



**GLENDALE ARTS AND ENTERTAINMENT DISTRICT
IMPROVEMENTS ON ARTSAKH AVENUE
SPECIFICATION NO. 3893R**



CITY OF GLENDALE, CALIFORNIA

ISSUED TO BID
October 23, 2024

Project Manager: Huang Zheng, P.E.
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PROJECT DIRECTORY

OWNER: City of Glendale
Public Works Engineering Department
633 E. Broadway, Room 205
Glendale, CA 91206

Contact: Huang Zheng, P.E., Project Manager
Tel: 818-548-3945
Fax: 818-242-7087
E-mail: hzheng@glendaleca.gov

CONSULTANTS

Landscape Architect:

Name of Firm: Studio One Eleven
Address: 245 East Third St.
Long Beach, CA 90802
Attention: Kirk Keller

Phone: 562-901-1500
Facsimile: _____
E-Mail: Kirk.keller@studio-111.com

Traffic Engineer:

Name of Firm: Lindscott, Law & Greenspan Engineers
Address: 600 South Lake Avenue, Suite 500
Pasadena, CA 91106

Attention: Alfred Ying
Phone: 626-796-2322 ext. 224
Facsimile: _____
E-Mail: ying@llgengineers.com

Civil Engineer:

Name of Firm: Fusco Engineering, Inc.
Address: 600 Wilshire Blvd., Suite 1470
Los Angeles, CA 90017
Attention: Brittany Knott

Phone: 213-988-8802
Facsimile: _____
E-Mail: bknott@fuscoe.com

Structural Engineer:

Name of Firm: DKSE Structural Engineers
Address: _____

Attention: Danniel Kang,SE

Phone: 213.328.3753
Facsimile: _____
E-Mail: danniel@dkseinc.com

Electrical Engineer:

Name of Firm: rtm engineering consultants
Address: 74770 Highway 111 suite 203
Indian Wells, CA 92210

Attention: Victor Leon
Phone: 760.340.9005
Facsimile: _____
E-Mail: Victor.leon@rtmec.com

Lighting Designer:

Name of Firm: Studio K1
Address: 15231 Laguna Canyon Road, Suite 100
Irvine, CA 92618

Attention: Jeremy Windle
Phone: 949-751-5800
Facsimile: _____
E-Mail: jwindle@studiok1.com

Urban Designer:

Name of Firm: Studio One Eleven
Address: 245 East Third St.
Long Beach, CA 90802
Attention: Shannon Heffernan
Phone: 562-901-1500
Facsimile:
E-Mail: Shannon.heffernan@studio-111.com

Environmental Graphics
and Wayfinding:

Name of Firm: RSM Design
Address: 87 Plotkin Alley
Pasadena, CA 91105
Attention: Cody Clark
Phone: 626-701-2321
Facsimile:
E-Mail: cody@rsmdesign.com

Soils Geotechnical Engineer:

Name of Firm: Twining Inc.
Address: 2883 East Spring Street, Suite 300
Long Beach, CA 90806
Attention: Paul Soltis, RCE, GE
Phone: 562-426-3355
Facsimile: 562-426-6424
E-Mail: psoltis@twininginc.com

Irrigation Engineer:

Name of Firm: Studio One Eleven
Address: 245 East Third St.
Long Beach, CA 90802
Attention: Christian Nunez
Phone: 562-901-1500
Facsimile:
E-Mail: Christian.nunez@studio-111.com

NOTICE INVITING BIDS

NOTICE is hereby given that the City of Glendale ("City") will receive sealed Bids, before the Bid Deadline established below for the following work of improvement:

GLENDALE ARTS AND ENTERTAINMENT DISTRICT IMPROVEMENTS ON ARTSAKH AVENUE
SPECIFICATION NO.3893R

Bid Deadline: Submit before **2:00 p.m. on Wednesday**, December 11, 2024 ("the Bid Deadline")

Original Bid to be submitted to:
Office of City Clerk
613 E. Broadway, Room 110
Glendale, CA 91206

Bid Opening: 2:00 p.m. on Wednesday, December 11, 2024
City Council Chambers
613 E. Broadway, 2nd Floor
Glendale, CA 91206

NO LATE BIDS WILL BE ACCEPTED.

Bidding Documents Available: October 23, 2024, at the Public Works Engineering Department, 633 E. Broadway, Room 205, City of Glendale, CA 91206

Bidding documents are also available to view and download online at:

<https://www.glendaleca.gov/government/departments/finance/purchasing/rfp-rfq-bid-page>

Mandatory Pre-Bid Conference: N/A

City of Glendale Contact Person: Huang Zheng, Project Manager
Phone: 818-548-3945
Fax: 818-242-7087
E-mail: hzheng@glendaleca.gov

Mandatory Qualifications for Bidder and Designated Subcontractors:

A Bid may be rejected as non-responsive if the Bid fails to document that Bidder meets the essential requirements for qualification. As part of the Bidder's Statement of Qualifications, each Bid must provide satisfactory evidence that:

Bidder satisfactorily completed as a prime contractor or subcontractor at least **(4)** prevailing wage public contracts in California; each comparable in scope and scale to this Project, within **{ (5)** years prior to the Bid Deadline and with a dollar value in excess of the Bid submitted for this Project. In addition, if the Bidder intends to self-perform the Signage Contractor, Bidder shall satisfy the mandatory qualifications described in the Specialty Contractor's Statement of Qualifications (starting at page F-23) applicable to such Work and submit the completed forms with the Bid.

Subcontractors listed for the Signage Contractor Work must satisfy the mandatory qualifications described in the Specialty Contractor's Statement of Qualifications (starting on page F-23) applicable to the Work to be performed by each Subcontractor and Bidder must submit the completed forms with the Bid.

General Scope of Work:

Contractor shall furnish labor, materials, equipment, services, and specialized skills to perform work involved in the Project. The Work included in the Bid is defined in accordance with Specifications No. 3893R and Plan Nos. 1-3095, SSF-3095, PLA-3095, IRR-3095, PG-3095, WS-3095, 49-251, 50-685, 50-686, 50-687 and GWP00638AA. The work generally includes: the removal and disposal of asphalt and Portland cement concrete pavements, removal and salvage of existing pavers to be reused; the grading and preparation of subgrade; the construction of new concrete curbs, sidewalks, and curb ramps, removing and hauling away of grindings; the removal of existing trees; relocating existing trees, new shrub and tree plantings; the reconstruction of irrigation mainline and lateral connections; the reconstruction of electrical lines for street lighting, the relocations of water meters and fire hydrants; the construction of sidewalk extension and accent shade structures, counters and benches; installation of site furnishings; as shown on the project plans and specifications, Standard Plans for Public Works Construction (SPPWC 2021 Edition), and the Standard Specifications for Public Works Construction (2021 Edition), including all supplements thereto issued prior to bid opening date.

Other Bidding Information:

Number of Contract Working Days: 180 Working Days
Amount of Liquidated Damages: \$6,700 per Calendar Day
Required Construction Staging: Six Phases, See Special Condition Section 6

Other Bidding Information:

1. Bidding Documents: Bids must be made on the Bidder's Proposal form contained herein. Bidding Documents may be obtained in the Public Works Engineering Department, 633 E. Broadway, Room 205, Glendale, CA 91206 where they may be examined. Electronic copy of bidding documents can be obtained at no cost from: <https://www.glendaleca.gov/government/departments/finance/purchasing/rfp-rfq-bid-page>. Future addendums, if any will be available for download on the same page as the bidding documents. The city will not mail/deliver the addendums to the prospective bidders. It is the bidders' sole responsibility to check the website to obtain future addendums to this bid documents.

2. Engineer's Estimate. The preliminary cost of construction of this Work has been prepared. The estimate is in the range of \$ 7.25M to \$7.5M

3. Completion: This Work must be completed within **one-hundred-eighty** Working days from the Date of Commencement as established by the City's written Notice to Proceed.

4. Acceptance or Rejection of Bids. The City reserves the right to reject any and all Bids, to award all or any individual part/item of the Bid, and to waive any informalities, irregularities or technical defects in such Bids and determine the lowest responsible Bidder, whichever may be in the best interests of the City. No late Bids will be accepted, nor will any oral, facsimile or electronic Bids be accepted by the City.

5. Mandatory Pre-Bid Conference and Job Walk. A mandatory pre-bid conference and job walk is not required.

6. Contractor License. At the time of the Bid Deadline and at all times during performance of the Work, including full completion of all corrective work during the Correction Period, the Contractor must possess a California contractor license or licenses, current and active, of the classification required for the Work, in accordance with the provisions of Chapter 9, Division 3, Section 7000 *et seq.* of the Business and Professions Code. In compliance with Public Contract Code Section 3300, the City has determined that the Bidder must possess the following **license(s)**:

- a. Pursuant to Section 3300, of the Public Contract Code, the classification of the bidder's Contractor's License shall be "Class A". Failure of a bidder to obtain adequate licensing at the time the contract is awarded shall constitute a failure to execute the Contract and shall result in the forfeiture of the Bidder's Bond.

The successful Bidder will not receive a Contract award if the successful Bidder is unlicensed, does not have all of the required licenses, or one or more of the licenses are not current and active. If the City discovers after the Contract's award that the Contractor is unlicensed, does not have all of the required licenses, or one or more of the licenses are not current and active, the City may cancel the award, reject the Bid, declare the Bid Bond as forfeited, keep the Bid Bond's proceeds, and exercise any one or more of the remedies in the Contract Documents.

7. Subcontractors' Licenses and Listing. At the time of the Bid Deadline and at all times during performance of the Work, each listed Subcontractor must possess a current and active California contractor license or licenses appropriate for the portion of the Work listed for such Subcontractor and shall hold all specialty certifications required for such Work. When the Bidder submits its Bid to the City, the Bidder must list each Subcontractor whom the Bidder must disclose under Public Contract Code Section 4104 (Subcontractor Listing Law), and the Bidder must provide all of the Subcontractor information that Section 4104 requires (name, the location (address) of the Subcontractor's place of business, California Contractor license number, California Department of Industrial Relations contractor registration number, and portion of the Work). *In addition, the City requires that the Bidder list the dollar value of each Subcontractor's labor or services.* **The City's disqualification of a Subcontractor does not disqualify a Bidder. However, prior to and as a condition to award of the Contract, the successful Bidder shall substitute a properly licensed and qualified Subcontractor— without an adjustment of the Bid Amount.**

8. Permits, Inspections, Plan Checks, Governmental Approvals, Utility Fees and Similar Authorizations: The City has applied and paid for the following Governmental Approvals and Utility Fees:

Artsakh Ave. Fire Modification (FMOD2110967)

Electrical Spot Service

All other Governmental Approvals and Utility Fees shall be obtained and paid for by Contractor and will be reimbursed based on Contractor's actual direct cost without markup. See Instructions to Bidders Paragraph 14, and General Conditions Paragraph 1.01 for definitions and Paragraph 1.03 for Contractor responsibilities.

9. Bid Forms and Bid Security: Each Bid must be made on the Bid Forms obtainable from the City's Bidding website listed in the paragraph 1 above. Each Bid shall be accompanied by a cashier's check or certified check

drawn on a solvent bank, payable to "City of Glendale," for an amount equal to ten percent (10%) of the total maximum amount of the Bid. Alternatively, a satisfactory corporate surety Bid Bond for an amount equal to ten percent (10%) of the total maximum amount of the Bid may accompany the Bid. Said security shall serve as a guarantee that the successful Bidder, within fourteen (14) calendar days after the City's Notice of Award of the Contract, will enter into a valid contract with the City for said Work in accordance with the Contract Documents.

10. Bid Irrevocability. Bids shall remain open and valid for ninety (90) calendar days after the Bid Deadline.

11. Substitution of Securities. Pursuant to California Public Contract Code Section 22300, substitution of securities for withheld funds is permitted in accordance therewith.

12. Prevailing Wage Resolution. Bidders are hereby notified that in accordance with the provisions of the Labor Code of the State of California, the City Council of the City has ascertained and determined by Resolution No. 18,626 (as amended), the general prevailing rate of per diem wages of a similar character in the locality in which the Work is performed and the general prevailing rate for legal holiday and overtime Work for each craft or type of worker needed in the execution of agreements with the City. Said resolution is on file in the Office of the City Clerk and is hereby incorporated and made a part hereof by the same as though fully set forth herein. Copies of said resolution may be obtained at the Office of the City Clerk.

13. California Department of Industrial Relations – Public Works Contractor Registration.

Beginning **July 1, 2014**, under the Public Works Contractor Registration Law (California Senate Bill No. 854 - See Labor Code Section 1725.5), contractors must register and meet requirements using the online application <https://efiling.dir.ca.gov/PWCR/ActionServlet?action=displayPWCRegistrationForm> before bidding on public works contracts in California. The application also provides agencies that administer public works programs with a searchable database of qualified contractors. Application and renewal are completed online with a non-refundable fee of \$300. More information is available at the following links:

http://www.dir.ca.gov/DLSE/PublicWorks/SB854FactSheet_6.30.14.pdf

<http://www.dir.ca.gov/Public-Works/PublicWorks.html>

Beginning **April 1, 2015**, the City must award public works projects only to contractors and subcontractors who comply with the Public Works Contractor Registration Law.

Notice to Bidders and Subcontractors:

- No contractor or subcontractor may be listed on a Bid proposal for a public works project (**submitted on or after March 1, 2015**) unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code Section 1771.1(a)].
- No contractor or subcontractor may be awarded a contract for public work on a public works project (**awarded on or after April 1, 2015**) unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.
- This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.
- The prime contractor must post job site notices prescribed by regulation. (See 8 Calif. Code Reg. Section 16451(d) for the notice that previously was required for projects monitored by the DIR Compliance Monitoring Unit.)

Furnishing of Electronic Certified Payroll Records to Labor Commissioner. **For all new projects awarded on or after April 1, 2015**, contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement).

INSTRUCTIONS TO BIDDERS

1. CONTRACTOR LICENSE

The Bidder must possess the valid State of California Contractor License(s) in the classification(s) specified in the Notice Inviting Bids at the time of the Bid Deadline and at all times during the performance of the Work, except as otherwise provided in California Business and Professions Code Section 7028.15.

2. INTERPRETATION OF BIDDING DOCUMENTS, SPECIFICATIONS AND ADDENDA

A. If any Bidder contemplating submitting a Bid is in doubt as to the true meaning of any part of the Bidding Documents, or who finds discrepancies, errors or omissions therein or who finds variances in any of the Bidding Documents with applicable law, such Bidder shall at once submit a written request for an interpretation or correction thereof to the City's representative identified in the Notice Inviting Bids, or other designated individual. All Bidders shall submit such written requests to City, preferably on the Bidder's Question Form provided at the end of these Instructions to Bidders, not less than ten (10) calendar days prior to the Bid Deadline. The person or entity submitting the request shall be responsible for its prompt delivery to City's Contact Person identified in the Notice Inviting Bids. Any interpretation or correction will be made only by Addendum issued by the City and a copy of such Addendum will be delivered to all Interested Bidders of record, as defined in Paragraph 3 below. Any Addenda so issued must be acknowledged in the Bid and the cost of performing Work described in the Addenda shall be included in the Bid. Bidder's failure to acknowledge receipt of all Addenda may result in rejection of the Bid as nonresponsive. No person is authorized to render an oral interpretation or correction of any Bidding Documents and no Bidder may rely on any such oral interpretation or correction issued by the City. The City shall not be responsible for any other explanation or interpretation of the Drawings or Specifications, or for any oral instructions. City reserves the right to extend the Bid Deadline by issuing an Addendum to Interested Bidders no later than 72 hours prior to the Bid Deadline. Bidders shall use complete sets of Bidding Documents in preparing Bids; City shall not assume responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

B. Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose. Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued and the Bidder shall acknowledge their receipt in the Bid.

3. OBTAINING DRAWINGS AND DOCUMENTS

Bidder may secure Bidding Documents ONLY from the location specified in the Notice Inviting Bids. Future addendums, if any will be available for download at the same place as the bidding documents. The city will not mail/deliver the addendums to the prospective bidders. It is the bidders' sole responsibility to check the website to obtain future addendums to this bid documents.

4. BID FORMS – SUBMITTAL

A. The Bids shall be made on the forms provided herein with all blank spaces properly filled in. All forms required to be submitted with the Bid are listed in the Bid Proposal at page F-1.

- B. The phraseology shall not be changed, and no additions shall be made to the items mentioned herein. Unauthorized conditions, exemptions, limitations, or provisions attached to a Bid will render it informal and may cause its rejection. All forms requiring specific information shall be completed with all applicable information for a Bid to be considered responsive. Special attention should be given to completing:
1. Bidder's Statement of Qualifications;
 2. Specialty Contractor's Statement of Qualifications; and
 3. Designation of Subcontractors
- C. Include all Bid Forms, properly executed, and intact on forms provided. Enclose the Bid Forms in a sealed envelope; type or print on the envelope "BIDS for" followed by the title and Specification Number and the date and time of the Bid Deadline as they appear on the cover of this Specification book, and the Bidder's name and address. The envelope may be mailed, hand delivered, or delivered by courier or package delivery service.
- D. Bids hand delivered, delivered by courier or package delivery service shall be presented to:
- City Clerk
City of Glendale
613 E. Broadway, Room 110
Glendale, CA 91206
- E. Bids received after the Bid Deadline or at any place other than the Office of the City Clerk will not be considered.

5. BID FORMS – AUTHORIZED SIGNATURES

The Bidder shall sign the Bid Forms. If the Bid Forms are submitted by:

- A. **A Sole Proprietorship**, the signature must be the full name of the individual, whose address must be given.
- B. **Partnership**, it must be signed by each partner or accompanied by proof that the person(s) signing is/are authorized to bind the partnership. The name and address of the partnership and the address of person signing must be provided.
- C. **Corporation**, it must be signed by an officer. The corporate name must be attested by the corporate seal. A signature other than a corporate officer's will be accepted only if signature authority is conferred in the Incumbency Certificate submitted with the Bid.
- D. **A Limited Liability Company**, it must be signed by the managing member(s), and the name and address of the limited liability company and the address of each person signing must be provided.
- E. **Joint Venture**, it must be signed in accordance with A-D above, based on the applicable situation, and the names and address of the joint venture and the address of each person signing must be provided.

6. BID FORMS – SCHEDULE OF BID PRICES

- A. The Bidder shall include in his/her Bid price(s) any and all expense or costs that may be necessary to complete the project in accordance with the requirements of the Contract.
- B. The Bidder shall state for each item on the Schedule of Bid Prices form, in clearly legible figures, the Base Bid, the alternates, and the unit price and item total or lump sum, as the case may be, for which he/she proposes to supply labor, materials, and equipment and to perform the Work. Bids must not contain any erasures, interlineations, strike-throughs or other corrections unless the same are suitably authenticated by affixing in the margin immediately opposite such erasure or correction the initials of the person(s) signing the Bid. If any Bid, or portions thereof, is determined by the City to be illegible, ambiguous or inconsistent, City may reject such a Bid as being non-responsive.
- C. In the case of a unit price item, the amount set forth, as the item total shall be the product of the estimated quantity times the unit price Bid. In the event of a discrepancy between the unit price Bid and the item total, the unit price shall prevail; however, if the unit price is ambiguous, unintelligible, or uncertain for any cause, or is omitted, or is the same amount as the entry for the item total, then the item total shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price. Where so indicated by the makeup of the Bid Form, sums shall be expressed in both words and figures, and in case of discrepancy between the two, the amount written in words shall govern.
- E. Post Bid Interviews. The **apparent low, second low, and third low Bidders** may be asked to attend a Post Bid Interview to review the completeness and accuracy of their Bids and qualifications to perform the Work. Upon City's request, such Bidders will be required to submit a detailed phasing plan, a Preliminary Schedule of Values for Payment equal to the Bid price, schedule of submittals, and confirmation of key personnel who will be dedicated to the Project for the duration of the Work. The detailed phasing plan will be reviewed and the qualifications of listed specialty contractors will be discussed. The Schedule of Values for Payment shall include separate line items for direct jobsite general conditions costs, field office overhead, and home office overhead and such other information as the City may require.

7. BID SECURITY

- A. Each Bid shall be accompanied by cash or a cashier's check or a certified check, drawn on a responsible bank doing business in the United States payable to the City, or a satisfactory Bid Bond in favor of the City executed by the Bidder as a principal and a California admitted surety company (as defined by California Code of Civil Procedure Sections 995.120 and 995.311) as surety ("Bid Security").
- B. A Bid Bond must be issued by a California admitted surety insurer with the minimum A.M Best Company Financial strength rating of "A:VII" or better. A Bid Bond issued by a California admitted surety not listed on Treasury Circular 570 will be deemed accepted unless specifically rejected by the City. A Bid Bond issued from an admitted surety insurer not listed in Treasury Circular 570 must be accompanied by all documents enumerated in California Code of Civil Procedure Section 995.660.

- C. Bid Security shall be in an amount not less than 10% of the Base Bid. Any Bid submitted without Bid Security will be rejected as non-responsive. The Bid Security shall be given as a guarantee that the successful Bidder shall execute the Construction Contract and shall provide the insurance, bonds and other required forms within fourteen (14) calendar days after the City's Notice of Award of the Contract. Bidders will be entitled to return of Bid Security provided, however, that a successful Bidder will forfeit Bid Security in the event that the successful Bidder withdraws its Bid prior to the expiration of ninety (90) calendar days after the Bid Deadline; or attempts to withdraw its Bid when the requirements of Public Contract Code Section 5101 *et seq.* are not met; or refuses or fails to execute said Contract and provide the required bonds, insurance or certificates within fourteen (14) calendar days after the City's Notice of Award of the Contract. In such event, if City awards the Contract for the Work to the next lowest responsible Bidder, the amount of the lowest responsible Bidder's Bid Security shall be applied to the Contract Price differential between the lowest Bid and the second lowest Bid and the surplus, if any, will be returned to the lowest Bidder. If the City rejects all other Bids presented and re-advertises, the lowest Bidder's Bid Security may be used to offset the City's cost of re-advertising and receiving new Bids and the surplus, if any, will be returned to the lowest Bidder.
- D. The Bid Security shall be held for ninety (90) calendar days after Bid Deadline or until posting by the successful Bidder of the payment and performance bonds, proof of insurance, return of executed copies of the Contract and necessary certification(s), whichever first occurs, at which time the Bid Security will be returned to all Bidders.
- E. If a Bid Bond will be submitted, Bidder shall use the form entitled "Bid Bond" contained in the Bidding Documents at page F-20, which Bid Bond must be properly executed and acknowledged by the Bidder and by a corporate surety authorized to transact such business in the State of California.
- F. The Bid Bond must be accompanied by a power of attorney from the surety company authorizing the person executing the bond to sign on behalf of the company. The signature of the person executing the bond on behalf of Surety must be acknowledged by a Notary Public as the signature of the person designated in the power of attorney.
- G. Any alteration of the form of Bid Bond, or imperfection in the execution thereof, as herein required, will render it informal and may, at the option of the City, result in the rejection of the Bid under which the Bid Bond is submitted.

8. BIDDER'S AND SPECIALTY CONTRACTOR'S STATEMENT OF QUALIFICATIONS

- A. Each Bidder shall be required to complete, execute and submit with its Bid, the form entitled "Bidder's Statement of Qualifications." In addition, if the Bidder intends to Architectural Grade Sign Fabricator and Installer Work, Bidder shall satisfy the mandatory qualifications described in the Specialty Contractor's Statement of Qualifications (starting at page F-35) applicable to such Work and submit the completed forms with the Bid. **Subcontractors** listed for the Architectural Grade Sign Fabrication and Installation Work must satisfy the mandatory qualifications described in the Specialty Contractor's Statement of Qualifications (starting at page F-37) applicable to the Work to be performed by each Subcontractor and Bidder must submit the completed forms with the Bid. Notwithstanding the provisions of Paragraph 22 herein, the Bidder's Statement of Qualifications and financial statements and the Specialty Contractor's Statement of Qualifications shall not be public records. All information required by a Bidder's or Specialty Contractor's Statement of Qualifications shall be completely and fully provided. If no information is to be filled in a blank space, then write "none." Any Bid not accompanied by a Bidder's Statement of Qualifications and

Specialty Contractor's Statement of Qualifications form completed with all information required may render the Bid non-responsive. If the City determines that any information provided by a Bidder in the Bidder's or Specialty Contractor's Statement of Qualifications is false or misleading, or is incomplete so as to be false or misleading, the City may reject the Bid submitted by such Bidder as being non-responsive.

- B. A responsible Bidder is a Bidder who has demonstrated the attribute of trustworthiness, as well as quality, fitness, capacity and experience to satisfactorily perform fully the requirements of the contract documents. In selecting the lowest responsible Bidder, consideration will be given not only to the financial standing but also to the general competency of the Bidder for the performance of the work covered by the Bid including, but not limited to, the experience of the Bidder in construction of public buildings for public agencies. By submitting a Bid, each Bidder agrees that the City, in determining the successful Bidder and its eligibility for the award, may consider the Bidder's experience with similar types of construction projects and facilities, conduct and performance under other contracts, financial condition, reputation in the industry, and other factors which could affect the Bidder's performance of the work.
- C. Glendale Ordinance No. 5544 adds Chapter 4.14 to the Glendale Municipal Code, 1995, establishing standards of responsibility and grounds for debarment for contractors who bid on public works contracts. Chapter 4.14 applies to all contracts awarded by, executed by or entered into by the City. Each Bidder is advised that the standards of Chapter 4.14 will be strictly enforced by the City.

9. DESIGNATION OF SUBCONTRACTORS

- A. Subcontractor Listing. On the Designation of Subcontractors form (page F-44), the Bidder shall list each Subcontractor whom the Bidder must disclose under the Subletting and Subcontracting Fair Practice Act, Public Contract Code Section 4104. The Bidder shall provide each Subcontractor's name, identify the trade and type of work that the Subcontractor will perform, state the location (address) of the Subcontractor's place of business, list the Subcontractor's California Contractor license number, and list the Subcontractor's Department of Industrial Relations contractor registration number. **In addition, on the form the Bidder shall list the dollar value of each Subcontractor's labor or services.** If additive Alternate Bid Items are included in the Bidding Documents, the Bidder shall identify each Subcontractor performing additive Alternate Bid Items, when such Work — or the combination of base Contract Work and Alternate Work — exceeds one-half of one percent of the total Bid Amount.
- B. Subcontractors' Licenses. At the time of the Bid Deadline and at all times during performance of the Work, each listed Subcontractor must possess a current and active California Contractor license appropriate for the portion of the Work listed for such Subcontractor and shall hold all specialty certifications required for such Work. An inadvertent error in listing the California contractor license number of a listed Subcontractor shall not be grounds for filing a bid protest or grounds for considering the Bid nonresponsive if the corrected contractor license number is submitted to the City by the Bidder within 24 hours after bid opening and provided the corrected contractor license number corresponds to the submitted name and location for that listed Subcontractor.
- C. Disqualification of a Subcontractor. The City has the right to review the suitability and qualifications of any Subcontractor proposed by the Bidder. As part of this review, the City may request a Bidder to submit additional information about one or more of the listed Subcontractors—including, but not limited to—an experience statement with pertinent information as to similar projects and other evidence of qualification for the Subcontractor. If requested, the Bidder shall provide the

information to the City within the time specified in the City's written request. After due investigation, if the City has reasonable objection to any proposed Subcontractor, the City may, before giving the notice of award, require the apparent successful Bidder to submit an acceptable substitute. **The City's disqualification of a Subcontractor does not disqualify a Bidder. However, prior to and as a condition to award of the Contract, the successful Bidder shall substitute a properly licensed and qualified Subcontractor— without an adjustment of the Bid Price.**

- D. Work of Subcontractors. The organization or arrangement of the Specifications and Drawings do not limit the extent of the Work for the Contract Documents. Accordingly, all Bidders are encouraged to disseminate all of the Specifications, Drawings and other Contract Documents to all persons or entities submitting sub-bids to the Bidder. The omission of any portion or item of Work from the Bid or from sub-bids, which is reasonably inferable from the Contract Documents, will not be a basis for adjustment of the Contract Price or the Contract Time.
- E. Ineligible Subcontractors. The successful Bidder is prohibited from performing Work on the Project with any Subcontractor who is ineligible to perform work on a public works project pursuant to California Labor Code Sections 1777.1 or 1777.7. In submitting its Bid, the Bidder certifies that it has investigated the eligibility of each and every listed Subcontractor and has determined that none is ineligible to perform work pursuant to the above code provisions.

10. CONTRACTOR'S NONCOLLUSION DECLARATION

Using the form provided by the City, the Bidder shall sign, under penalty of perjury, the Contractor's Declaration of Noncollusion, certifying that the Bid is not the result of and has not been influenced by collusion. Bidder shall submit this form with its Bid. Any Bid made without such declaration, or believed to be made in violation of the requirements set forth in the declaration form, may be rejected.

11. INSURANCE REQUIREMENTS AFFIDAVIT

The Bidder shall submit to its insurance company or insurance agent the Insurance Requirements in this Specification and the Contract Documents. The insurance company's underwriter or agent must complete the Insurance Requirements Affidavit which states that the insurer's underwriter or agent will furnish the City with the required insurance documents within fourteen (14) calendar days after the City's Notice of Award of the Contract. The Bidder shall submit this form with its Bid. Any Bid made without this affidavit, or made with an incomplete affidavit form, may be rejected.

12. EXAMINATION OF DRAWINGS, SPECIFICATIONS, AND SITE OF WORK

- A. The Bidder shall examine carefully the site of the Work contemplated and the Drawings and Specifications. The submission of a Bid will be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of Work to be performed and materials to be furnished, the difficulties to be encountered, and to the requirements of the Drawings, Specifications, and other Contract Documents. The Bidder shall ascertain the locations of the existing utility services, and other underground facilities, and to provide for carrying out his/her operations so as to cause the minimum possible inconvenience to the occupants of property along any streets affected. All Work and costs involved in the safeguarding of the property of others shall be at the expense of the Bidder to whom the Contract may be awarded.
- B. The Bidder hereby certifies that he has examined the local conditions, has read each and every clause of the Contract Documents, and that he/she has included all costs necessary to complete

the specified Work in his/her Bid prices, and the Bidder agrees that if he/she is awarded the Contract he/she will make no claim against the City based upon ignorance of local conditions or misunderstanding of any of the provisions of the Contract. Should the conditions turn out otherwise than anticipated by him/her, the Bidder agrees to assume all risks incident thereto.

13. PRICES AND PAYMENTS

Approximate quantities listed in the Notice to Contractors and quantities if listed for unit price items on the Bid Forms, are estimates given for comparing Bids, will be used to determine the lowest bid and for pricing changes to the Work. No claim shall be made against the City for excess or deficiency therein, actual or relative. Payment at the prices agreed upon will be in full for the completed Work and will cover materials, supplies, labor, tools, equipment, and all other expenditures incident to a satisfactory compliance with the Contract, unless otherwise specifically provided.

14. PERMIT FEES

Contractor shall be reimbursed for the actual direct cost of all Permit Fees, as defined in Paragraph 1.01 and addressed in 1.03 of the General Conditions. Bidder shall exclude the cost of Permit Fees from Bidder's Base Bid sum and from Bid Alternate prices. The Base Bid sum and Bid Alternate prices shall include the cost of administration and coordination for all Governmental Approvals and Utility Fees.

15. SUBSTITUTIONS

No requests for substitution of any material, device, product, equipment, fixture, form, or type of construction shall be considered by City prior to award of the Contract. Bidders shall submit all requests for substitution and substantiating data, on "Substitution Form" (Appendix 5), within **ten (10) calendar days** from the date of the Notice to Proceed. Bidder shall refer to the appropriate provisions of the General Conditions for additional information regarding substitutions. Authorization of a substitution is solely within the discretion of the City.

16. RETURN OF IMPROPER BIDS

Bids submitted after the Bid Deadline are non-responsive and shall be returned to the Bidder unopened. Oral, telephonic, telegraphic, facsimile or electronically transmitted Bids shall not be considered unless the Notice Inviting Bids expressly permits such means of transmittal.

17. WITHDRAWAL OF BIDS

Bidder may withdraw its Bid either personally or by written request any time prior to the scheduled Bid Deadline by notice to the City's Contact Person designated in the Notice Inviting Bids. If such notice is written, it shall be signed by the Bidder and shall be date-stamped and time-stamped by the City upon receipt. Withdrawn Bids may be resubmitted before the Bid Deadline provided that they are in full conformance with these Instructions to Bidders. Once submitted, all Bids are irrevocable, except as otherwise provided by law. Requests for withdrawal of Bids after the Bid Deadline shall be made only in accordance with California Public Contract Code Sections 5100, *et seq.* Bidder agrees by submitting a Bid that such Bid shall remain open, is irrevocable, and may not be modified, withdrawn, or cancelled for a period of ninety (90) days after Bid Deadline.

18. OPENING AND EVALUATION OF BIDS

A. Bid Opening and Tabulation. The Bids shall be opened and read in public after the Bid Deadline has expired at the time and location listed in the Notice Inviting Bids. A tabulation of all Bids

received will be available for public inspection at 633 E. Broadway, Room 205, Glendale, CA in the Public Works Engineering Department during regular business hours for a period of not less than thirty (30) calendar days following the Bid Deadline. The City reserves the right to accept or reject any or all Bids and be the sole judge regarding the suitability of the products, services or supplies offered; and/or to waive any irregularities or informalities in any Bids or in the bidding process. The City further reserves the right to purchase all or fewer than all items or quantities of each item listed in the Bidding Documents. The award of the Contract, if made by the City, shall be to the lowest responsive and responsible Bidder. If Bid Alternate Items are called for, the lowest Bid shall be determined according to Paragraph 20 below.

B. Evaluation of Bids

1. **Mandatory Qualifications and Submittals.** A Bid may be rejected as non-responsive if the **Bidder** fails to document in the Bid that Bidder meets the essential requirements for qualification and fails to include the submittals described in the Notice Inviting Bids. As part of the Bidder's Statement of Qualifications (in Section 3 EXPERIENCE, item 3.2), each Bidder must establish that Bidder has the required experience as set forth in the Mandatory Qualifications paragraph of the Notice Inviting Bids for this Project. The City's disqualification of a **Subcontractor** listed for the Architectural Grade Sign Fabricator and Installer Work does not disqualify a Bidder. However, prior to and as a condition to award of the Contract, the successful Bidder shall substitute a properly licensed and qualified Subcontractor — without an adjustment of the Bid Price.
2. **Responsive Bid.** A responsive Bid is a Bid which conforms, in all material respects, to the Bidding Documents.
3. **Responsible Bidder.** A responsible Bidder is a Bidder who has demonstrated the attribute of trustworthiness, as well as quality, fitness, capacity and experience to satisfactorily perform fully the requirements of the Contract Documents.
4. **Competency of Bidders.** In selecting the lowest responsible Bidder, consideration will be given not only to the financial standing but also to the general competency of the Bidder for the performance of the Work covered by the Bid including, but not limited to, the experience of the Bidder in construction of public works for public agencies. By submitting a Bid, each Bidder agrees that the City, in determining the successful Bidder and its eligibility for the award, may consider the Bidder's experience with similar types of construction projects and facilities, conduct and performance under other contracts, financial condition, reputation in the industry, safety record and protocols and other factors which could affect the Bidder's performance of the Work.

19. AWARD OF CONTRACT

The City reserves the right to reject any or all Bids and to waive any or all information or technical defects, as the interest of the City may require. Award of Contract or rejection of Bids will be made by the City within ninety (90) calendar days following the Bid Deadline. City Council meetings are regularly scheduled on Tuesday evenings.

20. BASIS OF AWARD

- A. A Contract will be awarded to the lowest responsive and responsible Bidder meeting all requirements set forth in these Bidding Documents.
- B. In making the determination as to lowest responsive and responsible Bidder, the following criteria will apply:
 - 1. Qualifications of Bidder: The Bidder shall be a qualified Bidder as required in this Paragraph 18(B) and as otherwise required in the Contract Documents.
 - 2. Responsive Bid: The Bidder's Bid shall be responsive to the requirements of the Contract Documents. As stated elsewhere, the City reserves the right to waive any informalities or technical defects of the Bid as the best interests of the City may require.

21. EXECUTION OF CONTRACT

Within fourteen (14) calendar days after the City's Notice of Award of the Contract, Contractor shall deliver to the City the following documents:

- A. Three (3) copies of the Contract in the form included herein, properly executed by Contractor and, if the Contractor is a corporation, evidence of its corporate existence and that the persons signing the Contract are authorized to do so. All signatures must be notarized.
- B. Properly executed copies of the (a) Performance Bond and (b) Labor and Material (Payment) Bond in accordance with the requirements set forth in Article 13 of the General Conditions and in the form shown on Appendix 1 and 2 attached thereto. All signatures must be notarized.
- C. Properly executed policies of (a) the Commercial General Liability Insurance, (b) the Automotive Liability Insurance, (c) the Excess or Liability Insurance, (d) the Waiver of Subrogation Clause, (e) Professional Liability, if required, and (f) the corresponding endorsements for each policy in accordance with the requirements set forth in Article 12 of the General Conditions.

In the event that the fourteenth calendar day falls on Saturday, Sunday, a legal holiday for the State of California, or on days when City Hall is closed, the aforesaid documents shall be delivered by the following Working Day.

After receipt of said documents within said time period or any extension thereof granted by the City, the City shall execute the Contract and return one (1) of said three (3) copies to Contractor for his/her files.

22. PUBLIC RECORDS

City seeks to conduct its business openly. Upon opening, all Bids shall become a matter of public record and shall be regarded as public, with the exception of those elements of each Bid that are identified by the Bidder and plainly marked as "trade secret," "confidential," or "proprietary," including any Statement of Qualifications and financial statements to be submitted by Bidders. Each element of a Bid which a Bidder desires not to be considered a public record must be clearly marked as set forth above, and any blanket statement (i.e. regarding entire pages, documents, or other, non-specific designations) shall not be sufficient and shall not bind the City in any way whatsoever. If City receives a request from a third party to make a Bid available for inspection and copying, the City will notify the Bidder of the request. If a Bidder instructs the City that the information is not to be released, City will withhold the information, provided, the Bidder expeditiously seeks a protective order from a court of competent jurisdiction to prevent such release. If

disclosure is required under the California Public Records Act or otherwise by law (despite the Bidder's request for confidentiality), the City shall not in any way be liable or responsible for the disclosure of any such records or part thereof. Bidder shall indemnify, defend (including Bidder's providing and paying for legal counsel for City), and hold harmless City, its officers, agents, employees, and representatives from and against all liability, claims, suits, demands, damages, fines, penalties, costs, or expenses arising out of or alleging City's refusal to publicly disclose one or more records that Bidder identifies as protectable, or asserts is protectable.

23. PREVAILING WAGE RATES AND EMPLOYMENT OF APPRENTICES

- A. **Prevailing Wage Rates.** The Bidder and all Subcontractors shall utilize the relevant prevailing wage rate determinations in effect on the first advertisement date of the Notice Calling for Bids in preparing the Bid Proposal and all component price quotations, provided, however, that when Davis Bacon wage rates apply, such rates are subject to increase by written notice, issued by Addendum not less than 10 calendar days before the Bid Deadline. Pursuant to California Labor Code Section 1770 *et seq.*, the Director of the Department of Industrial Relations of the State of California and the United States Secretary of Labor have determined the general prevailing wage rates in the locality in which the Work is to be performed.
- B. **Apprenticeship Committee Contract Award Information.** Pursuant to California Labor Code Section 1777.5 and Title 8 of the California Code of Regulations Section 230, the Contractor and Subcontractors of any tier who are not already approved to train by an apprenticeship program sponsor shall, within ten (10) calendar days of signing the Contract or subcontract, as applicable, but in any event prior to the first day in which the Contractor or Subcontractor has workers employed on the Project, submit the Public Works Contract Award Information form (DAS Form 140) to the appropriate local apprenticeship committees whose geographic area of operation include the area of the Project and who can supply apprentices to the Project. City reserves the right to require Contractors and Subcontractors to submit a copy of said form to the City.
- C. **Statement of Employer Fringe Benefit Payments.** Within five (5) calendar days of signing the Contract or subcontract, as applicable, the Statement of Employer Payments (DLSE Form PW 26) shall be completed for each Contractor and Subcontractor of any tier who pays benefits to a third party trust, plan or fund for health and welfare benefits, vacation funds or makes pension contributions. The form must contain, for each worker classification, the fund, plan or trust name, address, administrator, the amount per hour contributed and the frequency of contributions. Training fund contributions shall also be reported in this form. City reserves the right to require Contractors and Subcontractors to submit a copy of said form to the City.
- D. **Notice to Subcontractors.** Bidders shall notify all potential Subcontractors submitting price quotations for portions of the Work of the requirements concerning payment of prevailing wage rates, payroll records, hours of Work, and employment of apprentices.

24. ANTI-DISCRIMINATION

It is policy of the City that in connection with all Work performed under contracts, there shall be no discrimination against any prospective or active employee engaged in the Work because of race, color, religion, religious belief, national origin, ancestry, citizenship, age, sex, sexual orientation, marital status, pregnancy, parenthood, medical condition, or physical or mental disability. The Contractor shall comply with all applicable Federal and California laws including, but not limited to, the California Fair Employment and Housing Act (California Government Code Section 12900, *et seq.*), California Labor Code Section 1735, and The Americans with Disabilities Act of 1990 (42 U.S.C. 12101 *et seq.*). The Contractor shall require like compliance by all Subcontractors employed on the Work by such Contractor.

25. BID PROTEST PROCEDURES

- A. Any Bidder submitting a Bid directly to the City and eligible for award of the Contract may file a protest if the Bidder complies with all of the following requirements and conditions:
1. The Bid protest is in writing;
 2. A protest based upon alleged defects or improprieties in the Contract Documents is filed with the City prior to the Bid Deadline;
 3. All other protests are filed and received by the City no more than five (5) calendar days following the Notice of Intent to Award the Contract; and
 4. The written Bid protest sets forth, in detail, all grounds for the Bid protest, including without limitation: all facts, supporting documentation, legal authorities, and argument in support of the grounds for the Bid protest. All factual contentions must be supported by competent, admissible, and credible evidence.
- B. Any matters not set forth in the written Bid protest will be deemed waived. Any Bid protest not conforming to the foregoing requirements and conditions will be rejected by the City as invalid. The City's decision on the protest will be made by the Director of Public Works.
- C. If a dispute arises out of the City's acceptance of a Bid, the Bidder receiving award of the contract shall indemnify, defend (with counsel acceptable to City), and hold harmless the City, its City Council members, employees, and agents from liability, claims, demands, damages and costs arising therefrom.

BIDDER'S QUESTION FORM
(Please Print or Type)

Fax Bidder's Questions to Public Works Engineering Department
Project Manager: Huang Zheng, P.E.
Address: 633 E. Broadway, Room 205, Glendale, CA 91206
Phone: 818-548-3945
Fax: 818-242-7087
E-mail: hzheng@glendaleca.gov

Project: Glendale Arts and Entertainment District-
Improvements on Artsakh Avenue
Specification No.: 3893R

Date: _____

Name: _____ Phone: (____) _____

Position: _____ Fax: (____) _____

Firm Name: _____

Address: _____

Drawings Reference (Sheet/Detail): _____

Specifications Reference: (Section/Article): _____

Question: _____

IF CITY DETERMINES A RESPONSE IS NECESSARY, IT WILL BE ISSUED TO ALL INTERESTED BIDDERS BY
ADDENDUM.

Note: Please use additional sheets if you need more space for question(s).

BIDDING FORMS

BID FORMS

BIDDER'S PROPOSAL

The undersigned Bidder submits this Bid in response to the Notice Inviting Bids issued by the City to construct the Work of the following Project in accordance with the Contract Documents:

PROJECT: Glendale Arts and Entertainment District -Improvements on Artsakh Avenue

BIDDER'S NAME: _____

Deliver or mail to: Office of City Clerk
City of Glendale
613 E. Broadway, Room 110
Glendale, California 91206

A. **Enclosed herewith this letter** and by this reference incorporated herein and made a part of this Bidder's Bid are the following completed forms:

1. Bidder's Proposal
2. Schedule of Bid Prices
3. Incumbency Certificate
4. Bid Security in the following form (*check one*):

Cashier's Check Certified Check Bid Bond Cash

5. Bidder's Statement of Qualifications
6. Experience Form
7. Specialty Contractor's Statement of Qualifications
8. Contractor Safety Questionnaire
9. Questionnaire Regarding Subcontractors
10. Designation of Subcontractors
11. Contractor's Declaration of Noncollusion
12. Insurance Requirements Declaration

B. Acknowledgment of Addenda. The Bidder shall acknowledge the receipt of Addenda by placing an "X" by each Addendum received:

Addendum No. 1
Addendum No. 2
Addendum No. 3
Addendum No. 4
Addendum No. 5

BID FORMS

BIDDER'S PROPOSAL

If an Addendum or Addenda have been issued by the City and not noted above as being received by the Bidder, the Bid may be rejected.

C. Inspection of the Work and Contract Documents. Bidder certifies that it has carefully examined and is fully familiar with all of the provisions of the Bidding Documents and said Bidding Documents contain sufficient detail regarding the Work to be performed; that it has notified City of any errors or omissions in the Bidding Documents and/or any unusual site conditions; and that it has carefully checked all words, prices, and statements in this Bidding Document.

D. Bidder hereby certifies that he/she and his/her Subcontractors have inspected the site and related Drawings and Specifications of Work and fully acquainted themselves with all conditions and matters which may in any way affect the Work, time of completion or the costs thereof. Bidder also certifies he/she has observed the designated Contractor Work areas and access routes, if disclosed or shown, as part of the Work in this Contract.

SITE INSPECTION – CERTIFICATION:

Person(s) who inspected site of the proposed Work for your firm:

Name: _____ Date of Inspection: _____

Title: _____

Name: _____ Date of Inspection: _____

Title: _____

E. Mandatory Pre-Bid Conference (not required). Bidder hereby certifies that he/she and/or his/her Representative from Bidder's firm attended the Mandatory Pre-Bid Conference on the date and time established in the Notice Inviting Bids.

MANDATORY PRE-BID CONFERENCE – CERTIFICATION (N/A):

Person(s) from your firm who attended the Mandatory Pre-Bid Conference for your firm:

Name: _____

Title: _____

Name: _____

Title: _____

F. Bidder agrees that all costs of Work shown in the Bidding Documents, including work reasonably inferable therefrom and necessary thereto, are included in his/her Bid. All Work shown in the Contract Documents for which a specific line item is not provided in the Bidding Form is included in the Bidder's Base Bid sum. Contractor shall be reimbursed for the actual direct cost of all Permit Fees, as defined in Paragraph 1.01 and addressed in Paragraph 1.03 of the General Conditions. Bidder shall **exclude** the cost of Permit Fees from Bidder's Base Bid sum. Base Bid sum shall **include** the cost of administration and coordination of Governmental Approvals and Utility Fees. Bidder agrees that City will not be responsible for any errors or omissions on the part of the undersigned in making this Bid.

BID FORMS

BIDDER'S PROPOSAL

G. Forfeiture of Bid Security. Bidder further agrees that, in case of his/her default in executing the required Contract and the required bonds, or furnishing the required insurance, the money payable under the Bid Security accompanying this Bid shall be applied by the City towards payment of the damage to the City on account of such default, as provided in the Bidding Documents.

H. Period of Irrevocability. Bidder agrees that this Bid shall remain open and shall not be withdrawn for a period of not less than ninety (90) calendar days after bid deadline, or until rejected by the City, whichever period is shorter.

I. Bid Dispute Indemnification. In the event of a Bid dispute or protest based upon the Bidder's submission of this Bid and the City acceptance of same, the Bidder receiving award of the Contract will be required to indemnify, defend (with counsel acceptable to City), and hold harmless at Bidder's expense, the City, its City Council members, its agents, employees, and officers from liability, claims, demands, damages, and costs arising therefrom.

J. The California contractor license number listed below has been issued to the undersigned Bidder. This license has not been revoked or suspended and is in full force and effect and authorizes the undersigned Bidder to perform the Work under these Contract Documents. If Bidder is a joint venture and has not yet been issued a license, indicate the license number to be used for the joint venture and attach documentation providing assurances that the license will be issued on or before the award of the Contract.

K. Bidder certifies that before submitting this Bid, Bidder and Bidder's listed subcontractors have met the requirements of the Public Works Contractor Registration Law (California Senate Bill No. 854 - Labor Code Section 1725.5) and have registered with the California Department of Industrial Relations (DIR).

I hereby certify under penalty of perjury under the laws of the State of California that the representations made herein are true and correct.

Executed this _____ day of _____ at _____, _____
City State

COMPANY NAME: _____

ADDRESS: _____

CONTACT PERSON: _____

TELEPHONE NUMBER: _____ FAX NUMBER: _____

E-MAIL: _____

CONTRACTOR LICENSE NO.: _____

LICENSE CLASS: _____ EXPIRATION DATE: _____

DEPARTMENT OF INDUSTRIAL RELATIONS
CONTRACTOR REGISTRATION NO.: _____ EXPIRATION DATE: _____

TAX IDENTIFICATION NO.: _____

SURETY COMPANY: _____

BID FORMS

BIDDER'S PROPOSAL

All Bid forms must be signed where so indicated by the person or persons duly authorized to sign on behalf of the Bidder [see page IB-2, Paragraph 5 A-E]. By signing the Bid, the person signing is deemed to represent that he or she has authority to bind the Bidder. Failure to sign the Bidder's Proposal may invalidate the Bid.

BIDDER'S PROPOSAL – SIGNATURE(S):

Form of Entity of Bidder:

Please check the appropriate signature block below and fill in all related information.

Sole Proprietorship:

By: _____ Title: _____
Printed name of person signing

Signature

Partnership: General Partner Limited Partner

By: _____ Title: _____
Printed Name of person signing

Signature

Corporation:

By: _____ Corporate Officer Title: _____
Printed Name of person signing

Signature

Corporate Seal

Joint Venture: Corporation Partnership Individual Other _____

By: _____ Title: _____
Printed Name of person signing

Signature

BID FORMS

BIDDER'S PROPOSAL

Limited Liability Company:

By: _____
Printed Name of person signing

Title: _____

Signature

BID FORMS

SCHEDULE OF BID PRICES

PROJECT: Glendale Arts and Entertainment District – Improvements on Artsakh Ave.

BIDDER'S NAME: _____

BASE BID

Pursuant to and in compliance with your Notice Inviting Bids and Contract Documents relating to the Project including all Addenda, Bidder, having become thoroughly familiar with the terms and conditions of the Contract Documents and with local conditions affecting the performance and the costs of the Work at the place where the Work is to be done, hereby proposes and agrees to furnish and install everything necessary for and incidental to fully perform the base Contract Work within the time stated in strict accordance with the Contract Documents for the **Base Bid price** of:

Dollars (\$ _____)

(written dollar amount) _____ (dollar amount)

Item No.	Article	Est. Quantity	Unit Price	Total Price
General Condition				
1	Mobilization and Demobilization	1 LUMP SUM		
2	Traffic Control	180 EACH DAY		
Street Improvement Plans (1-3095)				
3	Pedestrian concrete removal (4-inch, TYP). (Note#9/ sheets 6 to 8)	40 CY		
4	Vehicular reinforced concrete removal, various thickness (7-inch to 10-inch) (Note#15/ sheets 7 & 8)	183 CY		
5	Remove and salvage pedestrian paver, various thickness (1-inch to 1.5-inch).(Note#11 and 39/ sheets 6 to 8)	2,844 SF		
6	Remove and salvage vehicular paver, various thickness (2-inch to 3-inch).(Note#18 and 28 / sheets 6 to 8)	21,480 SF		
7	Remove concrete sub base, various thickness (3-inch to 7-inch). (Note#39 / sheets 6 to 8)	31 CY		
7A	Remove reinforced concrete sub base, various thickness (6-inch to 8-inch). (Note#28/ sheets 6 to 8)	358 CY		
8	Planting removal (Note#10/ sheets 6 to 8)	2,610 SF		
9	Pavement removal, asphalt various thickness (5-inches to 8-inches) (Note#38/ sheets 6 to 8)	35 CY		

BID FORMS

SCHEDULE OF BID PRICES

10	Pavement removal, asphalt thickness surface plane (2-inches TYP) (Note#37/ sheets 6 to 8)	1,568 SY		
11	Pavement removal and 18-inch soil amendment (Note#26 and 27/ sheets 6 to 8)	287 CY		
12	Remove concrete curbs and median curbs (Note#8 and 17/ sheets 6 to 8)	1,554 LF		
13	Over excavation of sub-grade (2-inch deep)	633 CY		
14	Crushed miscellaneous base	2,500 TON		
15	Remove valve caps and sleeves. Fill void with cement sand slurry as necessary. (Note#3/ sheet 3)	1 EACH		
16	Abandon fire hydrant service lateral and valve. Salvage fire hydrant to GWP. (Note#20/sheet 20)	1 EACH		
17	Remove street light poles and foundations. Salvage poles and luminaires to GWP yard. (Note#5 / sheets 3 to 5)	6 EACH		
18	Remove and salvage existing light poles and luminaires to GWP. Remove pole foundations (Note A/sheets 4 &5)	22 EACH		
19	Remove and salvage existing light poles and luminaires. Install salvage poles and deliver luminaires to GWP. Remove pole foundations (Note C/sheets 3 &4)	8 EACH		
20	Remove and salvage existing luminaires to GWP. Protect light poles in place in preparation for new luminaires. (Note B/ sheets 3 &4)	35 EACH		
21	Remove and salvage existing manhole covers. Extension and adjust covers to grade.(Note#4 /Sheets 3 to 5)	10 EACH		
21A	Protect in place existing electrical vaults. Salvage covers, extension and adjust covers to grade. (Note#2/ sheets 4&5)	3 EACH		
22	Remove and salvage vault box covers. Protect in place vaults and adjust covers to grade. (Note#1/sheets 3 to 5)	16 EACH		
23	Remove electrical pull boxes (Note#6/sheet 3 to 5)	16 EACH		
24	Reconstruct/remodel curb drains (Note#25/ sheets 3 to 5)	5 EACH		
25	Remove water feature, stub and cap water and electrical lines. Salvage water feature equipment to city PW yard. Discard veneer material (Note#7/ sheets 3 & 4)	2 EACH		

BID FORMS

SCHEDULE OF BID PRICES

26	Remove and salvage special tree grates to city PW Yard (Note#30/ sheets 3 & 4)	9 EACH		
27	Relocate existing Palm trees (Note#16/sheets 3 to 5)	5 EACH		
28	Remove trees and tree wells (Note#29/sheet 5)	1 EACH		
28A	Remove trees (Note#34/sheet 4)	1 Each		
29	Remove and relocate existing signs. Salvage posts and remove foundations. (Note#13 and #13A/ sheets 3 to 5)	14 EACH		
30	Remove existing bollards and foundations. Salvage bollards to city PW Yard (Note#21/ sheet 5)	11 EACH		
31	Remove and salvage grate inlets. Set covers to new grade (Note#22/ sheet 5)	3 EACH		
32	Remove and discard planter lights (Note#23/ sheet 5)	11 EACH		
33	Remove and salvage existing bike racks and benches. Deliver to city PW Yard (Note#35 and #36/ sheet 5)	7 EACH		
34	Miscellaneous demo and haul away	ALLOWANCE	\$20,000	\$20,000
35	Erosion control - gravel bags berm (Note#1 / sheet 22 to 24)	300 LF		
36	Asphalt concrete pavement (surface and base course) (Note #9 / Sheets 12 to 14)	826 TON		
37	Asphalt rubber hot mix pavement (ARHM, 2-inch thick) (Note #22 / Sheets 12 to 14)	160 TON		
38	Install Creative Crosswalk.	6,200 SF		
39	Construct Integral P.C.C curb & Gutter (Note # 1 & 13 / Sheets 15 to 17 and Note #7 /Sheet 16)	1,663 LF		
40	Construct 4-inch P.C.C. pavement (scored and stamped sidewalk) (Note #4A, 4B & 25 /sheets 12 to 14)	9,126 SF		
41	Install pedestrian paver, including salvaged paver. (Note # 26,27 &32 / sheets 12 to 14)	4,955 SF		
42	Install vehicular paver including salvaged paver. (Note# 23 & 32A / sheets 12 & 13)	3,717 SF		

BID FORMS

SCHEDULE OF BID PRICES

43	Install Pedestrian Paver Concrete Subbase (4-inch) (Note# 26 & 27/ sheet 12 to 14)	4,448 SF		
44	Install Vehicular Paver Concrete Subbase (7-inch) (Note# 23/ sheet 12 to 13)	271 SF		
45	Construct 5-inch playground surface (Note #28 / Sheet 14)	1,200 SF		
46	Install cast-in-place detectable warning surface on ADA curb ramps	610 SF		
47	Install surface mounted detectable warning surface at transitions	215 SF		
48	Install safety barrier with concrete footing (Note# 18 / Sheets 15 & 16)	4 EACH		
49	Install bollards with concrete footing (Note#15 /sheet 15 &17)	21 EACH		
50	Furnish and install 4-foot square tree grate (heel proof) (Note 26 /sheets 15 &16)	4 EACH		
51	Install foundry service (Note#15 /sheet 16 &17)	2 EACH		
52	Install ADA compliant and heel proof 24" NDS channel grade (Note#6 /sheet 15 to 17)	984 LF		
53	NOT USED			
54	Install new water valve on existing fire line (Note #D /Sheet 15)	1 EACH		
55	Replace existing water valve box with two piece cast iron valve box and set to hardscape (Note #B /Sheet 15 &16)	8 EACH		
56	Replace existing water valve box, extension and cover set to softscape (Note #C /sheet 15 &16)	5 EACH		
57	Adjust GWP water valve cover to new finished grade (Note #A /sheet 16 &17)	6 EACH		
58	Install fire hydrant and assembly. Connect to existing 12-inch water main with 7.5-inch lateral. Install gate valve east of fire service lateral. (Note #27,32 and FH /Sheet 17)	1 EACH		
Signage and Stripping Plan (49-251)				
59	Remove existing signs, posts and footing (Note #4 / Plan 49-251)	3 EACH		
60	Remove existing signs from the existing sign posts or street lighting poles (Note #3&5 / Plan 49-251)	33 EACH		

BID FORMS

SCHEDULE OF BID PRICES

61	Remove conflicting striping (Note #18 / Plan 49-251)	1,067 LF		
62	Remove conflicting limit line/crosswalk pavement arrows (Note #18 / Plan 49-251)	278 SF		
63	Install new signs with 2-inch galvanized square tubing sign posts with footing (Note #1 / Plan 49-251)	38 EACH		
64	Install signs attached to existing sign posts or street lighting poles (Note #2 / Plan 49-251)	14 EACH		
65	Reorient existing signs on the existing street lighting poles to face direction noted (Note #6 / Plan 49-251)	4 EACH		
66	Thermoplastic 12-inch wide white limit line (Note #7 / Plan 49-251)	75 LF		
67	Thermoplastic 12-inch wide white crosswalk (Note #8 / Plan 49-251)	393 LF		
68	Thermoplastic continental crosswalk with 24-inch wide solid white longitudinal lines 24-inch apart (Note #9 & 17 / Plan 49-251)	578 SF		
69	Thermoplastic 4-inch wide double yellow centerline separated by 3-inch wide black stripe (Note #10 & 15/ Plan 49-251)	44 LF		
70	Thermoplastic 4-inch wide yellow left edge line (Note #11 / Plan 49-251)	81 LF		
71	Thermoplastic 4-inch wide yellow right edge line (Note #12 / Plan 49-251)	50 LF		
72	Thermoplastic 8-inch wide white channeling line with one way clear R.P.M. (Note #13 / Plan 49-251)	58 LF		
73	Thermoplastic pavement arrow/legends	253 SF		
74	Thermoplastic 12-inch wide white diagonal line at 5-feet on center (Note #16 / Plan 49-251)	170 SF		
75	Thermoplastic 4-inch wide solid white lane line (Note #14 / Plan 49-251)	40 LF		
76	NOT USED			
77	NOT USED			
Traffic Signal Modification Plans (50-687, 50-686, and 50-685)				
78	Traffic signal modification at Artsakh Avenue and Wilson Avenue (per plan No 50-687)	1 LUMP SUM		

BID FORMS

SCHEDULE OF BID PRICES

79	Traffic signal modification at Artsakh Avenue and Broadway (per plan no 50-686)	1 LUMP SUM		
80	Traffic signal modification at Artsakh Avenue and Harvard Street (per plan no 50-685)	1 LUMP SUM		
Parking Garage Improvement Plans (PG-3095)				
81	Remove and discard veneer at water feature wall	200 SF		
82	Remove and salvage column scones. Deliver to city yard. Replace Column with Cap.	6 EACH		
83	Infill wall with vinyl graphic mural	200 SF		
84	Paint existing overhead breezeway (Metal preparation and finish)	1,500 SF		
84A	Paint existing Steel barrier (Metal preparation and finish)	350 SF		
85	Power connection for blade sign	1 EACH		
Landscape Improvement Plans (PLA-3095)				
86	Plant 24-inch box tree	2 EACH		
87	Plant 15 gallon shrub* (Various Types)	207 EACH		
88	Plant 5 gallon shrub* (Various Types)	1,287 EACH		
89	Plant 1 gallon shrub* (Various Types)	1,369 EACH		
90	Install groundcover mulch*	6,317 SF		
91	Install linear root barrier at tree well	40 LF		
92	NOT USED			
93	Plant 15 Gallon Shrub in Planter Pot* (Various Types)	69 EACH		
94	Plant 1 Gallon Shrub in Planter Pot * (Various Types)	300 EACH		

BID FORMS

SCHEDULE OF BID PRICES

95	Not Used			
96	Soil preparation and amendment SC-13-2.02/.03	6,317 SF		
97	Garden soil for the planter pots	176 CY		
Irrigation Plans (IRR-3095)				
98	Install drip irrigation*	6,317 SF		
99	Install tree bubblers	2 EACH		
100	Install palm tree spray	10 EACH		
101A	Install rain sensor	2 EACH		
101B	Install irrigation controller	2 EACH		
102A	Install master control valve	2 EACH		
102B	Install flow sensor equipment	2 EACH		
103	Install mainline and wiring (sleeves and fittings)*	975 LF		
104	Install lateral piping (sleeves and fittings)*	3,050 LF		
105	Install new irrigation meter (1.5 Inch)	1 EACH		
106	Install quick coupler valve	6 EACH		
107A	Install manual flush valves	11 EACH		
107B	Install gate valves	4 EACH		
107C	Install valves for trees	4 EACH		

BID FORMS

SCHEDULE OF BID PRICES

107D	Install valves for shrubs	9 EACH		
Lighting-Electrical Improvement Plans (GWP00638AA)				
108	Install tree ring assembly (L3)	6 EACH		
109	Install tree ring assembly (L4)	3 EACH		
110	Install tree ring assembly (L5)	5 EACH		
111	Install festoon lighting at steel cabana	200 LF		
112	Install LED tape light (under toe kick and counter)	236 LF		
113	Install pedestrian pole light (P4)	2 EACH		
114	Install pedestrian pole light (P5)	1 EACH		
115	Remove and replace surface mount lights at existing overhead breezeway. Salvage fixture to City PW yard (K2)	12 EACH		
116	Remove and replace surface mount lights at building, salvage fixture to City PW yard (K1 and K4)	21 EACH		
117	Remove and replace step light (L1)	4 EACH		
118	Remove and replace surface mount lights at parking garage column, salvage fixture to City PW yard (K3)	10 EACH		
119	Install recess downlight at cabana structural tubing	20 EACH		
120	Install suspended light fixtures in tree canopy (D1)	212 EACH		
121	Install new light pole and fixture	22 EACH		
122	Install new fixture at existing pole	36 EACH		
123	Install existing light pole onto new foundation with new fixture	8 EACH		

BID FORMS

SCHEDULE OF BID PRICES

124	Install weather proof junction box for power connection to internally illuminated sign*	1 EACH		
125	Install weather proof junction box for power connection to art sculpture	3 EACH		
126	Install new electrical service	2 EACH		
126A	Electrical main trench	2456 LF		
126B	Boring under curb	106 EACH		
127	Install power connection for internally illuminated signage	6 EACH		
128	Install 120 V weatherproof GFCI outlet with lockable cover at South Parking Garage	1 EACH		
129	Electrical line source from nearest location within Garage to provide 120V for exterior lighting	1 LUMP SUM		
Wayfinding Signage Plan (WS-3095)				
130	Install district markers - Pylon Sign	6 EACH		
131	Install alley identity - Blade Sign	1 EACH		
132	Install district directional - Ground Sign	6 EACH		
133	Install enhanced backer to stop sign (R1-1)	4 EACH		
134	Install enhanced backer to left turn only sign (R3-5L)	1 EACH		
135	Install enhanced backer to right turn only sign (R3-5R)	4 EACH		
136	Install enhanced backer to do not enter sign (R5-1)	2 EACH		
137	Install enhanced backer to no right turn sign (R3-1)	1 EACH		
138	Install enhanced backer to no left turn sign (R3-2)	3 EACH		
Streetscape Site Furnishing Plans (SSF-3095)				

BID FORMS

SCHEDULE OF BID PRICES

139	Construct steel curve bench with steel frame with wood accent	80 LF		
140	Construct steel cabana, 32'-6" x 12'-0" x 10'-8"	1 EACH		
141	Construct steel cabana, 32'-6" x 10'-0" x 10'-8"	1 EACH		
142	Construct Steel and fabric shade structure	1 EACH		
143	Furnish and install limpido park benches (SF-2)	9 EACH		
144	Furnish and install drum side tables (SF-3)	4 EACH		
145	Furnish and install radium stools (SF-4)	9 EACH		
146	Furnish and install cafe tables (SF-5)	7 EACH		
147	Furnish and install signature dining chairs (SF-6)	110 EACH		
148	Furnish and install signature lounge chairs (SF-7)	14 EACH		
149	Furnish and install square top cafe tables (SF-8)	26 EACH		
150	Furnish and install XL signature table (SF-9)	1 EACH		
151	Furnish and install Rautster picnic tables (SF-10)	2 EACH		
152	Furnish and install Mistral umbrellas with base (SF-11, SF-12)	7 EACH		
153	Furnish and install stoop bench (SF-13)	2 EACH		
154	Furnish and install signature rocking chairs (SF-14)	4 EACH		
155	Furnish and install Bloc sun benches (SF-15)	6 EACH		
156	Furnish and install Bistrot outdoor tables (SF-16)	2 EACH		

BID FORMS

SCHEDULE OF BID PRICES

157	Furnish and install Bistrot stools (SF-16)	8 EACH		
158	Furnish and install April chairs (SF-17)	5 EACH		
159	Furnish and install code benches (SF-18)	13 EACH		
160	Furnish and install April steel tables (small) (SF-19)	8 EACH		
161	Furnish and install April steel tables (large) (SF-19)	6 EACH		
162	Furnish and install April seats (SF-20)	2 EACH		
163	Furnish and install foosball tables (SF-21)	2 EACH		
164	Furnish and install cornhole (SF-22)	6 EACH		
165	Furnish and install outdoor ping pong tables (SF-23)	1 EACH		
166	Furnish and install forum bike racks (small and large) (SF-25)	10 EACH		
167	Furnish and install stone bench (SF-26)	1 EACH		
168	Furnish and install solid table (SF-27)	3 EACH		
169	Furnish and install city little trash bin (180 liters) (SF-24)	26 EACH		
170	Furnish and install pop planter large low (PP-1)	8 EACH		
171	Furnish and install April go planter (PP-3)	25 EACH		
172	Furnish and install April go planter (PP-4)	9 EACH		
173	Furnish and install code planter (PP-5A)	6 EACH		
174	Furnish and install code planter (PP-5B)	4 EACH		

BID FORMS

SCHEDULE OF BID PRICES

175	Furnish and install Merida round planter (PP-6)	9 EACH		
176	Construct P.I.P concrete seat wall (20 inch wide by 18 inch height)	103 LF		
177	Construct P.I.P concrete seat wall with wood furnishing (23 inch wide by 14 inch height)	13 LF		
178	Construct concrete counter with steel frame and aluminum panels	28 LF		
179	Furnish and install stripes benches (SF-1)	14 EACH		
180	Construct Painted Graphic (p-2) over Concrete Pavement	8,490SF		
181	Remove and salvage existing tables , chairs, umbrellas and relocate to new locations	4 EACH		
182	South block art sculpture Foundation	ALLOWANCE	\$50,000	\$50,000
183	North block art sculpture Foundation	ALLOWANCE	\$50,000	\$50,000
184	Broadway intersection art sculpture Foundation	ALLOWANCE	\$50,000	\$50,000
185	Permit Fees	ALLOWANCE	\$25,000	\$25,000

(TOTAL BID) _____

If there is a difference between the amount shown in words for a bid and the amount shown in numbers, the amount in words shall have precedence.

Bidder shall exclude the cost of Permit Fees from Bidder's Base Bid price. Base Bid price shall include the cost of administration and coordination of Governmental Approvals and Utility Fees.

Items marked with a (*) indicates that quantities shown are for bidding purposes only. These items and quantities may or may not be used, at the discretion of the engineer. The Engineer shall determine the exact locations and quantities, if any, where the above quantities will be needed.

BID FORMS

SCHEDULE OF BID PRICES

Respectfully submitted:

_____ Signature	_____ Address
_____ Title	_____ Date
_____ License Number	_____ Date of Expiration
_____ Public Works Registration Number (PWCR)	

(SEAL - if BID is by a corporation)

Attest _____

Amount of Certified or Cashier's Check or Bid Bond

Name of Bonding Company

BID FORMS

INCUMBENCY CERTIFICATE

Print legibly the names and title of the president and all officers of the Company who are authorized to sign the Bid Forms:

PRESIDENT'S & OFFICERS' NAME:

TITLE:

The undersigned hereby certifies to the City of Glendale that he/she is the duly elected and acting Secretary of _____ (the "Company"), and that, as such, he/she is authorized to execute this Incumbency Certificate on behalf of the Company, and further certifies that the persons named above are the duly elected, qualified and acting officers of the Company, holding on the date hereof, the titles and positions set forth opposite their names and are authorized to sign the Bid Forms.

IN WITNESS WHEREOF, the undersigned has executed this Incumbency Certificate this _____ day of _____, 20__.

Secretary's Name-Printed

Secretary's Signature

BID FORMS

BID BOND

Bond No.: _____
Premium Amount: \$ _____
Bond's Effective Date: _____

RECITALS:

1. The City of Glendale, California ("City"), has issued a Notice Inviting Bids for the Work described as follows:

Specification No. _____ : _____ **in Glendale, CA.** ("Project")

2. In response to the Notice Inviting Bids, _____
(Name, address, and telephone of Contractor)
_____ ("Principal"),
has submitted the accompanying Bid for the Project.

3. Principal is required under the terms of the Specification— and all Bidding Documents referenced in it— to furnish a bond with the Bid.

4. The Specification, including all its amendments and supplements, and Principal's Bid are incorporated into this Bond and made a part of it by this reference.

OBLIGATION:

THEREFORE, for value received, We, Principal and

(Name, address, and telephone of Surety)

_____ ("Surety"),

a duly admitted surety insurer under California's laws, agree as follows:

By this Bond, We jointly and severally obligate and bind ourselves, and our respective heirs, executors, administrators, successors, and assigns to pay City the penal sum of _____ Dollars (\$ _____) ("the Bonded Sum"), this amount comprising not less than **TEN PERCENT (10%)** of Principal's Base Bid, in lawful money of the United States of America.

The California Licensed Resident Agent for Surety is:

(Name, address, and telephone)

_____. Registered Agent's California Department of Insurance License No. _____.

THE CONDITION OF THIS BOND'S OBLIGATION IS THAT, if:

- (1) Principal does not (a) withdraw its Bid for the period specified in the Bidding Documents, or— if no period is specified— for ninety (90) calendar days after the Bid Deadline, or within the time period as agreed to by City and Principal, or (b) attempt to withdraw its Bid when the requirements of California Public Contract Code Section 5101 *et seq.*, or any successor legislation, are not met, then this obligation becomes null and void; **or**
- (2) City awards Principal the Construction Contract ("Contract") in response to Principal's Bid, and within the time and manner specified by the Specification or Contract Documents, or— if no period is specified— within fourteen (14) calendar days after the City's Notice of Award of the Contract, Principal (a) signs and delivers to City the Contract, in accordance with the Bid as accepted, (b) furnishes the required bonds for not only Principal's faithful performance and proper fulfillment of the Contract, but also Principal's payment for labor and materials used in the Project, and (c) furnishes the required insurance, then this obligation becomes null and void.

Otherwise, this Bond remains in full force and effect, and the following terms and conditions apply to this Bond:

1. Surety's obligations under this Bond are separate, independent from, and not contingent upon any other surety's guaranteeing that upon City's awarding the Contract to Principal, the Principal will enter into the Contract with City.
2. No right of action accrues on this Bond to any entity other than City or its successors and assigns.
3. If an action at law or in equity is necessary to enforce or interpret this Bond's terms, Surety must pay— in addition to the Bonded Sum— City's reasonable attorneys' fees and litigation costs, in an amount the court fixes.

BID FORMS

4. Surety shall mail City written notice at least 30 days before: (a) the effective date on which the Surety will cancel, terminate, or withdraw from this Bond; or (b) this Bond becomes void or unenforceable for any reason.

On the date set forth below, Principal and Surety duly executed this Bond, with the name of each party appearing below and signed by its representative(s) under the authority of its governing body.

Date: _____

PRINCIPAL:

SURETY:

(Company Name)

(Company Name)

(Signature)

(Signature)

By: _____
(Name)

By: _____
(Name)

Its: _____
(Title)

Its: _____
(Title)

Address for Serving Notices or Other Documents:

Address for Serving Notices or Other Documents:

CORPORATE SEAL

CORPORATE SEAL

- EVIDENCE MUST BE ATTACHED OF THE AUTHORITY OF ANY PERSON SIGNING AS ATTORNEY-IN-FACT.
- THE PRINCIPAL'S AND ATTORNEY-IN-FACT'S SIGNATURE MUST BE NOTARIZED.
- A CORPORATE SEAL MUST BE IMPRESSED ON THIS FORM WHEN THE PRINCIPAL, OR THE SURETY, OR BOTH, ARE A CORPORATION.

BID FORMS

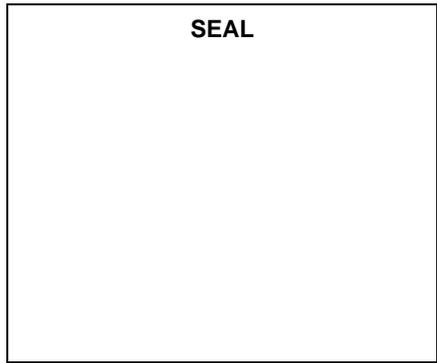
**BOND ACKNOWLEDGMENT
FOR
SURETY'S ATTORNEY-IN-FACT**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

On this _____ day of _____, 20____,
before me, _____(name), a Notary Public for said County, personally appeared
(name), who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to this instrument
as the attorney in fact of _____, and acknowledged to me that he/she subscribed the name
of _____ thereto as principal, and his/her own name as attorney in fact.

Notary Public



BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS

1. ORGANIZATION

1.1 How many years has your organization been in business as a Contractor? _____

1.2 How many years has your organization been in business under its present name and California contractor license number used for this Bid? _____

1.2.1 Under what other names has your organization operated?

1.3 If your organization is a corporation, answer the following:

1.3.1 Date of incorporation/organization: _____

1.3.2 State of incorporation/organization: _____

1.3.3 Corporate ID number: _____

1.3.4 Name of President: _____

1.3.5 Agent for Service of Process: _____

1.4 If your organization is a partnership, answer the following:

1.4.1 Date of organization/formation: _____

1.4.2 Type of partnership (if applicable): _____

1.4.3 Name(s) of general partner(s): _____

1.4.4 List all states in which you are registered and state ID numbers for each:

1.5 If your organization is individually owned, answer the following:

1.5.1 Date of organization: _____

1.5.2 Name of owner: _____

1.6 If the form of your organization is other than those listed above, describe it and name the principals:

2. LICENSING

2.1 List jurisdictions in which your organization is legally qualified to do business, indicate registration or license numbers, and category of license, if applicable.

2.2 List jurisdictions in which your organization's partnership or trade name is filed.

BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS (continued)

2.3 List any licensing suspensions and/or violations assessed against your organization within the past five years.

3. **EXPERIENCE**

3.1 List the categories of Work that your organization normally performs with its own personnel.

3.2 On the Experience Form (page F-33), list the project information that establishes that Bidder meets the essential requirements for qualification set forth in the Mandatory Qualifications paragraph of the Notice Inviting Bids for this Project.

3.3 Have Subcontractors for Architectural Grade Sign Fabricator and Installer Work (starting on page F-36) complete the Specialty Contractor's Statement of Qualifications (or Bidder to complete if self-performing).

3.4 List projects to which your firm or business has been awarded a government contract since your firm or business has been in existence (giving the name and address of the project, the government agency, contact name and phone number, the contract amount, and contract's starting date and ending date). Failure to provide all information requested on a separate sheet may render bid non-responsive.

3.5 List the experience and present commitments of the key individuals of your organization. Failure to provide all information requested on a separate sheet may render bid non-responsive.

4. **CLAIMS; LAWSUITS; CRIMINAL ACTS**

For the following questions, the term "owner" does not include owners of stock in your firm if your firm is a publicly traded corporation.

4.1 In the past five years, has your firm or any of its owners, partners, officers, or employees been a defendant in court, or participated in an arbitration or mediation, or administrative hearing on a matter related to:

4.1.1 The performance, non-performance, default, violation, or breach of a contract or agreement?

YES **NO**

BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS (continued)

4.1.2 A vehicle collision or accident involving your firm's employees?

YES NO

4.1.3 Damage to real property arising out of your services or operations?

YES NO

4.1.4 Employment-related litigation brought by an employee of your firm?

YES NO

4.1.5 Payment to a subcontractor or supplier?

YES NO

4.1.6 Federal Davis Bacon or California Labor Code requirements relating to underpayment of wages, failure to maintain or produce payroll records, failure to use apprentices in appropriate ratios, or failure to maintain workers compensation insurance?

YES NO

4.1.7 Defective, deficient, or substandard work?

YES NO

If the answer to any question in 4.1.1 to 4.1.7 is **YES**, identify the name of the person or entity that sued (i.e., "the plaintiff") or was involved in the mediation or arbitration; list the date, court, court address, and case number; describe the facts and circumstances giving rise to the lawsuit, mediation, or arbitration; and set forth the outcome or disposition. Attach additional sheets as necessary.

4.2 Has your firm ever filed a claim for damages or a lawsuit, or requested arbitration or mediation, against a government entity or a Client?

YES NO

If **YES**, identify the government entity or client; list the date, court and case number; describe the facts and circumstances about the claim for damages, or the lawsuit, or both; and set forth the outcome or disposition. Attach additional sheets as necessary.

4.3 Are there any pending or outstanding judgments or liens against your firm or any of its owners, partners, officers, or employees?

YES NO

BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS (continued)

If **YES**, identify the name of the person or entity entitled to payment; list the date court and case number; describe the facts and circumstances giving rise to the judgment or lien; and set forth the amount of the judgment or lien. Attach additional sheets if necessary.

- 4.4 In the past five years, has any government entity ever: (a) investigated, cited, disciplined, or assessed any penalties against your firm or any of its owners, partners, officers, or employees, or (b) determined or concluded that your firm or any of its owners, partners, officers, or employees violated any laws, rules, or regulations?

YES **NO**

If **YES**, identify the government entity; list the date, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

- 4.5 In the past five years, has your firm or any of its owners, partners, officers or employees been convicted of a crime related to the bidding of a government contract, the awarding of a government contract, or the performance of a government contract? ("Convicted" includes a verdict of guilty by a judge or jury, a plea of guilty, a plea of nolo contendere, or a forfeiture of bail.)

YES **NO**

If **YES**, identify the government entity; list the date, court and case number; describe the facts and circumstances about each instance; and set forth the penalty or punishment imposed. Attach additional sheets as necessary.

- 4.6 In the past five years, has your firm or any of its owners, partners, officers or employees been convicted of a crime involving embezzlement, theft, fraud, forgery, bribery, deceptive or unlawful business practices, perjury, falsifying or destroying records or evidence, or receiving stolen property, or making or submitting a false claim?

YES **NO**

If **YES**, identify the crime or offense; list the date, court and case number; describe the facts and circumstances about each instance; and set forth the penalty or punishment imposed. Attach additional sheets as necessary.

BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS (continued)

4.7 Have you or, if Bidder is a corporation, any principal of the corporation ever been convicted of a felony?

YES NO

If **YES**, explain the details of that conviction and, if so, whether you or said officer have served his or her sentence. Attach additional sheets as necessary.

4.8 In the past five years, has a government entity determined or concluded that your firm or any of its owners, partners, officers or employees made or submitted a false claim (including a false claim for payment), or made a material misrepresentation?

YES NO

If **YES**, identify the government entity, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

4.9 Have you or your company ever been charged by any governmental agency for failure to follow safety procedures?

YES NO

If **YES**, explain. Attach additional sheets as necessary.

4.10 Has any governmental agency ever submitted a complaint against you to the California State Labor Commission for failure to submit certified payrolls or use apprentices in proper ratios?

YES NO

If **YES**, provide the details of such complaint. Attach additional sheets as necessary.

4.11 List all Civil Wage and Penalty Assessments date and dollar amount issued against you or one of your subcontractor by any of the following entities: the California Department of Industrial Relations, a California public entity, or federal public entity, in the last five years and explain how the assessment was resolved. Attach additional sheets as necessary.

BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS (continued)

5. FIRM'S OPERATIONAL STATUS

5.1. In the past seven years, has your firm, or anyone else acting on behalf of your firm, filed for bankruptcy, insolvency, receivership, or reorganization?

YES NO

If **YES**, list the filing date, identify the court and case number; describe the facts and circumstances giving rise to each instance; and set forth the disposition or current status. Attach additional sheets as necessary.

5.2. In the past five years, has your firm had any consolidations, mergers, acquisitions, closings, layoffs or staff reductions?

YES NO

If **YES**, list the filing date, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

5.3. Is your firm in the process of, or in negotiations toward: (a) consolidating, merging, selling, or closing its business, or (b) laying off employees or reducing staff?

YES NO

If **YES**, describe the transaction; list the anticipated date for completing the transaction, laying off employees, or reducing staff; and describe the facts, circumstances, and reason for taking the action. Attach additional sheets as necessary.

6. BIDDING; DEBARMENT; CONTRACT PERFORMANCE

6.1. Has a government entity ever debarred, disqualified, removed, suspended, or otherwise prevented your firm from bidding on, contracting, or completing a construction project?

BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS (continued)

YES **NO**

If **YES**, identify the name of the government entity, list the date, and describe the facts and circumstances about each instance, and state the reason for the government entity's action against your firm. Attach additional sheets as necessary.

6.2. Has a government entity ever rejected your firm's Bid or Proposal on the ground that your firm is a "non-responsible" bidder or proposer?

YES **NO**

If **YES**, identify the name of the government entity, list the date, describe the facts and circumstances about each instance, and state the reason or basis for the government entity's determining that your firm was a "non-responsible" bidder. Attach additional sheets as necessary.

6.3. Has your firm ever failed to fulfill or perform – either partially or completely – a contract or an agreement with a government entity or a client?

YES **NO**

If **YES**, identify the name of the government entity or client, list the date, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

6.4. In the past five years, has any officer or principal of your firm been an officer of another firm which failed to perform a contract or agreement?

YES **NO**

If **YES**, list the date, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

6.5. Has your firm ever advised a government entity or a client, while your firm was under contract with the government entity or client, that your firm could not (or would not) fulfill or

BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS (continued)

perform – either partially or completely – the contract or the agreement based on the prices that your firm had originally submitted in a Bid or a Proposal?

YES **NO**

If **YES**, list the date, identify the name of the government entity or client, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

6.6. Has your firm ever requested a government entity or a client, while your firm was under contract with the government entity or client, to renegotiate one or more terms of the existing contract or agreement?

YES **NO**

If **YES**, identify the name of the government entity or client, list the date, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

6.7. Has your firm ever requested a government entity or a client, while your firm was under contract with the government entity or client, to: (a) cancel the contract or agreement, or (b) release or discharge your firm from the contract or agreement?

YES **NO**

If **YES**, identify the name of the government entity or client, list the date, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

6.8. Has a government entity or a client ever terminated, suspended, or non-renewed your firm's contract or agreement before its completion?

YES **NO**

If **YES**, identify the name of the government entity, list the date, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS (continued)

- 6.9. Has a government entity or a client ever notified or advised your firm that your firm's performance under a contract or agreement was poor, sub-standard, deficient, or non-compliant?

YES **NO**

If **YES**, identify the name of the government entity or client, list the date, and describe the facts and circumstances about each instance. Attach additional sheets as necessary.

- 6.10. In the past five years, has your firm paid, or has your firm been assessed, liquidated damages on a contract or agreement?

YES **NO**

If **YES**, identify all such contracts/projects by owner, owner's address, the date of completion of the project, amount of liquidated damages assessed, and all other information necessary to fully explain the assessment or payment of liquidated damages. Attach additional sheets as necessary.

BID FORMS

BIDDER'S STATEMENT OF QUALIFICATIONS (continued)

7. **INSURANCE AND BONDS**

7.1. In the past ten years, has an insurance company or a surety company:

7.1.1. Refused to insure your firm for liability coverage?

YES **NO**

7.1.2. Canceled or non-renewed your firm's insurance coverage?

YES **NO**

7.1.3. Refused to issue your firm a bond?

YES **NO**

7.1.4. Canceled or revoked a bond obtained by your firm?

YES **NO**

If the answer to any question in 7.1.1 to 7.1.4 is **YES**, identify the name of the insurance company or surety company, list the date, and describe the facts and circumstances about each instance. Attach addition sheets as necessary.

7.2. In the past ten (10) years, has an insurance company or surety company made any payments on your firm's behalf as a result of a default, to satisfy any claims against a performance bond, payment bond, or maintenance bond issued on your firm's behalf?

YES **NO**

If **YES**, identify each contract completed or amount of each claim, the name and telephone number of the claimant, the date, grounds and current status of the claim, and if resolved, the method, nature, and amount of the resolution. Attach addition sheets as necessary.

8. **SURETY**

8.1. If a performance and/or payment bond is required by this bid, identify the bonding company if arrangements for the bond have been made; if not, identify the bonding company for the Contractor's most recent project:

BID FORMS

EXPERIENCE FORM

PROJECT NAME: Glendale Arts and Entertainment District-Improvements on Artsakh Avenue

SPECIFICATION NO. 3893R

COMPANY NAME: _____

*****Please use additional sheets if necessary**

List below the project information that establishes that Bidder meets the essential requirements for qualification set forth in the Mandatory Qualifications paragraph of the Notice Inviting Bids for this Project.

	CONTRACT START DATE	CONTRACT END DATE	CONTRACT \$ AMOUNT	PROJECT NAME	ADDRESS	CONTACT NAME	CONTACT PHONE NUMBER
1							
2							
3							

SPECIALTY CONTRACTOR'S STATEMENT OF QUALIFICATIONS

ARCHITECTURAL GRADE SIGN FABRICATOR AND INSTALLER

As part of its Bid, Bidder shall submit this Statement of Qualifications for the Subcontractor that will perform the Signage (for wall-mounted illuminated blade sign), or for the Bidder itself, if Bidder will self-perform the Architectural Grade Sign Fabricator and Installer Work. This information shall provide evidence to indicate successful experience in providing Signage (for wall-mounted illuminated blade sign) work comparable to that specified in the Project Drawings and Specifications. Referenced qualifications shall demonstrate experience as a successful installer of Wall-Mounted internally illuminated Identity Blade Sign located within alley west of the Exchange Parking Garage. A 4'-10" W x 3'-0" D fabricated sign including a metal frame with double-sided lettering reading "Artsakh" and "The Artery."

A Bid may be rejected as non-responsive if Bidder fails to provide this completed form with the Bid or submits this form with inaccurate information.

Mandatory qualifications: Specialty Contractor (or Bidder, if self-performing) shall possess a valid **C-45 license** California Contractor License at the time of the Bid Deadline and at all times during performance of the Work and shall establish that it satisfactorily completed at least **four (4)** projects as the installer of a minimum of a wall-mounted sign that was fabricated, installed with electrical wiring and painted metal components; each comparable in scope and complexity to this Project, within **five (5) years** prior to the Bid Deadline.

Specialty Contractor Name: _____

Project Manager / Foreman: _____

Phone No: _____ **E-mail:** _____

COMPARABLE PROJECTS (Provide {insert same # of projects as listed above})

1. **Project Name:** _____

Address: _____

Date Completed: _____

Reference / Contact Name: _____

Reference / Contact Phone No: _____

Description of work performed: _____

BID FORMS

2. Project Name: _____
Address: _____
Date Completed: _____
Reference / Contact Name: _____
Reference / Contact Phone No: _____
Description of work performed: _____

3. Project Name: _____
Address: _____
Date Completed: _____
Reference / Contact Name: _____
Reference / Contact Phone No: _____
Description of work performed: _____

4. Project Name: _____
Address: _____
Date Completed: _____
Reference / Contact Name: _____
Reference / Contact Phone No: _____
Description of work performed: _____

SPECIALTY SUB-CONTRACTOR'S STATEMENT OF QUALIFICATIONS
ARCHITECTURAL GRADE SIGN FABRICATOR AND INSTALLER

As part of its Bid, Bidder shall submit this Statement of Qualifications for the Subcontractor that will perform the Signage (for wall-mounted illuminated blade sign), or for the Bidder itself, if Bidder will self-perform the Architectural Grade Sign Fabricator and Installer Work. This information shall provide evidence to indicate successful experience in providing Signage (for wall-mounted illuminated blade sign) work comparable to that specified in the Project Drawings and Specifications. Referenced qualifications shall demonstrate experience as a successful installer of Wall-Mounted internally illuminated Identity Blade Sign located within alley west of the Exchange Parking Garage. A 4'-10" W x 3'-0" D fabricated sign including a metal frame with double-sided lettering reading "Artsakh" and "The Artery."

A Bid may be rejected as non-responsive if Bidder fails to provide this completed form with the Bid or submits this form with inaccurate information.

Mandatory qualifications: Specialty Contractor (or Bidder, if self-performing) shall possess a valid **C-45 license** California Contractor License at the time of the Bid Deadline and at all times during performance of the Work and shall establish that it satisfactorily completed at least **four (4)** projects as the installer of a minimum of a wall-mounted sign that was fabricated, installed with electrical wiring and painted metal components; each comparable in scope and complexity to this Project, within **five (5) years** prior to the Bid Deadline.

Specialty Contractor Name: _____

Project Manager / Foreman: _____

Phone No: _____ E-mail: _____

COMPARABLE PROJECTS (Provide at least {insert same # of projects as listed above})

1. Project Name: _____

Address: _____

Date Completed: _____

Reference / Contact Name: _____

Reference / Contact Phone No: _____

Description of work performed: _____

BID FORMS

2. Project Name: _____
Address: _____
Date Completed: _____
Reference / Contact Name: _____
Reference / Contact Phone No: _____
Description of work performed: _____

3. Project Name: _____
Address: _____
Date Completed: _____
Reference / Contact Name: _____
Reference / Contact Phone No: _____
Description of work performed: _____

4. Project Name: _____
Address: _____
Date Completed: _____
Reference / Contact Name: _____
Reference / Contact Phone No: _____
Description of work performed: _____

BID FORMS

CONTRACTOR SAFETY QUESTIONNAIRE

Company Name: _____

Primary Type of Work: _____

Person Completing Form: _____

Title: _____ Phone Number: _____

Date: _____

SAFETY PERFORMANCE

1. List your company's Interstate Experience Modification Rating (EMR) for the three most recent years.

20 _____
20 _____
20 _____

2. List your company's number of injuries/illnesses from your OSHA 300 logs for the three most recent years.

	20____	20____	20____
a. Fatalities	_____	_____	_____
b. OSHA recordable incidents	_____	_____	_____
c. Lost work day incidents	_____	_____	_____
d. Total lost work days	_____	_____	_____
e. Total hours worked	_____	_____	_____

3. For the **apparent low Bidder**, not later than **3:00 p.m.** on the third Working Day following the Bid Deadline and for all other Bidders, not later than **3:00 p.m.** on the third Working Day following the City's request, a Bidder must furnish the City with copies of the following items (a-c):

- a. OSHA 300 logs for the most recent three years and current year-to-date
- b. Verification of ERM from your insurance carrier
- c. Injury/Illness Report

4. Company Safety Contact:

a. Name _____

b. Phone _____

BID FORMS

CONTRACTOR SAFETY QUESTIONNAIRE (continued)

SAFETY PROGRAM

1. SAFETY PROGRAM DOCUMENTATION

- a. Do you have a written safety program manual? YES NO
Last revision date: _____
- b. Do you have a written safety field manual? YES NO
- c. Are all workers given a booklet that contains work rules, responsibilities, and other appropriate information? YES NO

2. POLICY AND MANAGEMENT SUPPORT

- a. Do you have a safety policy statement from an officer of the company? YES NO
- b. Do you have a disciplinary process for enforcement of your safety program? YES NO
- c. Does management set corporate safety goals? YES NO
- d. Does executive management review:
- Accident reports? YES NO
 - Safety statistics? YES NO
 - Inspection reports? YES NO
- e. Do you safety pre-qualify subcontractors? YES NO
- f. Do you have a written policy on accident reporting and investigation? YES NO
- g. Do you have a light-duty, return-to-work policy? YES NO
- h. Is safety part of your supervisor's performance evaluation? YES NO
- i. Do you have a personal protective equipment (PPE) policy? YES NO
- j. Do you have a written substance abuse program? YES NO
If YES, does it include (check all applicable boxes):
- | | |
|---|---|
| <input type="checkbox"/> Pre-employment testing | <input type="checkbox"/> Return-to-duty testing |
| <input type="checkbox"/> Random testing | <input type="checkbox"/> Disciplinary process |
| <input type="checkbox"/> Reasonable cause testing | <input type="checkbox"/> Alcohol testing |
| <input type="checkbox"/> Post-accident testing | <input type="checkbox"/> National Institute on Drug Abuse |
| <input type="checkbox"/> Panel Screen | |

BID FORMS

CONTRACTOR SAFETY QUESTIONNAIRE (continued)

- k. Does each level of management have assigned safety duties and responsibilities? YES NO

3. TRAINING AND ORIENTATION

- a. Do you conduct safety orientation training for each employee? YES NO
- b. Do you conduct site safety orientation for every person new to the job site? YES NO
- c. Does your safety program require safety training meetings for each supervisor (foreman and above)? YES NO
How often?
 Weekly Monthly Quarterly Annually Other _____
- d. Do you hold tool box/tailgate safety meetings focused on your specific work operations/exposures? YES NO
How often?
 Weekly Daily Other _____
- e. Do you require equipment operation/certification training? YES NO

4. ADMINISTRATION AND PROCEDURES

- a. Does your written safety program address administrative procedures? YES NO

If YES, check which apply:

- | | |
|---|--|
| <input type="checkbox"/> Pre project/task planning | <input type="checkbox"/> Emergency procedures |
| <input type="checkbox"/> Record keeping | <input type="checkbox"/> Audits/inspections |
| <input type="checkbox"/> Safety committees | <input type="checkbox"/> Accident investigations/reporting |
| <input type="checkbox"/> HAZCOM | <input type="checkbox"/> Training documentation |
| <input type="checkbox"/> Substance abuse prevention | <input type="checkbox"/> Hazardous work permits |
| <input type="checkbox"/> Return-to-work | <input type="checkbox"/> Subcontractor prequalification |

- b. Do you have project safety committees? YES NO
- c. Do you conduct job site safety inspections? YES NO
How often?
 Daily Weekly Monthly Other _____
- If YES, do these inspections includes a routine safety inspection of equipment (e.g., scaffold, ladders, fire extinguishers, etc.)? YES NO

BID FORMS

CONTRACTOR SAFETY QUESTIONNAIRE (continued)

- d. Do you investigate accidents? YES NO
How are they reported?
 Total company By superintendent
 By project By project manager
 By foreman In accordance with OSHA
- e. Do you discuss safety at all preconstruction and progress meetings? YES NO
- f. Do you perform rigging and lifting checks prior to lifting? YES NO
If YES, are these checks for?
 Personnel Equipment Heavy lifts (more than 10,000 lbs.)

5. WORK RULES

- a. Do you periodically update work rules? YES NO
When was the last update? _____
- b. What work practices are addressed by your work rules?
- | | |
|---|--|
| <input type="checkbox"/> CPR/first aid | <input type="checkbox"/> Access—entrances/stairs |
| <input type="checkbox"/> Barricades, signs, and signals | <input type="checkbox"/> Respiratory protection |
| <input type="checkbox"/> Blasting | <input type="checkbox"/> Material handling/storage |
| <input type="checkbox"/> Communications | <input type="checkbox"/> Temporary heat |
| <input type="checkbox"/> Compressed air and gases | <input type="checkbox"/> Vehicle safety |
| <input type="checkbox"/> Concrete work | <input type="checkbox"/> Traffic control |
| <input type="checkbox"/> Confined-space entry | <input type="checkbox"/> Site visitor escorting |
| <input type="checkbox"/> Cranes/rigging and hoisting | <input type="checkbox"/> Public protection |
| <input type="checkbox"/> Electrical grounding | <input type="checkbox"/> Equipment guards and grounding |
| <input type="checkbox"/> Environmental controls and Occupational health | <input type="checkbox"/> Monitoring equipment |
| <input type="checkbox"/> Emergency procedures | <input type="checkbox"/> Flammable material handling/storage |
| <input type="checkbox"/> Fire protection and prevention | <input type="checkbox"/> Site sanitation |
| <input type="checkbox"/> Floor and wall openings | <input type="checkbox"/> Trenching and excavating |
| <input type="checkbox"/> Fall protection | <input type="checkbox"/> Lockout/Tagout |
| <input type="checkbox"/> Housekeeping | <input type="checkbox"/> Energized/pressurized equipment |
| <input type="checkbox"/> Ladders and scaffolds | |
| <input type="checkbox"/> Mechanical equipment/maintenance/pre-op checks/operation | <input type="checkbox"/> Personal protective equipment |
| <input type="checkbox"/> Welding and cutting (hot work) | <input type="checkbox"/> Tools, power and hand |
| | <input type="checkbox"/> Electrical power lines |
| | <input type="checkbox"/> Other _____ |

6. OSHA INSPECTIONS

- a. Have you been inspected by OSHA in the last three years? YES NO

BID FORMS

CONTRACTOR SAFETY QUESTIONNAIRE (continued)

- b. Were these inspections in response to complaints? YES NO
- c. Have you been cited as a result of these inspections? YES NO

If YES, describe the citations (add additional sheets if necessary):

BID FORMS

CONTRACTOR SAFETY QUESTIONNAIRE (continued)
QUESTIONNAIRE REGARDING SUBCONTRACTORS
(Submit with Bid Proposal)

Bidder shall answer the following questions and submit with his/her Contract proposal.

1. Were bid depository or registry services used in obtaining subcontractors bid figures in order to compute your bid? Yes No
2. If the answer to No. 1 is "Yes", please forward a copy of the rules of each bid depository you used with this questionnaire.
3. Did you have any source of subcontractors' bids other than bid depositories?
4. Has any person or group threatened you with subcontractor boycotts, union boycotts, or other sanctions to attempt to convince you to use the services or abide by the rules of one or more bid depositories? Yes No
5. If the answer to No. 4 is "Yes", please explain the following details:
 - (a) Date:
 - (b) Name of person or group:
 - (c) Job involved (if applicable):
 - (d) Nature of the threats:
 - (e) Additional comments:
(Use additional paper if necessary)

6. We declare under penalty of perjury that the foregoing is true and correct.

Dated this _____ day of _____, 20_____.

Name of Company

By: _____

Title _____

All of the above statements as to experience, financial qualifications, and available plant and equipment are submitted in conjunction with the proposal, as a part thereof, and the truthfulness and accuracy of the information is guaranteed by the bidder.

Signature of Bidder _____

BID FORMS

DESIGNATION OF SUBCONTRACTORS

NAME OF BIDDER: _____

Each Bidder must list, on the form provided on the next page, each Subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the Work or improvement, or a Subcontractor licensed in the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the Drawings and Specifications, in an amount in excess of one-half of one percent of the Contractor's Base Bid Amount. Each Subcontractor must have an active and current license, and all requisite specialty certifications, when listed.

Bidder must provide the following information for **EACH** Subcontractor.

1. The name of the Subcontractor;
2. The trade and type of work that the Subcontractor will perform;
3. Location (address) of Subcontractor's place of business;
4. Subcontractor's California Contractor license number; and any specialty licenses;
5. Subcontractor's Department of Industrial Relations contractor registration number; and
6. Dollar value of the Work that the Subcontractor will perform.

If the Contractor fails to specify a Subcontractor, or if the Contractor specifies more than one Subcontractor for the same trade or type of Work to be performed under the Contract in excess of one-half of one percent of the Contractor's Base Bid Amount, then the Contractor agrees that he/she is fully qualified to perform that Work himself/herself, and that he/she shall perform that Work himself/herself. If after award of Contract, the Contractor subcontracts any such Work, the Contractor will be subject to the statutory penalties.

**DESIGNATION OF SUBCONTRACTORS FORM
IS ON THE FOLLOWING PAGE**

BID FORMS

DESIGNATION OF SUBCONTRACTORS

The Contractor shall not:

- A. Substitute any person as Subcontractor in place of the Subcontractor listed in the original Bid, except that the City may consent to the substitution of another person as Subcontractor in any of the following situations:
 - 1. When the Subcontractor listed in the Bid, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract for the scope of Work specified in the Subcontractor's bid and at the price specified in the Subcontractor's bid, when that written contract, based upon the general terms, conditions, Drawings and Specifications for the Project or the terms of Contractor's written Bid, is presented to the Subcontractor by the Contractor;
 - 2. When the listed Subcontractor becomes insolvent or the subject of an order for relief in bankruptcy;
 - 3. When the listed Subcontractor fails or refuses to perform his/her subcontract;
 - 4. When the listed Subcontractor fails or refuses to meet the bond requirements of the Contractor as set forth in Public Contract Code Section 4108;
 - 5. When the Contractor demonstrates to the City that the name of the Subcontractor was listed as the result of an inadvertent clerical error;
 - 6. When the listed Subcontractor is not licensed pursuant to the Contractor License Law;
 - 7. When the City determines that the Work performed by the listed Subcontractor is substantially unsatisfactory and not in substantial accordance with the Drawings and Specifications, or that the Subcontractor is substantially delaying or disrupting the progress of the Work;
 - 8. When the listed Subcontractor is ineligible to work on a public works project pursuant to Section 1777.1 or 1777.7 of the Labor Code; or
 - 9. When the City determines that the listed Subcontractor is not a responsible contractor.
- B. Permit any subcontract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original Subcontractor listed in the original Bid, without the consent of the City.
- C. Other than in the performance of "change orders" causing changes or deviations from the original Contract, sublet or subcontract any portion of the Work in excess of one-half of one percent of the Contractor's Base Bid Amount as to which his/her original Bid did not designate a Subcontractor.

Prior to approval of the Contractor's request for a Subcontractor substitution, the City shall give notice in writing to the listed Subcontractor of the Contractor's request to substitute and of the reason for the request. The notice will be served by certified or registered mail to the last known address of the Subcontractor. The listed Subcontractor who has been so notified shall have five (5) Working Days within which to transmit to the City written objections to the substitution. Failure to file these written objections shall constitute the listed Subcontractor's consent to the substitution. If written objections are filed, the City shall give notice in

BID FORMS

DESIGNATION OF SUBCONTRACTORS

writing of at least five (5) Working Days to the listed Subcontractor of a hearing by the City on the Contractor's request for substitution.

The Contractor, as a condition to asserting a claim of inadvertent clerical error in the listing of a Subcontractor, shall within two (2) Working Days after the time of the Bid Deadline, give written notice to the City and copies of such notice to both the Subcontractor he/she claims to have listed in error and the intended Subcontractor who had bid to the Contractor prior to the Bid Deadline.

Subletting or subcontracting of any portion of the Work in excess of one-half of one percent of the Contractor's Base Bid to which no Subcontractor was designated in the original Bid shall only be permitted in cases of public emergency or necessity, and then only after a finding reduced to writing as a public record of the City setting forth the facts constituting the emergency or necessity.

If the Contractor violates any of the above provisions the Contractor may be in breach of this Contract and the City may exercise the option, in its own discretion, to (1) cancel this Contract, or (2) assess the Contractor a penalty in an amount not more than ten percent (10%) of the amount of the subcontract involved, and this penalty shall be deposited in the fund out of which the prime Contract is awarded.

BID FORMS

INSURANCE REQUIREMENTS DECLARATION

THIS FORM IS TO BE COMPLETED THOROUGHLY BY BIDDER'S INSURANCE BROKER/AGENT AND BIDDER. If Bidder has multiple Brokers/Agents, make copy of form and have each Broker/Agent supply information accordingly.

I, the undersigned (Please check one box) underwriter agent, certify that Broker/Agent and Bidder listed below have jointly reviewed the "Insurance Requirements" (Exhibit 2), in the Specification Package. If City of Glendale ("City") awards Bidder the Contract for the named project, I, Broker/Agent, will be able—within fourteen (14) calendar days after the City's Notice of Award of the Contract to furnish the City with valid insurance and all required Insurance Certificate(s) and Endorsement(s) as listed in the "Insurance Requirements" or Specification Package, Request for Proposal/Request for Qualifications, and/or Professional Services Agreement.

Project Name: _____

Specification Number: _____

**NAME OF INSURANCE
COMPANY:**

Broker/Agent Name (Printed): _____

Broker/Agent (Signature): _____

Business
Address: _____

City, State, Zip _____

Phone Number: _____ Fax
Number: _____

E-Mail Address: _____

Date: _____

**BIDDER'S COMPANY
NAME:**

Bidder's Name (Printed): _____

Bidder's Name (Signature): _____

Business
Address: _____

City, State, Zip _____

Phone Number: _____ Fax
Number: _____

E-Mail Address: _____

Date: _____

[CONTINUED ON NEXT PAGE]

BID FORMS

INSURANCE REQUIREMENTS DECLARATION (Continued)

DO NOT write "Will Provide," "To Be Determined," "When Required," or similar phrases.

Place a check mark (✓) next to each line of coverage Broker/Agent will provide, and furnish the name of the Carrier next to each coverage:

- | | |
|--|--|
| <input type="checkbox"/> Commercial General Liability | |
| <input type="checkbox"/> Automobile Liability | |
| <input type="checkbox"/> Workers' Compensation Liability | |
| <input type="checkbox"/> Professional Liability | Not required |
| <input type="checkbox"/> Pollution Liability | |
| <input type="checkbox"/> Builder's Risk | City Will Purchase Policy, if required |

NOTE: (1) If this Declaration is not completed accurately, and/or failure to submit the form, City may declare Bid non-responsive
(2) Awarded Bidder's failure to submit the required insurance forms within the 14-day time limit, and/or forms submitted does not fully comply with the Insurance Requirements, City may declare Bidder non-responsive and elect to award the Contract to the next lowest responsible Bidder.

If you have any questions about this form or Insurance Requirements, please contact Ms. Veronika Padron, Risk Management Section, at (818) 550-4354.

**STANDARD FORM
OF CONTRACT**

**STANDARD FORM OF
CONSTRUCTION CONTRACT BETWEEN
CITY OF GLENDALE AND CONTRACTOR**

This Construction Contract, effective _____, 20_____ (“Effective Date”), is made and entered into at Glendale, California, by and between the CITY OF GLENDALE, a chartered municipal corporation “City” and _____, a [Insert State of Incorporation] (“Contractor”), for construction of **GLENDALE ARTS AND ENTERTAINMENT DISTRICT – IMPROVEMENTS ON ARTSAKH AVENUE**

THE PARTIES AGREE AS FOLLOWS:

1. CONTRACT DOCUMENTS

The “Contract Documents,” except for modifications issued after execution of this Agreement, consist of the following documents which are either attached to this Construction Contract as exhibits or are incorporated into it by this reference, with the same force and effect as if set forth at length in this Construction Contract:

- A. This Construction Contract;
- B. Governmental Approvals including, but not limited to, permits required for the Work;
- C. Exhibit 1 – Index of Drawings, Specifications, [and Reference Documents];
- D. Exhibit 2 – Insurance Requirements;
- E. Exhibit 3 – Baseline Project Schedule ;
- F. Exhibit 4 – Preliminary Schedule of Values or Bid Forms ;
- G. Exhibit 7 – Contractor’s Certification under Labor Code § 1861 of Labor Code § 3700 Compliance;
- H. Project Drawings;
- I. Project Specifications;
- J. General Conditions; Special Conditions,
- K. Supplementary Conditions, if any;
- L. Bidding Requirements; and
- M. Bidding Addenda Nos. _____.

2. REFERENCE DOCUMENTS

The following Reference Documents are not considered Contract Documents and were provided to the Contractor for informational purposes. Contractor may rely upon the technical data contained in such documents but not upon non-technical data, interpretations, opinions or provisional statements contained therein:

Reference 1 - Hydrology Study

Reference 2 - Artsakh Street Improvement Plans Sections

Reference 3 - Marketplace Parking Structure Assessment

Reference 4 - Maryland Ave B/T Broadway and Harvard St. (4236-E1) Street Electrical As-Built

Reference 5 - Maryland Ave B/T Wilson Ave. & Broadway & Harvard St. (4218-E) Water Facility As-Built

Reference 6 - Harvard St Drain Line F (4-256) (No. 181-156-D1.7) As-Built-1

Reference 6 - Harvard St. Drain Line F (4-256) (No. 181-156-D1.8) As-Built-2

Reference 7 - Broadway, Wilson Ave B/T Maryland Ave. & Louise St. GWP Plan (3963)

Reference 8 - Artsakh Ave. Fire Code Modification FMOD2110967 Plans

3. SCOPE OF WORK

Within the Contract Time and for the stated Contract Sum, subject to adjustments thereto, and pursuant to the Contract Documents, the Contractor shall perform and provide all necessary: labor; services; supervision; materials; tools; equipment; apparatus; facilities; supplies; tools; permits, inspections, plan checks, and similar Governmental Approvals; temporary utilities; utility connections; and transportation necessary to complete the Work in strict conformity with the Contract Documents for:

GLENDALE ARTS AND ENTERTAINMENT
DISTRICT – IMPROVEMENTS ON
ARTSAKH AVENUE

Specification No. 3893R

4. TIME FOR PERFORMANCE

Contract Time. Contractor shall achieve Substantial Completion of the Work within 180 calendar days from the Date of Commencement established in City's written Notice to Proceed ("Contract Time"), subject to adjustment in accordance with the Contract Documents. Contractor shall achieve Final Completion of the Work, within the time

established by the Certificate of Substantial Completion issued by the City. The Contract Time may only be adjusted as permitted by this Construction Contract and the General Conditions.

Time is of the essence of this Construction Contract. Except when the Contract Documents state otherwise, time is of the essence in the performance of the Work. Contractor acknowledges that the time limits and deadlines set forth in the Contract Documents are reasonable for Contractor to perform and complete the Work.

Liquidated Damages. If Contractor fails to achieve Substantial Completion of the entire Work within the Contract Time for Substantial Completion, Contractor shall pay City as liquidated damages the amount of **Three thousand five hundred (\$3,500)** per day for each calendar day occurring after the expiration of the Contract Time for Substantial Completion until Contractor achieves Substantial Completion of the entire Work, as required by Article 3 of the General Conditions.

Contractor Initial here: _____.

5. CONTRACT SUM

In consideration of the Contractor's full, complete, timely, and faithful performance of the Work required by the Contract Documents, City shall pay Contractor the sum of _____ dollars/no cents (\$_____), payable as set forth in the General Conditions ("Contract Sum").

The actual direct cost of all Permit Fees is excluded from the Contract Sum, however Contractor's cost of administration and coordination of all Governmental Approvals and Utility Fees is included in the Contract Sum.

6. PERMIT FEE REIMBURSEMENT

In accordance with Paragraph 1.03 of the General Conditions, the City shall reimburse Contractor for the documented actual direct cost of Permit Fees, without Allowable Mark-up, in addition to payment of the Contract Sum.

IN WITNESS WHEREOF, the parties have caused this Contract to be executed the date and year first above written.

Executed at Glendale, California.



[Contractor]:

By: _____
An Authorized Signatory (Print Name)

By: _____
An Authorized Signatory (Sign Name)

Date: _____

CONTRACTOR'S SIGNATURE MUST BE NOTARIZED
CITY OF GLENDALE:

By: _____
Roubik R. Golanian P.E. , City Manager

Date: _____

REVIEWED BY:

APPROVED AS TO FORM:

Daniel Hernandez, Interim Director of
Public Works

Date City Attorney

Date

SAMPLE

EXHIBIT 1

INDEX OF DRAWINGS, SPECIFICATIONS, AND REFERENCE DOCUMENTS

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GWP00638AA SHEETS

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EXHIBIT 2

INSURANCE REQUIREMENTS

1.0 REQUIRED INSURANCE POLICIES

At its own expense, Contractor shall obtain, pay for, and maintain – and shall require each of its Subcontractors to obtain and maintain – for the duration of the Construction Contract, policies of insurance meeting the following requirements:

A. Workers' Compensation/Employer's Liability Insurance must provide workers' compensation statutory benefits as required by law.

1. Employer's Liability insurance must be in an amount not less than:

- (a) **ONE MILLION DOLLARS (\$1,000,000)** per accident for bodily injury or disease;
- (b) **ONE MILLION DOLLARS (\$1,000,000)** per employee for bodily injury or disease; and
- (c) **ONE MILLION DOLLARS (\$1,000,000)** policy limit.

B. Commercial General Liability ("CGL") (primary). City and its officers, agents, employees and representatives must be added as additional insureds, not limiting coverage for the additional insured to "ongoing operations" or in any way excluding coverage for completed operations. Coverage must apply on a primary, non-contributing basis in relation to any other insurance or self-insurance, primary or excess, available to City or any officer, agent, employee, or representative of City (collectively, "City and its representatives"). Coverage must not be limited to the vicarious liability or supervisory role of any additional insured. Coverage afforded to "City and its representatives" must be at least as broad as that afforded to Contractor. If Contractor has higher limits than the limits specified in these insurance requirements, or has additional broader coverage, or has both, the insurer shall make available the higher limits and broader coverage to "City and its representatives." Coverage must not contain a contractors' limitation or other endorsement limiting the scope of coverage for liability arising from explosion, collapse, or underground property damage.

1. CGL insurance must not be written for less than the limits of liability specified as follows:

- (a) **TWO MILLION DOLLARS (\$2,000,000)** per occurrence, or the full per occurrence limits of the policy, whichever limit is greater, for bodily injury (including accidental death) to any one person;
- (b) **TWO MILLION DOLLARS (\$2,000,000)** per occurrence, or the full per occurrence limits of the policy, whichever limit is greater, for personal and advertising injury to any one person;
- (c) **TWO MILLION DOLLARS (\$2,000,000)** per occurrence, or the full per occurrence limits of the policy, whichever limit is greater, for property damage; and
- (d) **THREE MILLION DOLLARS (\$3,000,000)** general aggregate limit, or the full aggregate limits of the policy, whichever limit is greater.

2. CGL insurance must include all major divisions of coverage and must cover:
 - (a) Premises Operations (including Explosion, Collapse, and Underground ["X,C,U"] coverages as applicable);
 - (b) Independent Contractor's Protective;
 - (c) Independent Contractors;
 - (d) Products and Completed Operations (maintain same limits as above until **five (5)** years after recordation of Notice of Completion);
 - (e) Personal and Advertising Injury (with Employer's Liability Exclusion deleted);
 - (f) Contractual Liability (including specified provision for Contractor's obligation under Article 11 of the General Conditions); and
 - (g) Broad Form Property Damage.
3. Umbrella or Excess Liability Insurance (over primary), if provided, must be at least as broad as any underlying coverage. Umbrella or excess liability coverage must apply on a primary, non-contributory basis for the benefit of "City and its representatives," before the umbrella or excess liability insurer calls upon "City's and its representatives" primary insurance policy, or self-insurance program, or umbrella or excess liability insurance, or any combination of these insurance policies or programs. Coverage must be provided on a "pay on behalf" basis, with defense costs payable in addition to policy limits. There must be no cross liability exclusion and no contractor's limitation endorsement. The policy must have starting and ending dates concurrent with the underlying coverages. The Named Insured may determine the layering of primary and excess liability insurance provided that if such layering differs from that described here, the actual coverage program meets the minimum total required limits and complies with all other requirements listed here.

C. Business Automobile Liability Insurance

1. Business Automobile Liability Insurance must cover all vehicles, whether rented, leased, hired, scheduled, owned or non-owned. If Contractor does not own any vehicles, this requirement may be satisfied by a non-owned vehicle endorsement to the general and umbrella liability policies. Business Automobile Liability Insurance coverage amounts must not be less than the following:
 - (a) TWO MILLION DOLLARS (\$2,000,000) per occurrence for bodily injury (including accidental death) to any one person; and
 - (b) TWO MILLION DOLLARS (\$2,000,000) per occurrence for property damage; or
 - (c) TWO MILLION DOLLARS (\$2,000,000) combined single limit.

- D. Contractors Pollution Liability Insurance (CPL) – NOT REQUIRED FOR THIS PROJECT
- E. Builder’s Risk Insurance – NOT REQUIRED FOR THIS PROJECT

2.0 GENERAL REQUIREMENTS—ALL POLICIES

A. Qualifications of Insurer. At all times during the term of this Contract, Contractor’s insurance company must meet all of the following requirements:

1. “Admitted” insurer by the State of California Department of Insurance or be listed on the California Department of Insurance’s “List of Approved Surplus Line Insurers” (“LASLI”);
2. Domiciled within, and organized under the laws of, a State of the United States; and
3. Carry an A.M. Best & Company minimum rating of “A-: VII”.

B. Continuation Coverage. For insurance coverages that are required to remain in force after the Final Payment, and if reasonably available, Contractor shall submit to City, with the final Application for Payment, all certificates and additional insured endorsements evidencing the continuation of such coverage.

C. Deductibles or Self-Insured Retentions. All deductibles or self-insured retentions are subject to City’s review and approval, in its sole discretion. Any “self-insured retention” must be declared. City reserves the right to require the self-insured retention to be eliminated or replaced by a deductible. Self-funding, policy fronting or other mechanisms to avoid risk transfer are not acceptable. If Contractor has such a program, Contractor shall fully disclose such program to City.

D. Commercial General Liability and Business Automobile insurance policies must be written on an “occurrence” basis and must add the City of Glendale and its officers, agents, employees and representatives as additional insureds.

E. Contractor’s Insurance Primary. Other insurance (whether primary, excess, contingent or self-insurance, or any other basis) available to “City and its representatives” is excess over Contractor’s insurance (whether primary, excess, contingent or self-insurance, or any other basis). “City’s and its representatives” insurance (whether primary, excess, contingent or self-insurance, or any other basis) will not contribute with Contractor’s insurance policy or policies.

F. Waiver of Subrogation. Contractor and Contractor’s insurance company waive— and shall not exercise— any right of recovery or subrogation that Contractor or the insurer may have against “City and its representatives.”

G. Separation of Insureds. Contractor’s insurance policy applies separately to each insured or additional insured who is seeking coverage, or against whom a claim is made or suit is brought, except that the naming of multiple insureds will not increase an insurance company’s limits of liability.

H. Claims by Other Insureds. Contractor’s insurance policy applies to a claim or suit brought by an additional insured against a Named Insured or other insured, arising out of bodily injury, personal injury, advertising injury, or property damage.

I. A liability policy must not contain any provision or definition that would serve to eliminate so-called “third party action over” claims, including any exclusion for bodily injury to an employee of the insured or of any contractor or subcontractor.

- J. Premiums. City is not liable for a premium payment or another expense under Contractor's policy
- K. At any time during the duration of this Contract, City may do any one or more of the following:
1. Review the insurance coverage requirements;
 2. Require that Contractor obtain, pay for, and maintain more insurance depending on City's assessment of any one or more of the following factors:
 - (a) City's risk of liability or exposure arising out of, or in any way connected with, the services of Contractor under the Contract;
 - (b) The nature or number of accidents, claims, or lawsuits arising out of, or in any way connected with, the services of Contractor under the Contract; or
 - (c) The availability, or affordability, or both, of increased liability insurance coverage.
 3. Obtain, pay for, or maintain a bond (as a replacement for an insurance coverage) from a California corporate surety, guaranteeing payment to City for liability, or costs, or both, that City incurs during City's investigation, administration, or defense of a claim or a suit arising out of the Contract; or

L. Contractor shall maintain the insurance policy without interruption, from the Project's commencement date to the Final Payment date, or until a date that City specifies for any coverage that Contractor must maintain after the Final Payment.

M. Contractor shall not allow any insurance to expire, cancel, terminate, lapse, or non-renew. Contractor's insurance company shall mail City written notice at least thirty (30) days in advance of the policy's cancellation, termination, non-renewal, or reduction in coverage and ten (10) days before its insurance policy's expiration, cancellation, termination, or non-renewal, Contractor shall deliver to City evidence of the required coverage as proof that Contractor's insurance policy has been renewed or replaced with another insurance policy which, during the duration of the Contract, meets all of these insurance requirements.

N. At any time, upon City's request, Contractor shall furnish satisfactory proof of each type of insurance coverage required—including a certified copy of the insurance policy or policies; certificates, endorsements, renewals, or replacements; and documents comprising Contractor's self-insurance program—all in a form and content acceptable to the City Attorney or City's Risk Manager.

O. If Contractor hires, employs, or uses one or more Subcontractor(s) to perform work, services, operations, or activities on Contractor's behalf, Contractor shall:

1. Ensure and verify that the Subcontractor meets, and fully complies with, these insurance requirements. Contractor shall monitor and review all such coverage and assumes all responsibility for ensuring that all required coverage is provided; and
2. Furnish City at any time upon its request, with a complete copy of the Subcontractor's insurance policy or policies for City's review, or approval, or both. Failure of City to request copies of the documents does not impose any liability on City, or its employees.

P. Contractor shall provide immediate notice to City of any claim or loss against Contractor that includes City or any other indemnitee as a defendant. City assumes no obligation or liability by such notice, but has the right (but not the duty) to monitor the handling of any such claim or claims if they are likely to involve City.

Q. Contractor's failure to comply with an insurance provision constitutes a material breach upon which City may immediately terminate or suspend Contractor's performance of the Contract, or invoke another remedy that the Contract or the law allows. At its discretion and without waiving any other rights it may have pursuant to law, City has the right but not a duty to obtain or renew the insurance and pay all or part of the premiums. Upon demand, Contractor shall repay City for all sums or monies that City paid to obtain, renew, or reinstate the insurance, or City may offset the cost of the premium against any sums or monies that City may owe Contractor.

3.0 CONTRACTOR'S SUBMITTAL OF CERTIFICATES AND ENDORSEMENTS

A. Contractor shall have its insurance carrier(s) or self-insurance administrator(s) complete and execute the following insurance documents and shall deliver the documents at the same time Contractor delivers the Contract to City. City will neither sign the Contract nor issue a "Notice to Proceed" until the City Attorney or City's Risk Manager has reviewed and approved all insurance documents. City's decision as to the acceptability of all insurance documents is final. Sample insurance documents in the City's approved format are set forth in this Exhibit 2.

B. Required Submittals for Commercial General Liability and Business Automobile Insurance and Contractor's Pollution Liability Insurance. The following submittals must be on forms satisfactory to the City Attorney or City's Risk Manager, and signed by the insurance carrier or its authorized representative – which fully meet the requirements of, and contain provisions entirely consistent with, all of the insurance requirements set forth in this document:

1. "Certificate of Insurance";
2. "Additional Insured Endorsement"; and
3. Subrogation Endorsement: "Waiver of Transfer to Rights of Recover Against Others."

C. Both Certificates of Insurance and Additional Insured Endorsements must read as follows: "The City of Glendale, and its officers, agents, employees and representatives are included as additional insureds under the policy(s). This insurance is primary to all other insurance of the City. The City's insurance and self-insurance will apply in excess of, and will not contribute with this insurance. This insurance applies separately to each insured or additional insured who is seeking coverage, or against whom a claim is made or a suit is brought. The issuing company shall mail thirty (30) days advance notice to the City for any policy cancellation, termination, non-renewal, or reduction in coverage."

D. Required Submittals for Workers' Compensation Insurance. Contractor shall provide City with a certificate of insurance and a subrogation endorsement on forms satisfactory to the City Attorney or City's Risk Manager, and signed by the insurance carrier or its authorized representative – which fully meet the requirements of, and contain provisions entirely consistent with, the workers compensation insurance requirements. If Contractor is self-insured for workers' compensation, a copy of the "Certificate of Consent to Self-insure" from the State of California is required; or if Contractor is lawfully exempt from workers' compensation laws, an "Affirmation of Exemption from Labor Code § 3700" form is required.

E. Required Evidence of Builder's Risk Coverage. City will provide a certificate of insurance and a declarations page on a form satisfactory to the City Attorney or City's Risk Manager, and signed by the insurance carrier or its authorized representative. The policy terms must fully meet the requirements of, and contain provisions entirely consistent with, all of the insurance requirements set forth herein. The City shall be named as a loss payee on the insurance policy for the full replacement value of all buildings, structures, fixtures and materials to be constructed, maintained, repaired or supplied pursuant to this Contract.

F. Please comply with the following Sample Insurance Documents.

EXHIBIT 3

BASELINE PROJECT SCHEDULE

Phase 1: Underground Infrastructure Improvements (Electrical and Fiber Optic Conduits, Storm Drains, Irrigation Lines, Fire Service Lateral)

Phase 2: Sidewalk Improvements (Substructure Foundations, Brick/Granite/Concrete Pavement, Curbs, Gutters, ADA Ramps, Landscaping Hardscapes)

Phase 3: Street Improvements (Brick/Granite/Asphalt Pavement, Utility Adjustments)

Phase 4: Traffic Signal Modifications and Installation of Traffic Striping and Signing

Phase 5: Site Furnishing and Landscape Improvements (Furniture, Playground Surface, Painted Graphic, Trees and Plants, Lighting, Parking Garage Improvements, etc.)

Phase 6: Public Artwork and Sculpture Installations

Road operations for Phases 1-3 shall be completed before November 13, 2025.

Moratorium for all Work operations for ALL Phases between November 13, 2025 to January 11, 2026.

The contractor shall ensure continuous public access to streets, sidewalks, and parking garages during moratorium period.

The Contractor shall not be allowed to commence the next phase of the schedule without written approval from the City project manager.

Refer to the Section 6 of Special Conditions for more details on project schedule.

EXHIBIT 4

PRELIMINARY SCHEDULE OF VALUES

The Bidder shall state for each item on this proposal form, in clearly legible figures, the unit price and item total or lump sum, as the case may be, for which he/she proposes to supply labor, materials, and equipment and to perform the Work.

(Insert Contractor's Bid Proposal Here)

EXHIBIT 7

**CONTRACTOR’S CERTIFICATION UNDER LABOR CODE § 1861 OF
LABOR CODE § 3700 COMPLIANCE**

(WORKERS’ COMPENSATION INSURANCE)

Contractor shall execute the following form as required by California Labor Code Section 1861:

1. I certify that:

- I have read, and I am familiar with, California Labor Code Section 3700 which states in part:

“Every employer except the state shall secure the payment of [workers’] compensation in one or more of the following ways:

(a) By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this state.

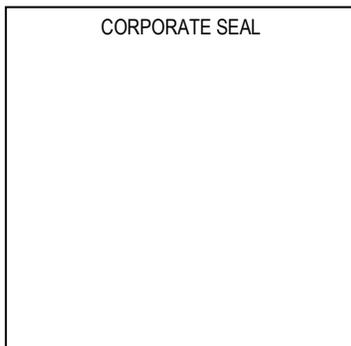
(b) By securing from the Director of Industrial Relations a certificate of consent to self-insure either as an individual employer, or as one employer in a group of employers, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his or her employees.”

- I am aware of the provisions of Labor Code Section 3700 which requires every employer to be insured against liability for workers’ compensation or to undertake self-insurance in accordance with the provisions of that code.

2. I affirm that before starting the Work of this Contract, and at all times while performing the Work, I will comply with the Labor Code provisions. I have a certificate of consent to self-insure, or a certificate of workers’ compensation insurance, and I will give it to the City of Glendale before I begin the Work.

I declare under penalty of perjury of the laws of the State of California that the foregoing is true and correct.

Executed on _____, 20____, at _____, California.



CONTRACTOR:

Signature

By: _____
Name

Title of Authorized Signatory

GENERAL CONDITIONS

GENERAL CONDITIONS

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ARTICLE 1 PRELIMINARY PROVISIONS

1.01 DEFINITIONS

The following words shall have the following meanings:

- A. **Addenda.** The Addenda or Addendum consist of the written clarifications of the Proposal Requirements, Preliminary Design Documents, or the Contract Documents issued by the City prior to the execution of the Construction Contract.
- B. **Admitted Surety Insurer.** A Surety authorized to transact surety insurance in the State of California, as evidenced by a valid Certificate of Authority issued by the California Department of Insurance in accordance with California Insurance Code Section 12070 et seq.
- C. **Allowance.** A line item cost estimate established by the City to be carried in the Base Bid sum, Contract Sum, and Schedule of Values for Payment for a particular item of Work, which cannot be sufficiently defined so as to allow the Contractor to adequately determine fair value before the Bid Deadline. Allowances include estimated amounts established by the City for certain construction elements that have not yet been fully designed or authorized for inclusion in the Work or to permit deferred approval or selection of actual materials and equipment to a later date when additional information is available for evaluation.
- D. **As-Builts.** The documents prepared by Contractor showing the condition of the Work as actually built, including, without limitation, all changes and the exact locations of all mechanical, electrical, plumbing, HVAC or other portions of the Work that are shown diagrammatically in the Contract Documents.
- E. **Base Bid.** The price stated in the Schedule of Bid Prices for which the Bidder offers to perform Work described in the Contract Documents as the base Contract Work (e.g. not designated as part of a Bid Alternate).
- F. **Bid.** A complete and properly executed offer by the Bidder on City-prescribed forms to perform the Work for the prices stated in response to the Notice Inviting Bids.
- G. **Bid Alternate.** An item of Work described in the Contract Documents as a Bid Alternate and the price the Bidder indicates in the Schedule of Bid Prices form that will be added to or deducted from the scope of Work of the Base Bid which will be the Contractor's responsibility to perform only if the City accepts the Bid Alternate.
- H. **Bid Deadline.** The date and time when Bids are due for submission to the City, as established in the Notice Inviting Bids and as may be modified by Addenda.
- I. **Bid Forms.** The City-prescribed forms which the Bidder shall complete and use to submit a Bid. The Bid Forms include: (1) Bidder's Proposal; (2) Schedule of Bid Prices; (3) Incumbency Certificate; (4) Bid Bond; (5) Bidder's Statement of Qualifications; (6) Experience Form; (7) Specialty Contractor's Statement of Qualifications; (8) Contractor Safety Questionnaire; (9) Designation of Subcontractors; (10) Declaration of Non-Collusion; (11) Insurance Requirements Affidavit; and (12) forms included in the Specification required by the type of project funding (e.g. federal, ARRA, HUD, etc.).

- J. **Bidder.** The individual, partnership, firm, corporation, joint venture or other legal entity submitting a bid on these Contract Documents or any part thereof.
- K. **Bidding Documents.** Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of: (1) Notice Inviting Bids; (2) Instructions to Bidders; and (3) Bid Forms. The proposed Contract Documents consist of: (1) the Bidding Requirements; (2) the Construction Contract Between City and Contractor; (3) the Conditions of the Contract (General, Supplementary, and Special, if applicable); (4) all Exhibits to the Contract; (5) the Drawings; (6) the Specifications; (7) all Addenda issued prior to the execution of the Construction Contract; (8) all Modifications issued after the execution of the Construction Contract; and (9) Governmental Approvals, including, but not limited to, permits.
- L. **Change Order.** A Change Order is a written document prepared by the City reflecting the agreement between the City and Contractor for: a change in the terms or conditions of the Contract, if any; a specific Scope Change in the Work; the amount of the adjustment, if any, in the Contract Sum; and the extent of the adjustment, if any, in the Contract Time.
- M. **Change Order Request (COR).** A Change Order Request is a written document originated by the Contractor, which describes an instruction issued by the City after the effective date of the Contract, which Contractor believes to be a scope change that may result in changes to the Contract Sum or Contract Time or, which describes the need for or desirability of a change in the Work proposed by Contractor.
- N. **City or Owner.** The City of Glendale, California, acting through its City Council or other City officials authorized to act for the City, acting in its proprietary rather than regulatory capacity in connection with the Project.
- O. **City Manager.** The City official who is the executive head of the department of management services and of the various departments of the City, or his/her duly appointed representative whom the City Manager has designated in writing.
- P. **Construction Change Directive.** A written order prepared and signed by the City directing a change in Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both.
- Q. **Contract Documents.** The Contract Documents are enumerated in the Construction Contract between City and Contractor and consist of: (i) the Bidding Requirements; (ii) the Construction Contract; (iii) the Conditions of the Contract (General, Supplementary, and Special, if applicable); (iv) all Exhibits to the Contract; (v) the Drawings; (vi) the Specifications; (vii) all Addenda issued prior to the execution of the Contract; (viii) all Modifications issued after the execution of the Contract; and (ix) Governmental Approvals, including, but not limited to, permits. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.
- R. **Contract.** The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified on by a Modification. The Contract Documents shall not be construed to create a contractual

relationship of any kind between any persons or entities other than the City and the Contractor. There shall be no third party beneficiaries of the Contract Documents.

- S. **Contract Sum.** The total amount of compensation stated in the Construction Contract that is payable to Contractor for the complete performance of the Work in accordance with the Contract Documents.
- T. **Contract Time.** The total number of days set forth in the Construction Contract within which Substantial Completion of the Work must be achieved beginning with the Date of Commencement established in the Notice to Proceed, subject to adjustments in accordance with the terms of the Contract Documents. The Contract Time for Contractor's performance of the Work is measured in Working days (not Calendar Days).
- U. **Contractor.** The individual, partnership, firm, corporation, joint venture or other legal entity with whom the Contract is made by said City, or the agent or legal representative who may be appointed to represent such individual, partnership, firm, corporation, joint venture or other legal entity in the execution of the Contract as general contractor for construction of the Work.
- V. **Correction Period.** Correction Period is synonymous with the terms of the correction guarantee period used in the Contract Documents.
- W. **Critical Path.** The "Critical Path" or "Critical Path Management" ("CPM") is a method of scheduling the Work in which the Critical Path represents the sequence of activities yielding the longest chain of interrelated activities in terms of time from the beginning of the Project to the end that has a Float value of zero indicating that any delay in any one activity along this path will delay the completion of the overall Work.
- X. **Date of Commencement.** The date for commencement of the Work fixed by City in a Notice to Proceed to Contractor.
- Y. **Day.** The terms "day" or "days" mean calendar days unless otherwise specifically designated in the Contract Documents.
- Z. **Director.** The Director of the Public Works Department of the City of Glendale or his/her duly appointed representative whom the Director has designated in writing.
- AA. **Drawings.** The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location, and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.
- BB. **Extra Work.** New or unforeseen work will be classified as Extra Work when determined by the City that the work is not described in, or reasonably inferable from, the Contract Documents, the work is not covered by any Bid line item or Allowance, and the work causes Contractor to incur additional and unforeseen costs.
- CC. **Final Completion.** Final Completion is the stage of performance of the Work when (1) all Work required by the Contract Documents has been fully completed in compliance with the Contract Documents and all applicable laws including, but not limited to, correction or completion of all punch list items noted by City upon Substantial Completion; (2) Contractor has delivered to City an Application for Final Payment and all closeout documentation required by the Contract Documents; and (3) documentation of all final Governmental Approvals has been submitted to City including,

but not limited to a final Certificate of Occupancy or equivalent Building Department sign-off has been issued covering the entire Project site without exception or conditions.

- DD. **Float.** The amount of time that any activity or path of activities may be delayed without impacting the date for Substantial Completion of the Work.
- EE. **Force Majeure.** "Force Majeure" includes but is not limited to declared or undeclared war, sabotage, insurrection, riot, or other acts of civil disobedience, labor disputes, fires, explosions, floods, earthquakes or other acts of God.
- FF. **Fragnet.** A contemporaneous, fragmentary schedule network, which graphically identifies the sequencing of all critical and non-critical new activities and/or activity revisions affected by a compensable delay or excusable delay with logic ties to all affected existing activities noted on the construction schedule.
- GG. **Governmental Approval.** Any approval, authorization, inspection, certification, consent, exemption, filing, permit, registration, plan check, ruling or similar authorization required by any federal, state or local law, regulation or procedures in order for Contractor to perform the Work.
- HH. **Guarantee.** Assurance to City by Contractor or product manufacturer or other specified party, as guarantor, that the specified warranty will be fulfilled by the guarantor in the event of default by the warrantor.
- II. **Modification.** A Modification is: (1) a written amendment to Contract signed by both parties; (2) a Change Order; or (3) a Construction Change Directive.
- JJ. **Notice to Proceed.** The Notice to Proceed is a document issued by the City fixing the date for Commencement for the Work.
- KK. **Parties.** The City and Contractor may be referred to in the Contract Documents from time to time as the Parties.
- LL. **Permit Fees.** The actual direct costs paid by Contractor for Governmental Approvals and Utility Fees.
- MM. **Permit Fees Reimbursement.** A payment made to the Contractor by the City in addition to the Contract Sum to compensate Contractor for the actual direct cost of all Permit Fees.
- NN. **Project.** The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the City or by separate contractors.
- OO. **Project Manual/Contract Package.** The volumes of Contract Documents and reference documents assembled for the Work made available to Bidders.
- PP. **Record Documents.** The Drawings, Specifications, Addenda, requests for information, bulletins, Change Orders and other modifications to the Contract Documents, approved shop drawings, product data, samples, mock-ups, permits, inspection reports, test results, daily logs, schedules, subcontracts, and purchase orders. Records Documents shall include a set of "As-Built" Drawings and Specifications, which shall be continuously updated during the prosecution of the Work.

- QQ. **Site.** The physical area designated in the Contract Documents for Contractor's performance of the Work.
- RR. **Specialty Contractor.** A contractor whose operations as such are the performance of construction work requiring special skill and whose principal contracting business involves the use of specialized building trades or crafts and as otherwise defined in California Business and Professions Code Section 7058.
- SS. **Specification.** The Specification is a volume(s) assembled for the Work that includes, without limitation, the Bidding Documents, the Construction Contract and Exhibits, the General Conditions, the Supplementary and/or Special Conditions, if any, and the Specifications.
- TT. **Specifications.** The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards, and workmanship for the Work and performance of related services, including, but not limited to, the Project Technical Specifications, Standard Specifications, if any, and any applicable Trade Association Specifications.
- UU. **Substantial Completion.** Substantial Completion is defined to mean the stage in the progress of the Work when the Work is sufficiently complete in accordance with the Contract Documents as determined by the City so that the City can occupy and utilize the Work for its intended use (for which a Temporary Certificate of Occupancy ("TCO") has been issued by the City unless a TCO is not required to operate that type of facility) and as further defined in the Contract Documents.
- VV. **Unit Price.** A "Unit Price" is a price entered by Bidder in a Bid Form as a price per unit of measurement for payment for installation of for credit for deletion of materials, equipment or services including supervision, overhead and profit for a portion of the Work described in the Bid Form.
- WW. **Utility Fees.** The fees charged by any public, private, cooperative, municipal and/or government line, facility or system used for the carriage, transmission and/or distribution of cable television, electric power, telephone, water, gas, oil, petroleum, steam, chemicals, sewage, storm water or similar commodity including, but not limited to fees for temporary utilities and refuse hauling.
- XX. **Warranty.** Assurance to City by contractor, installer, supplier, manufacturer or other party responsible as warrantor, for the quantity, quality, performance and other representations of a product, system service of the Work.
- YY. **Work.** The term "Work" means the construction and other services required by, and reasonably inferable from the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.
- ZZ. **Work Directive.** A Work Directive is a unilateral written order issued by the City directing Contractor to continue performance of the Work or a disputed item of Work pending resolution of a claim or dispute concerning the scope of Work.
- AAA. **Working Day or Work Day.** The term "Working Day" or "Work Day" means any calendar day except Saturdays, Sundays, and City-recognized legal holidays as described in Paragraph 14.01 below.

1.02 REPRESENTATIVES

- A. The Director shall be the representative of the City and, except as otherwise expressly provided herein, shall make all decisions and interpretations to be made by the City under the provisions of the Contract Documents, subject to the following limitations:
1. The Director is authorized to execute Change Orders, Construction Change Directives and Modifications to increase the Contract Sum up to the contingency amount, if any, established by the City Council at the time of award of the Contract. City Council approval is required for any change that results in the total amount of Change Orders, Construction Change Directives, or Modifications exceeding the approved contingency and changes to the design approved by the City Council.
 2. Whenever the Contract Documents require or permit the City to take or request an action or approve or disapprove of an action or request made by another party, the reference shall mean the Director unless the Contract Documents or context make it clear that another person is authorized or required to act on behalf of the City.
 3. The Director is authorized to approve Contractor Applications for Payment; sign the Notice of Completion; make determinations regarding partial deletion or suspension of Work; and make determinations regarding partial or complete termination of Contractor's performance of the Work.
 4. All legal notices and communications by Contractor to City after Final Completion of the Project shall be made to the Director.
- B. The City Manager is authorized to execute the Contract on behalf of the City. The City Manager may approve Change Orders, Construction Change Directives and Modifications to increase the Contract Sum exceeding contingency amount, if any, established by the City Council at the time of award of the Contract on an emergency basis, which will require later ratification by the City Council.
- C. The City's Project Manager designated in the Project Directory of the Specification is the single point of communications by Contractor to City during the course of construction. The City's Project Manager shall: serve as the primary contact for the City; coordinate site access; coordinate the Work with City's separate consultants and contractors; attend pre-bid conferences(s) for construction of the Work; issue Addenda; coordinate RFIs; prepare, recommend approval of, and circulate Change Orders and Construction Change Directives to Contractor; attend construction meetings; review and recommend approval of Contractor Applications for Payment; issue the Certificate of Substantial Completion and collect all Contractor close out documents after City's consultants have reviewed for completeness. Authority to sign Change Orders, Construction Change Directives, and Modifications rests solely with the Director and, as provided in Paragraph 1.02, the City Manager.
- D. The Contractor shall at all times be represented on the Work in person or by a duly designated agent. Instructions and information given by the Director to the Contractor's agent on the Work shall be considered as having been given to the Contractor.

1.03 PERMITS, INSPECTIONS, PLAN CHECKS, AND SIMILAR GOVERNMENTAL APPROVALS AND UTILITIES

- A. Except as otherwise provided in the Notice Inviting Bids, the Contractor shall apply for, obtain, and pay for all permits including, but not limited to, building or structure permits, plumbing system permits, mechanical system permits, electrical system permits, structural system permits, demolition permits, excavation permits, street use permits, driveway permits, sidewalk, curb, sewer, gutter, crosswalk, paving or other street work grading permits, street/utility use permits, OSHA permits, fire sprinkler permits, fence permits, blasting permits, landscaping/irrigation permits, and permits to demolish, remove, or make major alterations to any designated historic resource; inspections; and plan checks obtained after the Date of Commencement of the Work. The Notice Inviting Bids contains a list of permits and other Governmental Approvals and Utility Fees obtained and paid for by the City prior to the Date of Commencement; Contractor is responsible for obtaining all Governmental Approvals and Utility Fees not listed in the Notice Inviting Bids.
- B. The City will reimburse Contractor monthly for the documented actual direct cost paid to governmental agencies or utilities for all Permit Fees according to the payment provisions of the Contract Documents after submission to the City of the Contractor's and/or Subcontractors' original receipts from the governmental entities or utilities ("Permit Fee Reimbursement"). Contractor shall deliver the original receipt to the City's Project Manager with each permit. All Permit Fees shall be separately itemized in each Application for Payment and copies of the receipt(s) and permit(s) must be attached. The Base Bid sum / Contract Sum shall include the cost of administration and coordination for all Governmental Approvals and Utility Fees.
- C. All documents evidencing Contractor's satisfaction with all Governmental Approvals and Utility Fees must be submitted to the City prior to submission of the Application for Final Payment.
- D. Where requirements of the Governmental Approvals differ from those of the Drawings and Specifications, the more stringent requirements shall apply.
- E. Unless otherwise specified in the Contract Documents, Contractor shall be responsible for payments of all Utility Fees from the Date of Commencement until City's Final Acceptance of the Work.

1.04 LICENSES

The Contractor shall apply for, obtain, and pay for all licenses required by governing authorities for the Work.

1.05 ALLOWANCES

- A. Contractor shall include in the Contract Sum and Schedule of Values for Payment, the City's estimated cost established for each Work item covered by an Allowance stated in the Contract Documents. See Paragraph 1.01 for definition of Allowance.
- B. The line item cost estimate established by the City for Work covered by an Allowance includes the cost to Contractor of: all materials and equipment, preparation of submittals; labor; transportation; delivery; handling; installation; supervision; overhead; profit; licenses; bonds; insurance; all sales, use and other taxes legally chargeable; and all other costs and expenses incidental to such Work.

- C. Work items covered by Allowances shall be supplied with such materials and equipment and for such prices approved in advance by City. Contractor shall notify and request City's approval of material equipment, and pricing information for Work covered by an Allowance before ordering the material or equipment and in sufficient time to avoid delay to the Work. City shall provide approval of materials, equipment, and prices with reasonable promptness. The material, equipment, and pricing information submitted by the Contractor to the City's Project Manager shall, at a minimum, include product data and detailed costs of material, equipment, and labor to complete such Work, itemized by costs incurred by Contractor and each subcontractor associated with the performance of such Work. Contractor shall not order materials or equipment or proceed with Work covered by an Allowance until the material, equipment, and pricing information for such Work items have been submitted to the City's Project Representative for review and the Contractor has received City's approval to proceed with a Work item covered by an Allowance.
- D. All expenditures for Allowance Work shall be separately itemized in each Application for Payment.
- E. To the extent that the cost of Work items covered by an Allowance is less than the Allowance cost estimate established by the City, the Contract Sum shall be reduced by Change Order or Construction Change Directive to reflect the actual cost of the Allowance item. Similarly, to the extent the cost of Work items covered by an Allowance is greater than the Allowance cost estimate, the Contract Sum shall be increased by Change Order or Construction Change Directive to reflect the actual cost of the Allowance item. If Work items covered by an Allowance are not performed or the City deletes such items from the Scope of Work, the Contract Sum shall be reduced by Change Order or Construction Change Directive to deduct the Cost of the unused Allowance item.

1.06 WAIVER

A waiver by City of any breach of any term, covenant, or condition contained in the Contract Documents shall not be deemed to be a waiver of any subsequent breach of the same or any other term, covenant, or condition contained therein, whether of the same or a different character.

1.07 DATA TO BE FURNISHED BY THE CONTRACTOR

The Contractor shall furnish the Director reasonable facilities for obtaining such information as he/she may desire respecting the character of the materials and the progress and manner of the Work, including all information necessary to determine its costs, such as the number of persons employed, their pay, the time during which they worked on the various classes of construction, and other pertinent data.

1.08 CONTRACT DRAWINGS

The City will accept no responsibility for errors resulting from misinterpretation or scaling of the Drawings.

1.09 SPECIFICATIONS AND DRAWINGS

- A. The Contractor shall keep on the Work Site a copy of all Specifications, Drawings, and Change Orders pertaining to the Work and shall at all times give the Director access thereto. Anything mentioned in the Specifications and not shown on the Drawings or shown on the Drawings and not mentioned in the Specifications shall be of like effect as though shown or mentioned in both.
- B. In general, the Drawings will show dimensions, positions, and kind of construction; and the Specifications will define materials, quality, and standards. Any Work not particularly detailed, marked or specified, shall be the same as similar parts that are detailed, marked or specified.

- C. The Drawings shall not be scaled to determine dimensions, and in all cases shall be calculated from figures shown on the Drawings. Any discrepancies between scale and figured dimensions, not marked "not to scale," must be brought to the Director's attention before proceeding with the Work affected by the discrepancy.
- D. Omissions from the Drawings and/or Specifications shall not relieve the Contractor from the responsibility of furnishing, making, or installing all items required by law or code, or usually furnished, made or installed in a project of the scope and general character indicated by the Drawings and Specifications.
- E. For convenience, the Drawings and Specifications are arranged in various trade subparagraphs, but such segregation shall not be considered as limiting the Work of any subcontract or trade. The Contractor shall be solely responsible for all subcontract arrangements of the Work regardless of the location or provision in the Drawings and Specifications.
- F. The City will furnish free of charge to the Contractor, a maximum of six (6) sets of Contract Drawings and Specifications. The Contractor shall pay for the costs of any additional sets or portions thereof. The Contractor shall be responsible to see that all sets are the same as the up to date approved set.

1.10 PRECEDENCE OF CONTRACT DOCUMENTS.

- A. In the event of conflict between any of the Contract Documents, the provisions placing a more stringent requirement on the Contractor shall prevail. The Contractor shall provide the better quality or greater quantity of Work and/or materials unless otherwise directed by City in writing. In the event none of the Contract Documents place a more stringent requirement or greater burden on the Contractor, the controlling provision shall be that which is found in the document with higher precedence in accordance with the following order of precedence:
 - 1. Governmental Approvals including, but not limited to, permits required for the Work.
 - 2. Modifications issued after execution of the Contract (including modifications to Drawings and Specifications).
 - 3. The Contract, including all exhibits, attachments, appendices and Addenda, with later Addenda having precedence over earlier Addenda.
 - 4. Special Conditions, if any.
 - 5. General Conditions.
 - 6. Specifications.
 - 7. Drawings.
 - 8. Bidding Requirements.

B. With reference to the Drawings, the order of precedence is as follows:

1. Change Order Drawings.
2. Addenda Drawings.
3. Contract Drawings.
4. Project Drawings.
5. Standard Drawings.
6. Detail Drawings.
7. General Drawings.
8. Figures.
9. Scaled dimensions.

C. Within the Specifications, the order of precedence is as follows:

1. Change Orders.
2. Special Conditions.
3. Project Technical Specifications.
4. Standard Specifications, if any.
5. Applicable Trade Association Specifications.

1.11 NOTICE OF CONFLICTS

If the Contractor, in the course of the Work, becomes aware of any claimed conflicts, errors or omissions in the Contract Documents or in the City's fieldwork or work of City's separate contractors, the Contractor shall immediately notify the Director in writing. The Director shall promptly review the matter, and if the Director finds a conflict, error or omission, the Director shall determine the corrective actions and advise the Contractor accordingly. If the correction associated with a conflict, error or omission increases or decreases the amount of Work called for in the Contract, the City shall issue an appropriate Change Order in accordance with the Contract Documents. After discovery of an error or omission by the Contractor, any related additional work performed by the Contractor shall be done at the Contractor's risk unless authorized by the Director.

1.12 REPORTS

A. Daily Construction Reports: The Contractor shall prepare a daily construction report recording the following information concerning events at Project site:

1. List of Subcontractors at Project site.
2. List of other contractors at Project site.

3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events.
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

Immediately upon discovery of a difference between field conditions and the Contract Documents, the Contractor shall prepare and submit a detailed report through a Request for Information (RFI). Include a detailed description of the differing conditions, together with recommendations for a remedy.

The Daily Construction Report must be: signed by Contractor's Superintendent, submitted within 24 hours (next Working Day) to the Director, and shall be made available to others as directed by City.

1.13 LINES, GRADES, AND MEASUREMENTS

- A. All lines and grades will be established by the Contractor. The Contractors shall carefully preserve all survey stakes and reference points as far as possible. Should any stakes or points be removed or destroyed unnecessarily by any act of the Contractor or his/her employees, they must be reset to the satisfaction of the Director, at the Contractor's expense.
- B. The Contractor shall inform the Director 48 hours (two Work Days) in advance of the times and places at which he/she intends to Work in order that inspection may be provided, and that necessary measurements for records and payments may be made with minimum inconvenience.

- C. No direct payment will be made for the cost to the Contractor of any of the Work or delay occasioned by giving lines and grades, by making other necessary measurements, or by inspection.

1.14 RIGHT OF WAY

- A. The site for the installation of equipment or the right of way for the Work to be constructed under this Contract will be provided by the City.
- B. The City will provide the appropriate rights of way and property for pipelines and structures. Upon approval by the Director, the Contractor may, without cost, use portions of any of the City's rights of way or property which may be suitable for working space and for storage of equipment and materials. The Contractor will be held responsible for any damage to structures, streets, and roads, trees and landscaping, and for any damage that may result from his/her use of City property.
- C. In case areas additional to those available on the City's rights of way or property are required by the Contractor for his/her operations, he/she shall make arrangements with the property owners for the use of such additional areas at his/her own expense.

1.15 CONTRACTOR'S OPERATIONS/STORAGE YARD

In the event the Contractor requires space for the storage and/or staging of construction materials, supplies, equipment, stockpiling of debris, or any other needs required for construction operations, he/she shall acquire at his/her own expense such areas as he/she may desire. For properties within the City of Glendale, the staging area must be enclosed at Contractor's expense with construction fencing covered with a mesh screen to limit visibility to the site. Approval of the Neighborhood Services Department is required to ensure that private properties with code enforcement problems are not used. Private property used for storage of construction material or debris shall be restored to a legal condition with regard to appearance and maintenance upon conclusion of the project. Property should be graded and free of weeds and debris when project is completed.

[END OF ARTICLE]

ARTICLE 2 PERFORMANCE OF THE WORK

2.01 PERFORMANCE OF WORK - GENERAL

Contractor shall, at its own cost and expense, furnish all necessary materials, labor, transportation, and equipment for doing and performing said Work and the materials used shall comply with the requirements of the Contract Documents. All Work shall be performed and completed as required in the Contract Documents, and subject to the approval of the Director, or his/her designated assistant.

2.02 NO ASSIGNMENT OR DELEGATION

Contractor shall not assign or delegate the duties or obligation under this Contract or his/her interest therein in whole or in part without the prior written consent of the City which may be withheld at the City's sole discretion.

2.03 STANDARD OF PERFORMANCE

Contractor agrees that all services performed hereunder shall be provided in a manner commensurate with the highest professional standards and shall be performed by qualified and experienced personnel; that any Work performed by Contractor under the Contract will be performed in the best manner; that any material furnished shall be subject to the approval of the Director; and that both Work and materials will meet fully the requirements of the Contract Documents.

2.04 DEFECTIVE WORK

Within the time periods that the City specifies, the Contractor shall correct all deficient, improperly executed, or unsatisfactory Work determined by the City.

The Contractor shall remove and shall repair or replace, at his/her own expense any part of the Work that is deficient, improperly executed, or unsatisfactorily executed, even though it has been included in the monthly estimates. If he/she refuses or neglects to remove, repair, or replace such defective Work, prior to the City's acceptance of the Work, it may be replaced by the City at the expense of the Contractor, plus 15% for overhead expenses, and his/her sureties shall be liable therefor. (See Paragraph 2.15 for curing defects after acceptance of the Work.)

2.05 CITY'S RIGHT TO CARRY OUT THE WORK

A. Notwithstanding other remedies available to the City, if the Contractor defaults, fails to perform Work required by the Contract Documents, or otherwise neglects to carry out the Work in accordance with the Contract Documents and fails within a **48 hour** period after receipt of written notice from the City to commence and correct such default, failure to perform, or neglect with diligence and promptness, the City, at its sole discretion and without obligation, may, with its own or outside forces, perform the Work Contractor has failed to perform and/or replace or correct deficiencies in the Work. In such case, a Change Order or Construction Change Directive shall be issued deducting from payments then or thereafter due the Contractor the cost of completion, replacement or correction of such deficiencies, including compensation for additional services by the City's project management staff, the Architect, and their respective consultants made necessary by such default, failure to perform, or neglect, plus 15% for City's overhead expenses. If payments then or thereafter due the Contractor

are not sufficient to cover such amounts, the Contractor shall pay the difference to the City immediately. This remedy is cumulative.

- B. The City also has the right, but not the obligation, to self-perform or have outside forces perform portions of the Work previously assigned to Contractor. In such case a Change Order or Construction Change Directive shall be issued, reducing the Contract Sum by the Unit Price(s) applicable to such deleted Work or, in the absence of Unit Prices, an amount that reflects the reasonable cost of performing such deleted Work and the Allowable Mark-Up applicable to such deleted Work.

2.06 COMMUNICATIONS AND NOTICES REGARDING THE WORK

- A. Notices under the Contract Documents shall be in writing and (i) delivered personal; (ii) sent by certified mail, return receipt requested; (iii) sent by a recognized overnight mail or courier service, with delivery receipt requested; or (iv) sent by facsimile communication followed by a hard copy and with receipt confirmed by telephone, to the following addresses (or to such other address as may from time to time be specified in writing by such Person):

All correspondence with Contractor shall be sent to the following address:

City of Glendale
Public Works Engineering Department
633 E. Broadway, Room 205
Glendale, CA 91206
Attention: **Huang Zheng**
Phone: 818-548-3945
Facsimile: 818-242-7087
E-mail: hzheng@glendaleca.gov

- B. Notices shall be deemed received when actually received in the office of the addressee (or by the addressee if personally delivered) or when delivery is refused, as shown on the receipt of the U. S. Postal Service, private carrier or other Person making the delivery. Notwithstanding the foregoing, notices sent by facsimile after 4:00 p.m. Pacific Standard or Daylight Time (as applicable) and all other notices received after 5:00 p.m. shall be deemed received on the first business day following delivery (that is, in order for a fax to be deemed received on the same day, at least the first page of the fax must have been received before 4:00 p.m.). Any technical or other communications pertaining to the Work shall be conducted by Contractor's project manager and technical representatives designated by City. Contractor's representatives shall be available at all reasonable times for consultation, and shall be authorized to act on behalf of Contractor in matters concerning the Work.
- C. Contractor shall copy City on all written correspondence pertaining to the Contract between Contractor and any Person other than Contractor's Subcontractors, consultants and attorneys.

2.07 INDEPENDENT CONTRACTOR

The Contractor in the performance of the Work hereunder will be acting in an independent capacity and not as an agent, employee, partner, or joint venture of the City.

2.08 EMERGENCY WORK

A. During Working Hours:

In case of an emergency which threatens loss or injury of property, and/or safety of life during working hours, the Contractor shall act, without previous instructions from the City, as the situation may warrant. He/she shall notify the Director of the emergency and the action taken immediately thereafter. Any compensation claimed by the Contractor, together with substantiating documents in regard to expense, shall be submitted to the Director within 15 calendar days after the emergency. Compensation, if allowed, will be paid for as Extra Work.

B. Outside of Working Hours:

Whenever, in the opinion of the City, there shall arise outside of the regular Working hours on the Contract Work of an emergency nature which threatens loss or injury of property, or danger to public safety, the Contractor shall act, without previous instructions from the City as the situation may warrant. He/she shall notify the Director of the emergency and the action taken immediately thereafter. Any compensation claimed by the Contractor, together with substantiating documents in regard to expense, shall be submitted to the Director within 15 calendar days after the emergency. Compensation, if allowed, will be paid for as Extra Work. In the event the Contractor is not able to respond to an emergency outside of regular working hours, the City's forces will handle such emergency Work. If such emergency arises out of or is the result of operations by the Contractor, the cost of the corrective measures will be billed to the Contractor and deducted from his/her payment as provided in the Contract Documents. The performance of emergency Work by City forces will not relieve the Contractor of any of his/her responsibilities, obligations, or liabilities under the Contract.

2.09 SUBCONTRACTORS

- A. Each subcontract shall contain a reference to the Contract between the City and the principal Contractor, and the terms of the Contract and all parts thereof shall be made part of each subcontract insofar as applicable to the Work covered thereby. Each Subcontractor shall provide for its annulment at the order of the Director, if, in his/her opinion, the Subcontractor fails to comply with the requirements of the principal Contract insofar as the same may be applicable to his/her Work.
- B. Nothing contained in these Contract Documents shall be construed as creating any contractual relationship between any Subcontractor and the City.
- C. The Contractor shall be considered the employer of and as fully responsible to the City for the acts and omissions of Subcontractors and of persons employed by them as he/she is for the acts and omissions of persons directly employed by him/her.
- D. The Contractor shall be responsible for the coordination of the trades, Subcontractors, and material suppliers engaged upon his/her Work. It shall be his/her duty to see that all of his/her Subcontractors commence their Work at the proper time and carry it on with due diligence so that they do not delay or injure either the Work or materials; and that all damage caused by them or their workers is made good at his/her expense.
- E. The City will not undertake to settle differences between the Contractor and his/her Subcontractors or between subcontractors.

- F. The Contractor shall utilize the services of specialty Subcontractors, without additional expense to the City, on those parts of the Work which are specified to be performed by specialty contractors.
- G. The City's consent to or approval of any Subcontractor under this Contract shall not in any way relieve the Contractor of obligations under this Contract and no such consent or approval shall be deemed to waive any provision of this Contract. The Contractor shall not substitute a Subcontractor, person or entity previously selected if the City makes reasonable objection to such substitution. Contractor shall submit copies of the complete subcontracts of City upon request of City.
- H. Contractor shall not use a debarred Subcontractor; a current list of debarred contractors is available at the Department of Industrial Relations' website.

I. Payments to Subcontractors:

The Contractor shall pay all Subcontractors for an on account of Work of the Contract performed by such Subcontractors within the (10) days after receipt of progress payments from City and within seven (7) days after receipt of retention from City.

Joint Payments. City hereby reserves the right, upon written notice to Contractor, to make, at any time, and from time-to-time, payments directly to each Subcontractor, and, if such rights shall be exercised by City, then such amount shall be credited against the Contract Sum due to Contractor hereunder and City shall be relieved and released from the obligation to make such payment to Contractor and Contractor shall be relieved and released as to City from the obligation to make such payments to each Subcontractor paid by City, but not from any of the other obligations and responsibilities of Contractor to City under the Contract Documents.

J. Arm's Length Transactions and Commercially Useful Function of Subcontractors and Suppliers.

To assure competitive bids and to assure that no bid rigging, unfair practices, collusion or conflicts of interest occur in connection with the Work, Contractor agrees that all agreements between Contractor and Subcontractors and suppliers for performance of the Work shall be pursuant to arm's length transactions, with unrelated and unaffiliated firms (a "related" or "affiliated" firm is one which is subject to the control of the same persons through joint ownership or otherwise). In all such agreements, each firm shall act in its own best interest, for compensation that reflects the fair market values of the materials or services that are the subject of the transaction.

Contractor further agrees that each Subcontractor and supplier for the Work will perform a commercially useful function (i.e. is responsible for the performance, management and supervision of a distinct element of the Work). A Subcontractor or supplier does not perform a commercially useful function when, for example: the Work is outside the firm's experience or qualifications; the firm provides little or no supervision of the Work; more than fifty percent (50%) of the Work designated to be performed by a Subcontractor is performed by a Sub-subcontractor or supplier; the Subcontractor only purchases materials while performing little or no Work; the firm works for only one prime contractor; or the same employees work for the firm and the Contractor.

If, upon City's request, Contractor fails to provide adequate assurances of arm's length transactions or that all Subcontractors and Suppliers will perform a commercially useful function, Contractor shall remove such Subcontractor or supplier from the Project, exclude the cost associated with such firm from all Applications for Payment and change order requests and, if necessary, propose another Subcontractor or supplier to whom the City has no objection, without increase to the Contract Sum or Contract Time.

2.10 USE OF FACILITIES PRIOR TO COMPLETION OF CONTRACT

- A. Whenever in the opinion of the Director any Work under the Contract, or any portion(s) thereof, is in a condition suitable for use by the City, the City may, after written notice and designation from the Director to the Contractor, use (which includes, but is not limited to, taking over or placing into service) any portion(s) designated by the Director.
- B. The use of any portion(s) by the City shall not be construed as, and will not constitute acceptance in any sense, of any portion(s) of the Work of the Contractor nor will such use trigger the running of any warranty and/or guarantee periods.
- C. All necessary repairs, renewals, changes, or modifications in the Work or any portion thereof so used, not due to ordinary wear and tear, but due to defective materials or workmanship, the operations of the Contractor, or any other cause, shall be made at the expense of the Contractor.
- D. The use of any portion(s) by the City shall not relieve the Contractor of any of his/her responsibilities or liabilities under the Contract nor constitute a waiver by the City of any of the conditions thereof. Said use shall not cancel liquidated damages as of the first date of use, or any continuance thereof, nor impair, reduce, or change the amount of liquidated damages.

2.11 COOPERATION WITH OTHER WORK FORCES

- A. The City reserves the right to perform other Work at or near the site at any time by the use of its own forces or other contractors.
- B. Other contractors, other utilities and public agencies or their contractors, other City contractors, and City personnel may be working in the vicinity during the project construction period. There may be some interference between these activities and the Work under the Contract Documents. The Contractor shall cooperate and coordinate his/her Work with that of other Work forces to assure timely Contract completion.

2.12 AGREEMENTS WITH PROPERTY OWNERS

Agreements with property owners for spoiling excavated material, storing materials, or other purpose related to the Work shall be made in writing and a copy submitted to the Director for his/her information. All storage charges shall be at the Contractor's sole expense.

2.13 PROTECTION OF PROPERTY

All public and private property, pavement or improvement, shall be safely guarded from damage or loss in connection with this Contract by the Contractor at all times. Should any facility, structure, or property be damaged during operations of the Contractor, he/she shall immediately notify the property owners or authorities. All damages and losses incurred shall be paid by the Contractor.

2.14 CONTRACTOR'S RESPONSIBILITIES FOR LOSSES OR LIABILITIES

- A. Risk of Loss:

Except as otherwise provided in the Contract Documents and except as to the cost of repair or restoration of damage to the Work caused by Force Majeure, the Contractor shall bear all losses resulting to him/her on account of the amount or character of the Work, or from any unforeseen obstructions or difficulties which may be encountered, or from any encumbrances on the line of the

Work, or because the nature of the ground in or on which the Work is done is different from what is assumed. The Contractor shall bear the risk for any City equipment, material, or supplies with which he/she has been entrusted.

B. Materials and Facilities:

The Contractor shall be responsible for materials and facilities as hereinafter provided and in the event of his/her failure to carry out said responsibilities, the same may be carried out by the City at the expense of the Contractor:

1. The Contractor shall be responsible for any materials so furnished and for the care of all Work until its completion and final acceptance, and he/she shall at his/her own expense replace damaged or lost materials and repair damaged parts of the Work.
2. The Contractor shall protect City facilities from damage resulting from his/her Work. City facilities damaged by, or as a result of, the Contractor's Work under this Contract shall be repaired or replaced, as directed by the Director, at the Contractor's expense.
3. The Contractor shall remove from the vicinity of the completed Work all buildings, rubbish, unused material, concrete forms, and other materials belonging or used under his/her direction during construction. If Contractor fails to completely remove such items within a reasonable time the City may do so at the Contractor's expense.

C. Laws and Regulations:

1. The Contractor shall obey all laws, ordinances, and regulations in any manner affecting those engaged or employed on the Work, or the materials used in the Work, or in any way affecting the conduct of the Work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. If any discrepancy or inconsistency should be discovered in this Contract, or in the Drawings or Specifications herein referred to, in relation to any such law, ordinance, regulation, order, or decree, he/she shall forthwith report the same in writing to the Director.
2. Contractor shall, at all times, cause all his/her agents and employees to observe and comply with all such applicable laws, ordinances, regulations, orders, and decrees in effect or which may become effective before Final Completion of this Contract.
3. Nothing in the Contract Documents shall be construed to permit Work not conforming to such laws, ordinances, and regulations. If the Contractor ascertains at any time that any requirement of this Contract is at variance with such applicable law requirement, he/she shall promptly notify the Director.
4. If such applicable law requirement was not in effect on the date of submission of bids, any necessary adjustment of the Contract price shall be made as provided in Article 6 (changes clause) of the General Conditions. If such applicable law requirement was in effect on said date of bid submission, no adjustment of Contract price will be considered.
5. The Contractor, at his/her own expense, shall pay all taxes properly assessed against his/her equipment, materials, or property used or required in connection with the Work.

2.15 WARRANTY AND CORRECTIONS

A. **Warranty**

1. Warranty. The Contractor warrants to the City that: (i) materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents; (ii) the Work will be of good quality and free from defects; (iii) the Work will conform to the requirements of the Contract Documents; and (iv) Contractor will deliver the Project free of stop payment notice claims. Work not conforming to these requirements, including substitutions not properly accepted by the City, will be deemed defective. The Contractor's warranty excludes improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the City, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the correction obligation of Paragraph 2.04 herein.
2. Overlap. Where any warranties provided under the Contract Documents overlap, conflict, or are duplicative, Contractor will be bound by the more stringent requirements.
3. Procurement and Assignment of Warranties: Contractor shall obtain in the name of City, or transfer or assign to City or City's designee prior to the time of Final Completion of the Work, any and all warranties or guarantees which Contractor is required to obtain pursuant to the contract Documents and which Contractor obtained from any other person or entity other than Contractor including, but not limited to, Subcontractors and manufacturers, and further agrees to perform the Work in such a manner so as to preserve any and all such warranties. Contractor shall secure written warranties from all Subcontractors in the form approved by City. Contractor and its Subcontractors shall offer any warranty upgrades or extensions that are offered by manufacturers of any equipment or system installed in the Work to the City. Contractor shall deliver to City all warranty and guarantee documents and policies.
4. Survival of Warranties: The provisions of Paragraph 2.15 will survive Contractor's completion of the Work or termination of Contractor's performance of the Work.

B. **Correction of Work**

1. Before or After Final Completion. The Contractor shall promptly correct Work rejected by the City or City's designee, as failing to conform to the requirements of the Contract Documents, whether discovered before or after Final Completion and whether or not fabricated, installed, or completed. Costs of correcting such rejected Work, including additional testing, inspections, and compensation for the City's services and expenses made necessary thereby, will be at the Contractor's expense within the Contract Price.
2. After Final Completion.
 - a. In addition to the Contractor's warranty obligations under Paragraph 2.15-A, if, within one (1) year after the date of Final Completion of the Work or within the time period established by any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall commence correction or replacement of such Work within forty-eight (48) hours after receipt of written notice from the City to do so. The Contractor shall perform such

corrective work without charge or cost to the City after Final Completion of the Work. The City shall give such notice promptly after discovery of the condition.

b. If the Contractor fails to commence correction or replacement of non-conforming Work within forty-eight (48) hours after receipt of written notice, the City will proceed to have defects repaired or replaced at the expense of the Contractor and its Performance Bond surety, plus fifteen percent (15%) for the City's overhead and administrative expense. The City may charge such costs against any payment due Contractor. If, in the opinion of the City, defective work creates a dangerous or hazardous condition or requires immediate correction or attention to prevent further loss to the City or to prevent interruption of operations of the City, the City may take immediate action, give notice, make such correction, or provide such attention and the cost of such correction or attention will be charged against the Contractor. Such action by the City will not relieve the Contractor of the warranties provided in this Article or elsewhere in the Contract Documents.

3. Replacement or Removal of Defective or Unauthorized Work. The Contractor shall remove from the Site and replace those portions of the Work which are not in accordance with the requirements of the Contract Documents in a manner acceptable to and as ordered by the Director. No compensation shall be allowed for such removal or replacement. Director shall have authority to cause defective work to be remedied, removed or replaced and to deduct the costs from monies due or to become due to the Contractor.

4. Destruction or Damage. The Contractor shall bear the cost within the Contract Price of correcting destroyed or damaged construction, whether completed or partially completed, of the City or Separate Contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

5. No Limitation. Nothing contained in Paragraph 2.15-B will be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the one-year period for correction of Work as described in Paragraph 2.15-B relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

2.16 CLEANING AND ENVIRONMENTAL CONTROLS

The Contractor, Subcontractors and employees shall comply with all litter and pollution laws and it shall be the responsibility of the Contractor to insure compliance. The Contractor shall do all of the following:

- A. Maintain the Site free of waste materials, debris, and rubbish. Maintain Site in a clean and orderly condition and Remove waste materials, debris and rubbish from site and dispose off-site legally.
- B. Contractor shall maintain at their disposal any and all equipment necessary to prevent and remediate any sanitary sewer overflow arising out of the Work. In addition, the Contractor shall furnish and operate a self-loading motor sweeper with spray nozzles as directed by the Director to maintain the affected areas in a condition of cleanliness acceptable to the City at all locations affected by the

Contractor's operation. For purposes of this Paragraph, the affected areas includes the Site as well as all haul routes to and from the project Site and all areas of construction and restoration which have not been completed. The Contractor shall not proceed with Work until affected areas are clean to the satisfaction of the Director.

- C. The Contractor shall take appropriate action to insure that no dust originates from the project site.
- D. Any equipment or vehicles driven and/or operated within or adjacent to a street gutter, storm drain, runoff conveyance or ocean shall be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.
- E. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction, or associated activity or whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into waters of the State. When operations are completed, any excess materials or debris shall be removed from the Work area. The Contractor shall comply with Glendale Municipal Code Section 13.42.030 (c).

2.17 WATER POLLUTION CONTROL

This project is a maintenance project and is exempt from the Construction Activities Storm Water General Permit from the State Water Resources Control Board. The Contractor shall comply with subsection A below (subsection B is not applicable). The contractor shall submit a Best Management Practices Plan to the City for review and approval. No submittal or reporting to the State will be required. The Contractor may still be liable for fines should they disregard the BMP Plan or not remedy any hazardous conditions as directed.

- A. Water Quality Protection Requirements for Construction Projects with Less than One (1) Acre of Disturbed Soil.

All construction projects, regardless of size, will be required to implement best management practices (BMPs) necessary to reduce pollutants to the Maximum Extent Practicable (MEP) to meet the minimum water quality protection requirements as defined in Table 2-1.

Table 2-1 Minimum Water Quality Protection Requirements for Construction Projects		
Category	Minimum Requirements	BMPs
1. Sediment Control	Sediments generated on the project site shall be retained using adequate Treatment Control or Structural BMPs.	Sediment Control
2. Construction Materials Control	Construction-related materials, wastes, spills or residues shall be retained at the project site to avoid discharge to streets, drainage facilities, receiving waters, or adjacent properties by wind or runoff. Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project sites.	Site Management; Material and Waste Management

3. Erosion Control	Erosion from slopes and channels shall be controlled by implementing an effective combination of BMPs, such as the limiting of grading scheduled during the wet season; inspecting graded areas during rain events; planting and maintenance of vegetation on slopes; and covering erosion susceptible slopes.	Erosion Control
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Please refer to the California Stormwater Quality Association’s Construction Handbook (available on their website www.cabmphandbooks.com) for further information regarding the BMPs listed in Table 2-1.

B. Water Quality Protection Requirements for Construction Projects with One (1) Acre (or greater) of Disturbed Soil

In addition to the minimum BMPs required in Paragraph A, all construction projects where at least one (1) acre of soil will be disturbed, construction activity that results in land surface disturbances of less than one acre if the activity is part of a larger common plan of development, or the sale of one or more acres of disturbed land surface requires a Construction Activities Storm Water General Permit (2009-0009-DWQ Permit).

Prior to commencement of construction activities, the Permit Registration Documents (PRDs) must be submitted electronically in the Storm Water Multi-Application Report Tracking System (SMARTS) (<http://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.jsp>). PRDs consist of the Notice of Intent, Risk Assessment, Post-Construction Calculations, a Site Map, the Storm Water Pollution Prevention Plan (SWPPP), a signed certification statement by the Legally Responsible Person (LRP), and the first annual fee (see http://www.swrcb.ca.gov/water_issues/programs/stormwater/construction.shtml for more information). A Waste Discharger Identification (WDID) will be emailed to the LRP after the PRDs have been submitted and are deemed complete. Construction activities cannot begin until a WDID is issued by the State Water Resources Control Board. Contractor shall bear the costs of any delays to the Project caused by a delay in obtaining its WDID.

The SWPPP shall include:

1. The name, location, period of construction, and a brief description of the Project;
2. Contact information for the City and Contractor;
3. The building permit number for the Project;
4. The grading permit number for the Project (where applicable);
5. A list of major construction materials, wastes, and activities at the Project site;
6. A list of best management practices to be used to control pollutant discharges from major construction materials, wastes, and activities;
7. A site plan (construction plans may be used) indicating the selection of BMPs and their location where appropriate;
8. Non-storm water discharges, their locations, and the BMPs necessary to prevent the discharge;

9. A maintenance and self-inspection schedule of the BMPs to determine the effectiveness and necessary repairs of the BMPs; and
10. A certification statement that all required and selected BMPs will be effectively implemented.

Within 7 days after the City awards the Contract, the Contractor shall submit seven (7) copies of the proposed SWPPP to the City. The City shall review the SWPPP within 14 days of receipt of the plan. If revisions are required, the Contractor shall revise and re-submit the document within 7 days of its receipt of the City's comments. The City shall then have 7 days to consider the revisions made by the Contractor and approve the SWPPP.

The Contractor shall maintain a minimum of two readily accessible copies of the SWPPP at the Project site. The SWPPP shall be made available upon request of a representative of the Los Angeles Regional Water Quality Control Board (LARWQCB) or the U.S. Environmental Protection Agency (U.S. EPA). Requests by environmental groups and the public shall be directed to the City.

C. Best Management Practices

The objective of the SWPPP is to identify potential sources of pollution that may reasonably affect the quality of storm water discharge associated with construction activities. The plan will describe and ensure the implementation of Best Management Practices (BMPs) which will be used to reduce pollutants in the storm water discharges from the construction site. A Best Management Practice is defined as any program, technology, process, operating method, measure, or device that controls, prevents, removes, or reduces pollution. The Contractor shall select appropriate BMPs from the California Stormwater BMP Handbook, Municipal, Industrial, New Development, and Construction Volumes (www.cabmphandbooks.com) in conjunction with all activities and construction operations:

1. Construction Practices (NS2, NS3, NS4, and NS6)
2. Material and Waste Management (WM01, WM02, and WM04)
3. Vehicle and Equipment Management (NS8, NS9, and NS10)
4. Physical Stabilization (EC7, EC12, NS4, TC1, and TC2)
5. Sediment Control Practices (SE1, SE9, SE8, SE10, SE3, and SE2)

Copies of the California Stormwater BMP Handbooks may be obtained from:

California Stormwater Quality Association
P.O. Box 2313
Livermore, CA 94551
www.cabmphandbooks.com

Cashier
Los Angeles County DPW
900 South Fremont Avenue
Alhambra, CA 91803
Tel. No. (626) 458-6959

D. Implementation

The Contractor will be responsible throughout the duration of the Project for the installation, monitoring, inspection and maintenance of the BMPs included in the SWPPP and for removing and

disposing of temporary BMPs. The Contractor may be required to implement additional BMPs as a result of changes in actual field conditions, contractor's activities, or construction operations.

The Contractor shall demonstrate the ability and preparedness to fully deploy these SWPPP control measures to protect soil-disturbed areas of the project site before the onset of precipitation and shall maintain a detailed plan for the mobilization of sufficient labor and equipment to fully deploy these control measures.

Throughout the winter season, active soil-disturbed areas of the project site shall be fully protected at the end of each day with these control measures unless fair weather is predicted through the following day. The Contractor shall monitor daily weather forecasts. If precipitation is predicted prior to the end of the following workday, construction scheduling shall be modified, as required, and the Contractor shall deploy functioning control measures prior to the onset of the precipitation.

The City may order the suspension of construction operations which are creating water pollution if the Contractor fails to conform to the requirements of Paragraph 2.17, "Water Pollution Control." Unless otherwise directed by the City, the Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of Work.

E. Sewage Spill Prevention

The Contractor's attention is directed to the sewer bypass operation required during any sewer construction (Standard Specification for Public Works Construction Section 500.1.2.4).

The Contractor shall exercise extraordinary care to prevent the cause of events that may lead to a sewage spill. In the event of a sewage spill, the Contractor shall make arrangements for an emergency response unit comprised of emergency response equipment and trained personnel to be immediately dispatched to the project site.

The Contractor shall be fully responsible for preventing and containing sewage spills as well as recovering and properly disposing of raw sewage. In addition, the Contractor is responsible for any fines, penalties and liabilities arising from negligently causing a sewage spill. Any utility that is damaged by the contractor shall be immediately repaired at the Contractor's expense. The Contractor shall take all measures necessary to prevent further damage or service interruption and to contain and clean up the sewage spills.

F. Sewage Spill Telephone Notification

Should a sewage spill occur, the Contractor shall immediately report the incident to either one of these two City Departments:

Sewer Maintenance Services (818) 548-3950

Fire Department Dispatch Center 911

The Contractor is encouraged to obtain telephone numbers, pager numbers and cellular telephone numbers of City representatives such as Project Managers and Inspectors. However, if these City representatives are not available, then the Contractor shall immediately call:

Wastewater Maintenance Superintendent (818) 550-3413

Safety Administrator (818) 548-2169

The City will notify the following:

Los Angeles County Department of Health Services	(213) 974-1234
Los Angeles County Department of Public Works	(800) 303-0003
Regional Water Quality Control Board	(213) 576-6749 or 6600
State Office of Emergency Services	(800) 852-7550

(For any significant volume of material that entered the storm drain or receiving water)

G. Sewage Spill Written Notification

The Contractor shall prepare and submit a written report within three (3) Working Days from the occurrence of a spill to the City, (Attention: Project Manager). This report shall describe the following information related to the spill:

1. The exact location on the Thomas Guide map;
2. The nature and volume;
3. The date, time and duration;
4. The cause;
5. The type of remedial and/or cleanup measures taken and date and time implemented;
6. The corrective and preventive action taken; and
7. The water body impacted and results of necessary monitoring.

H. Enforcement

The City is subject to enforcement actions by the LARWQCB, U.S. EPA, environmental groups and private citizens. The Contractor shall indemnify, defend and hold City, its officers, agents and employees harmless from Contractor's failure to comply and/or fulfill the requirements set forth in this Paragraph 2.17. Contractor shall be responsible for all costs and liabilities imposed by law as result of Contractor's failure to comply and/or fulfill the requirements set forth in this Paragraph 2.17. The costs and liabilities include, but are not limited to fines, penalties and damages whether assessed against the City or the Contractor.

In addition to any remedy authorized by law, any money due to the Contractor under this contract shall be retained by the City until all costs and liabilities imposed by law against the City or Contractor have been satisfied.

I. Maintenance

The Contractor shall ensure the proper implementation and functioning of BMP control measures and shall regularly inspect and maintain the construction site for the BMPs identified in the SWPPP. The Contractor shall identify corrective actions and time frames in order to properly address any damaged measure, or reinstate any BMPs that have been discontinued.

If the City identifies a deficiency in the deployment or functioning of identified control measures, the deficiency shall be corrected by the Contractor immediately or by a later date and time if agreed to

by Director and if requested in writing, but not later than the onset of the subsequent precipitation events. The correction of deficiencies shall be at no additional cost to the City.

J. Payment

All costs involved in the implementation of the SWPPP, including furnishing all labor, materials, tools, equipment and all incidentals; and for doing all the work involved in installing, constructing, maintaining, removing, and disposing of control measures, except those that were installed as a part of another structure, shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefor.

2.18 SOLID WASTE DISPOSAL AND DIVERSION

The Contractor shall submit to the Director the following summary of solid waste generated by the Work, disposed in Class III landfills, or diverted from disposal through recycling. Report disposal in inert fill separately. This form must be accompanied by legible copies of weight tickets, receipts, or invoices that specifically identify the project generating the material. Said documents must be from recyclers and/or disposal site operators that are acceptable to the Director. Further, the documents must be submitted to the Director with each application for progress payment. Failure to submit the form and its supporting documentation will render the application for progress payment incomplete and delay progress payments.

SUMMARY OF SOLID WASTE DISPOSAL AND DIVERSION

Project Title: _____, Specification No. _____

Type of Material	(a) Disposed in Class III Landfills	(b) Diverted from Class III Landfills by Recycling	(c) [Leave This Column Blank]	(d) Disposed in Inert Fills
	Tons/CY	Tons/CY	Tons/CY	Tons/CY
Asphalt				
Concrete				
Metal				
Other Segregated Materials (Describe):				
Miscellaneous Construction Waste				
Total				

Form to be submitted to Integrated Waste

SIGNATURE: _____

TITLE: _____

DATE: _____

2.19 RECYCLED, REUSABLE AND RECYCLABLE PRODUCTS

The Contractor is encouraged to support the City in recycling efforts. It is City policy that all City Departments and Sections shall utilize recycled, reusable, and recyclable products to the maximum extent practicable. Preference will be given to recycled, reusable and recyclable products, over non-recycled, non-reusable and non-recyclable products, fitness and quality being equal, whenever available at no more than the total cost of non-recycled, non-reusable and non-recyclable products.

Contractors are encouraged to propose recycled, reusable and recyclable products for use by the City. Those items should be clearly identified. The City may require further information or documentation to ascertain the suitability/appropriateness of a proposed product.

All Contractors that provide goods, supplies, or equipment to the City that contain recycled material shall provide in writing to the Director the following information:

- A. The minimum, if not the exact, percentage of recycled material, both post-consumer waste and/or secondary waste, in the goods, supplies, or equipment; and
- B. The quantity and total dollar amount of the goods, supplies or equipment provided to the City with recycled material content.

[END OF ARTICLE]

**ARTICLE 3
TIME OF COMMENCEMENT AND COMPLETION**

3.01 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

A. Notice to Proceed

The Contractor is not authorized to perform any Work the Contract Documents until he/she has received from the City an official notification to commence Work. The date on which the notification is received by the Contractor is herein referred to as the Notice to Proceed. The Contractor shall commence Work on the Date of Commencement established in the Notice to Proceed is issued. The Notice to Proceed shall be issued after the Contract is properly executed, bonds are furnished and approved, and insurance has been submitted and approved.

B. Prosecution of the Work

Work shall be continued at all times with such force and equipment as will be sufficient to complete it within the specified time. The Contractor expressly proposes that he/she has taken into consideration and made allowances for all ordinary delays and hindrances to the Work to be performed and that he/she will complete the Work within the specified time.

C. Required Contract Completion

Time is of the essence in the completion of this Contract. By executing the Contract, Contractor confirms that the Contract Time established in Article 4 of the Contract is a reasonable period for performing the Work.

3.02 CITY'S DISCRETION TO EXTEND CONTRACT TIME

In the event the Work required hereunder is not satisfactorily completed in all parts and in compliance with the Contract Documents, City shall have the right, in its sole discretion, to increase the number of Working Days or not, as may seem best to serve the interest of City. A change order extending the Contract Time only will be issued by the City should the City decide to increase the number of Working Days.

3.03 SUBSTANTIAL COMPLETION

A. Contractor Request for Inspection and Punch List

When the Contractor considers that it has achieved Substantial Completion of the Work, or designated portion thereof, Contractor shall prepare and submit to the Director a request for inspection and a comprehensive punch list of items to be completed or corrected prior to Final Payment. Failure to include an item on such punch list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

B. City Inspection

Upon receipt of the Contractor's punch list, the Director will make an inspection to determine whether the Work or designated portion thereof is Substantially Complete. If the inspection discloses any item, whether or not included on the Contractor's punch list, which is not sufficiently

complete in accordance with the Contract Documents so that the City can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before City's issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by City. The Contractor shall then submit a request for another inspection by City to determine Substantial Completion.

C. Certificate of Substantial Completion

When the Work or designated portion thereof is substantially complete, the Director will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the City and Contractor for security, maintenance, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall finish all items on the Contractor's punch list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work. Contractor shall deliver to City all warranty and guarantee documents and policies.

3.04 DELAYS AND EXTENSIONS OF TIME FOR CONTRACTOR

- A. The Contractor shall take reasonable precautions to foresee and prevent delays to the Work. In the event of any delay to the Work, the Contractor shall revise his/her sequence of operations, to the extent possible under the terms of the Contract, to offset the delay.
- B. If any delay to the Work is caused by circumstances within the Contractor's control, it is not excusable and not compensable, and the Contractor will not be entitled to any extension of time or to any other compensation for damages resulting directly or indirectly therefrom.
- C. If any delay having a direct effect on the Work is caused by circumstances beyond the control of the Contractor except for causes of delay specified in Paragraph 3.04-D., such delay may be excusable and may entitle the Contractor to an equivalent extension of time, but not to any other compensation. Excusable but not compensable causes include but are not limited to labor disputes, weather conditions unfavorable for prosecution of the Work, and force majeure.
- D. If any delay having a direct effect on the Work is caused by failure of the City to provide information as specified, or necessary instructions for carrying on the Work, or to provide the necessary right of way or site for installation, or failure of a utility to remove or relocate an existing facility such delay may be compensable and may entitle the Contractor to an equivalent extension of time, and to compensation for damages resulting directly from any of the causes of delay specified in this Paragraph.
- E. The Contractor shall notify the Director in writing of any delay having a direct effect on the Work and the causes thereof within seven (7) calendar days from the beginning of such delay.
- F. Any claim for an extension of time or for compensation for damages resulting from delay shall be made in writing to the Director not more than thirty (30) calendar days after the ending of such delay. The Contractor may request additional compensation and/or time arising from a delay but not for instances that occurred more than seven (7) calendar days prior to the initial notice to the Director. In addition to the content of claim requirements in Paragraph 7.10 below, the Contractor shall provide a written report evaluating the impact of the delay which shall include, at a minimum, all of the following:

1. A narrative description of the delay and its impact on the critical path to Substantial Completion of the Work or a portion of the Work designated by City;
2. A CPM schedule Fragnet;
3. A detailed breakdown of the Allowable Costs, if any, sought by Contractor due to the delay;
4. The number of days of extension sought by Contractor as an adjustment to the Contract time;
5. A statement that Contractor has complied with the requirements of the General Conditions for written notice of delays, along with the dates and copies of such notices;
6. The measures taken by Contractor and Subcontractors to prevent or minimize the delay; and
7. The Contactor's recommendations for reordering or re-sequencing the Work to avoid or minimize further delay.

No extension of time or compensation for damages resulting from delay will be granted unless the delay affects the timely completion of the overall Work under the Contract or the timely completion of a portion of the Work for which a time of completion is specified.

- G. The Director will investigate the facts and ascertain the extent of the delay, and his/her findings thereon shall be final and conclusive.
- H. Failure of the Contractor to give written notice of a delay, or to submit or document a claim for an extension of time or for damages resulting from delay in the manner and within the times stated above shall constitute a waiver of all claims thereto.
- I. When a Contractor experiences two concurrent delays, one compensable and the other excusable, no compensation other than an extension of time will be allowed.
- J. An extension of time must be approved by the Director to be effective, but an extension of time whether with or without consent of the sureties, shall not release the sureties from their obligations, which shall remain in full force until the discharge of the Contract.

3.05 CLIMATIC CONDITIONS

- A. Rain Days/Severe Inclement Weather. The Contractor shall account for **five (5) Work Days** for which the effects of rainfall/inclement weather are expected to prevent Work in the Construction Schedule as set forth in **Article 4** herein and shall obtain City's approval of Contractor's use of each Rain Day before suspending Work on any Work Day. The Director may suspend the Work whenever weather conditions or conditions resulting from inclement weather are unfavorable for the prosecution of the Work. The delay caused by such suspension may entitle the Contractor to an extension of time but not to any other compensation.
- B. If the Contractor believes that Work should be suspended under this Paragraph 3.05, he/she may request such suspension. The delay caused by such suspension may entitle the Contractor to an extension of time but not to any other compensation.

- C. No extension of time will be granted for suspension of Work unless the suspension affects the timely completion of all Work under the Contract or the timely completion of a portion of the Work for which a time of completion is specified. Determination that the suspension for inclement weather conditions or conditions resulting from inclement weather affects timely completion and entitles the Contractor to an extension of time shall be made and agreed to in writing by the Director and the Contractor on each day that Work is suspended. In the event of failure to agree, the Contractor may protest under the provisions of Paragraph 7.07.
- D. If Work is suspended and an extension of time is granted under this Paragraph 3.05 the Contractor will be entitled to a one day extension of time for each day that he/she is unable to Work at least one-half of his/her current normal Work Day; and if the Work is suspended at the regular starting time on any Work Day and the Contractor's Workforce is dismissed as a result thereof, then he/she will be entitled to a one day extension of time whether or not conditions change thereafter and the major portion of the day is suitable for Work.

3.06 COMPLETION AND ACCEPTANCE

Upon request by the Contractor, the Director shall conduct a final inspection of the Work. If, in the Director's opinion, Final Completion has been achieved, the Director will accept the Work by issuing a "Notice of Completion" of the Work to the Contractor. Upon the issuance of the Notice of Completion the Contractor will be relieved from responsibility to protect the Work. Within fifteen (15) calendar days after issuing the Notice of Completion, the Director will record the Notice of Completion with the County Recorder.

3.07 LIQUIDATED DAMAGES

- A. Contractor and City agree to liquidate damages in the amount of **six thousand seven hundred dollars (\$6,700)** per Calendar day, with respect to Contractor's failure to achieve Substantial Completion of the Work within the Contract Time. The Parties intend for the liquidated damages set forth herein to apply to this Contract as set forth in Government Code Section 53069.85 and in Public Contract Code Section 7203. Contractor acknowledges and agrees that the liquidated damages are intended to compensate City solely for Contractor's failure to meet the deadline for Substantial Completion and shall not excuse Contractor from liability from any other breach, including any failure of the Work to conform to the requirements of the Contract Documents.
- B. In the event that Contractor fails to achieve Substantial Completion of the Work within the Contract Time, Contractor agrees to pay City the amount specified in the Contract form for each calendar day that Substantial Completion is delayed.
- C. Contractor and City acknowledge and agree that the foregoing liquidated damages have been set based on an evaluation of damages that the City will incur in the event of late completion of the Work. Contractor and City acknowledge and agree that the amount of such damages are impossible to ascertain as of the effective date hereof and have agreed to such liquidated damages to fix City's damages and to avoid later disputes. It is understood and agreed by Contractor that liquidated damages payable pursuant to this Construction Contract are not a penalty and that such amount are not manifestly unreasonable under the circumstances existing as of the effective date of this Construction Contract.
- D. It is further mutually agreed that City shall have the right to deduct liquidated damages against progress payments or retainage and that the City will issue a Construction Change Directive and reduce the Contract Sum accordingly. In the event the remaining unpaid Contract Sum is insufficient to cover the full amount of liquidated damages. Contractor shall pay the difference to City.

[END OF ARTICLE]

ARTICLE 4 CONSTRUCTION SCHEDULES

4.01 BASELINE PROJECT SCHEDULE

Within fourteen (14) calendar days after the City's Notice of Award of the Contract, Contractor shall submit a Baseline Project Schedule, in electronic format, showing in detail how the Contractor plans to execute and coordinate the Work.

A. Format

1. At a minimum, the Baseline Project Schedule activities shall be coded on a work discipline basis (in accordance with CSI format) and by geographic area or location on the Project. The Baseline Project Schedule shall include a detailed description of each activity code. The Baseline Project Schedule shall be based on and incorporate contract milestone and completion dates specified in the Contract Documents. It shall depict events, jobs, and their interrelationships and shall recognize the progress that must be made on one task before subsequent tasks can begin. The schedule shall be comprehensive and shall include all logical interdependencies and interactions required to perform the Work of the Project.
2. Overall time of completion and time of completion for each milestone shown on the Schedule shall adhere to the specified Contract Time, unless an earlier (advanced) time of completion is requested by Contractor, agreed to by the City and formalized by Change Order.
3. Contractor shall use the latest version of Microsoft Project or equivalent software agreed to by the parties.
4. The City will review the submitted Baseline Project Schedule for conformance with these scheduling requirements. Within fourteen (14) calendar days after receipt, the City will accept the proposed Baseline Project Schedule or will return it with comments. If the proposed Baseline Project Schedule is accepted by the City, it shall be deemed part of the Contract Documents. If the Baseline Project Schedule is not accepted by City, Contractor shall revise the Baseline Project Schedule, in accordance with the recommendations of the City, and re-submit same for acceptance, no later than seven (7) calendar days after receipt of said recommendation.
5. Acceptance of Baseline Project Schedule by City, failure to include an element of work, or inaccuracy in Baseline Project Schedule shall not relieve Contractor from the responsibility for accomplishing the Work in accordance with the Contract Documents.

B. Float

1. Critical Work activities are defined as Work activities which, if delayed or extended, will delay the scheduled completion of the milestones and/or time of completion. All other Work activities are defined as non-critical Work activities and are considered to have float. Float is defined as the time that a non-critical Work activity can be delayed or extended without delaying the scheduled completion of the milestones and/or time of completion. Float is considered a Project resource available to either party or both parties as needed. Once

identified, Contractor shall monitor, account for, and maintain float in accordance with Critical Path Methodology.

2. Delays of any non-critical Work shall not be the basis for an extension of Contract Time until the delays consume all float associated with that non-critical Work activity and cause the Work activity to become critical.
3. It is acknowledged that City-caused time savings (i.e., critical path submittal reviews returned in less time than allowed by the Contract Documents, approval of substitution requests which result in a savings of time for Contractor, etc.) create shared float. Accordingly, City-caused delays may be offset by City-caused time savings.

C. Early Completion

While the Contractor may schedule completion of the Project earlier than the date established by the Contract Documents, no additional compensation shall become due the Contractor for the use of float time between the Contractor's projected early completion date and the date for Substantial Completion established by the Contract Documents, unless an earlier (advanced) time of completion is requested by Contractor, agreed to by the City, and formalized by Change Order.

4.02 SCHEDULE UPDATES

- A. With each Application for Payment submitted by Contractor (other than the final Application for Payment), the Contractor shall submit to the City an updated Project Schedule (an electronic copy in a P3 backup file format) revised to indicate the Work completed, status of Work in progress, all progress slippages, corrective actions taken, or slippage carry-over, for all anticipated delays or difficulties, and all other information required to accurately present the actual status of the progress of the Work as of the date of the Application for Payment. If the Contractor does not submit an updated Project Schedule with an Application for Payment, City may withhold payment, in whole or in part, until the updated Project Schedule is submitted. In the event that an update to the Project Schedule indicates a delay to the Contract Time the Contractor shall propose an affirmative plan to correct each such delay, including overtime and/or additional labor, if necessary. In no event shall any Project Schedule update constitute an adjustment in the Contract Time, any deadline, or the Contract Sum unless any such adjustment is agreed to by the City and authorized pursuant to Change Order or Construction Change Directive.
- B. At no time shall historical data contained within the updated Project Schedule (i.e. completed activities) be removed and/or altered in any way. This historical data is to be preserved within each of the updated Project Schedules and submitted with the final schedule update to reflect the actual start and finish dates for each activity within the Schedule.
- C. Any work stoppages within individual work activities that exceed seven (7) calendar days in duration shall be clearly indicated within the updated Project Schedule. In cases where unplanned activity work stoppages exceed seven (7) calendar days activities shall be added to the Project Schedule to clearly indicate the work stoppage period and identify forecasted resumption and completion of the activity where work has stopped. Contractor shall clearly note all schedule revisions when Project Schedule updates are submitted, as required in Paragraph 4.02A above.

4.03 NONCOMPENSABLE EXTRAORDINARY MEASURES

- A. Should the City determine, in its sole judgment, that the performance of the Work has not progressed to the level of completion required by the Contract Documents, City shall have the right to order the Contractor to take corrective measures to expedite the progress of construction, at no additional cost to the City, including, without limitation, the following:
1. Working additional shifts of overtime.
 2. Supplying additional manpower, equipment, and/or facilities.
 3. Reschedule activities to maximize practical concurrence of accomplishment of activities.
 4. Submitting a Recovery Schedule discussed above, for resequencing performance of the Work or other similar measures.
 5. Any other actions that may be necessary to mitigate delays.
- B. Such Extraordinary Measures shall continue until the progress of the Work is no longer behind schedule and/or reaches the stage of completion required by the Contract Documents. Contractor shall not be entitled to an adjustment in the Contract Sum in connection with the performance of any such Extraordinary Measures required by the City under this Paragraph. The City may exercise the rights furnished the City pursuant to this Paragraph as frequently as the City deems necessary to ensure that the Contractor's performance of the Work will comply with the Contract Time or interim completion dates set forth in the Contract Documents. If Contractor or its Subcontractors fail to implement or commence Extraordinary Measures within forty-eight hours (48 hours) of City's written demand, City may, without prejudice to other remedies, take corrective action at the expense of the Contractor which shall reduce the Contract Sum accordingly.

4.04 CONDITION OF PAYMENT

Compliance by Contractor with the requirements of the Contract Documents pertaining to preparation, submission, revising and updating of the Schedule is a condition precedent to City's obligation to make payment to Contractor of any or all sums that might otherwise be due to Contractor in the absence of such noncompliance. Payment by City under circumstances in which City, for any reason, fails or elects not to assert its right to withhold payment for noncompliance with this Paragraph shall not be construed as a waiver of the right to withhold future payments on account of such noncompliance or any other noncompliance.

[END OF ARTICLE]

ARTICLE 5 SUSPENSION OR TERMINATION OF CONTRACT

5.01 TERMINATION BY THE CONTRACTOR

- A. Contractor shall have the right to terminate its performance of the Contract only upon the occurrence of one of the following:
1. The Work is stopped for a period of ninety (90) consecutive days through no act or fault of the Contractor, any Subcontractor, Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, due to:
 - a. the issuance of an order of a court or other public authority having jurisdiction; or
 - b. an act of government, such as a declaration of national emergency making material unavailable; and
 - c. Contractor has given City written notice within ten (10) calendar days of the occurrence of such ground for termination, then the Contractor may, upon thirty (30) additional calendar days written notice to City, unless the reason has theretofore been cured, terminate its performance of the Work.
 2. The Work is stopped for a period of 120 consecutive calendar days through no act or fault of Contractor, any Subcontractor, Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, because the City has persistently failed to perform any material obligation under the Contract Documents and fails to cure such default within ninety (90) calendar days after the receipt of notice from Contractor stating the nature of such default.
- B. If Contractor terminates its performance of the Contract in accordance with this Paragraph 5.01, the City shall pay Contractor for the Work executed through the date of termination as set forth in Paragraph 5.04-C below.

5.02 TERMINATION BY THE CITY FOR CAUSE

A. Grounds

The City shall have the right to terminate the Contractor's performance of the Contract, in whole or in part, without liability to City if:

1. Contractor fails promptly to begin the Work under the Contract Documents; or
2. Contractor refuses or fails to supply enough properly skilled workers or proper materials; or
3. Contractor fails to perform the Work in accordance with the Contract Documents, including conforming to applicable standards set forth therein in constructing the Project, or refuses to remove and replace rejected materials or unacceptable Work; or

4. Contractor discontinues the prosecution of the Work (exclusive of work stoppage: (a) due to termination by City; or (b) due to and during the continuance of a Force Majeure event or suspension by City); or
5. Contractor fails to resume performance of Work which has been suspended or stopped, within a reasonable time after receipt of notice from City to do so or (if applicable) after cessation of the event preventing performance; or
6. Any representation or warranty made by Contractor in the Contract Documents or any certificate, schedule, instrument, or other document delivered by Contractor pursuant to the Contract Documents shall have been false or materially misleading when made; or
7. Contractor fails to make payment to Subcontractors or Material Suppliers for materials or labor in accordance with the respective Contract Documents and applicable law; or
8. Contractor disregards laws, ordinances, or rules, regulations, or orders of a public authority having jurisdiction; or
9. Contractor is guilty of breach of a provision of the Contract Documents; or
10. Contractor becomes insolvent, is adjudicated bankrupt, or makes a general assignment for the benefit of creditors and fails to provide City with adequate assurances of Contractor's ability to satisfy its contractual obligations.

A receiver, trustee, or other judicial officer shall not have any right, title, or interest in or to the Contract. Upon that person's appointment, City has, at its option and sole discretion, the right to immediately cancel the Contract and declare it null and void.

B. City's Rights.

When any of the reasons specified in Paragraph 5.02-A exist, the City may, in addition to and without prejudice to any other rights or remedies of the City, and after giving the Contractor five (5) calendar days written notice, terminate Contractor's performance of the Work, in whole or in part, and may:

1. Take possession of the site and all materials, equipment, tools, construction equipment, and machinery thereon owned by the Contractor;
2. Withhold from Contractor amounts unpaid hereunder and to offset such amounts against damages or losses incurred by City;
3. Accept assignment of subcontracts from Contractor, at the sole discretion of City, and
4. Finish the Work by whatever reasonable method the City may deem expedient.

Upon request of the Contractor, the City shall furnish to the Contractor a detailed accounting of the costs incurred by the City in finishing the Work.

C. Costs

If City's costs to complete and damages incurred due to Contractor's default exceed the unpaid Contract balance, the Contractor shall pay the difference to the City.

D. Wrongful Termination

If it has been adjudicated or otherwise determined that City has wrongfully terminated the Contractor for cause, then said termination shall be deemed converted to a termination for convenience as set forth in Paragraph 5.04 and Contractor's remedy for wrongful termination in such event shall be limited to the recovery of the payments permitted for termination for convenience as set forth in Paragraph 5.04.

5.03 PARTIAL DELETION OR SUSPENSION OF WORK BY THE CITY

- A. Contractor agrees that the City may determine whether any or all of the Work described in the Contract Documents shall be deleted or performance suspended without electing to terminate the Contractor's performance under the Contract and without any penalty being incurred by the City.
- B. Any such partial deletion or suspension of the Work shall in no way void or invalidate the Contract nor shall it provide Contractor with any basis for seeking payment from City for Work deleted or suspended except to the extent such Work has already been performed and is otherwise compensable under the Contract.
- C. The City shall have the right to later have any such suspended or deleted Work performed by Contractor or others without any penalty to the City.
- D. In the event of any partial or complete deletion or suspension of Work, the City shall furnish Contractor with prompt written notice thereof, and the City shall be entitled to take possession of and have as its property all Record Documents, Accounting Records, and other data prepared by Contractor or its Subcontractors.
- E. Suspension for Convenience.
1. The City may at any time and from time to time, without cause, order the Contractor, in writing, to suspend, delay, or interrupt the Work in whole or in part for such period of time as the City may determine. Such order shall be specifically identified as a "Work Suspension Directive" under this section.
 2. Upon receipt of a Work Suspension Directive, Contractor shall, at the City's expense, comply with its terms and take all reasonable steps to minimize costs allocable to the Work covered by the Work Suspension Directive during the period of Work stoppage.
 3. Within the period of suspension, or such extension to that period as is agreed upon by Contractor and the City, the City shall either cancel the Work Suspension Directive or delete the Work covered by such Work Suspension Directive by issuing a Change Order or Construction Change Directive.
 4. If a Work Suspension Directive is cancelled or expires, Contractor shall continue the Work. A Change Order or Construction Change Directive will be issued to cover any adjustments of the Contract Sum and Contract Time necessarily caused by such suspension. No adjustment shall be made to the extent:
 - (a) That performance is, was, or would have been so suspended, delayed, or interrupted by another cause for which the Contractor is responsible; or

- (b) That an equitable adjustment is made or denied under another provision of the Contract.

F. Suspensions for Cause

City has the authority by written order to suspend the Work, in whole or in part, without liability to City for Contractor's failure to:

- 1. Correct conditions unsafe for the Project personnel or general public, or
- 2. Carry out the Contract; or
- 3. Carry out orders of City.

G. Responsibilities of Contractor During Suspension Periods

During periods that Work is suspended, Contractor shall continue to be responsible for the Work and shall prevent damage or injury to the Project, provide for drainage, and shall erect necessary temporary structures, signs or other facilities required to maintain the Project and continue to perform according to the Contract Documents.

5.04 TERMINATION BY THE CITY FOR CONVENIENCE

A. Grounds

Without limiting any rights which City may have by reason of any default by Contractor hereunder, City may terminate Contractor's performance of the Contract, in whole or in part, at any time, for convenience upon fifteen (15) calendar days written notice to Contractor.

B. Contractor Actions

Upon receipt of such notice, Contractor shall perform the duties required by Paragraph 5.05 below. At the election of and as directed by the City, any or all of the subcontracts and purchase orders entered in to by Contractor prior to the effective date of termination shall be terminated or shall be assigned to City.

C. Compensation

- 1. If the Parties are unable to agree on the amount of a termination settlement, the City shall pay the Contractor the following amounts:
 - a. For Work performed before the effective date of termination, the total (without duplication of any items) of:
 - i. The cost of the Work; and
 - ii. A sum, as overhead and profit on the cost of the Work, determined by the City to be fair and reasonable. In no event shall Contractor be entitled to recover overhead or profit on Work not performed.
 - b. The reasonable costs of settlement of the Work terminated, including:

- i. Accounting, clerical, and other expenses reasonably necessary for the preparation of termination settlement proposals and supporting data, if any; and
 - ii. Storage, transportation, and other costs reasonably necessary for the preservation, protection, or disposition of inventory.
- 2. Such payment shall be Contractor's exclusive remedy for termination for convenience and will be due and payable on the same conditions as set forth for final payment to the extent applicable. Upon receipt of such payment, the Contractor and City shall have no further obligations to each other except for Contractor's obligations with respect to warranties, representations, indemnity, maintenance of insurance, and other obligations that survive termination or Final Completion as provided for herein.
- 3. It is understood and agreed that no fee, anticipated profit, compensation for lost opportunity costs, or other compensation or payment of any kind or character shall be due or payable for unperformed Work regardless of the basis of termination and the inclusion of this provision within this subparagraph shall in no way limit its application to termination under this Paragraph.
- 4. Contractor agrees that each of its subcontracts will reserve for the Contractor the same right of termination for convenience provided by this Paragraph 5.04.

D. No Consequential Damages

Under no circumstances shall Contractor be entitled to anticipatory or unearned profits or consequential or other damages as a result of a termination or partial termination under this Article 5. The payment to Contractor determined in accordance with this Article constitutes Contractor's exclusive remedy for a termination hereunder.

5.05 CONTRACTOR'S DUTIES UPON TERMINATION FOR CAUSE OR CONVENIENCE

- A. If the City terminates Contractor's performance of Work under the Contract, for cause or convenience or if Contractor terminates a Subcontractor with the City's approval, Contractor shall:
 - 1. Cease performance of the Work to the extent specified in the notice;
 - 2. Take actions necessary or that the City may direct, for the protection and preservation of the Work;
 - 3. Settle outstanding liabilities, as directed by City;
 - 4. Transfer title and deliver to City Work in progress, specialized equipment necessary to perform the Work;
 - 5. Submit all Record Documents, Accounting Records and other data prepared pursuant to the Contract by Contractor and/or its Subcontractors, as applicable, to the City with fifteen (15) calendar days after the City's notice of termination in an organized, usable form, in both hard copy and electronic/digital form, with all items properly labeled to the degree of detail specified by the City; and

6. Except for Work directed by City to be performed prior to the effective date of termination stated in the notice, incur no further costs or expenses and enter into no further subcontracts and purchase orders.
- B. No compensation shall be due Contractor, if any, until Contractor complies with the requirements of this Paragraph.

[END OF ARTICLE]

ARTICLE 6 CHANGES

6.01 CITY'S RIGHT TO ORDER CHANGES

The City, without invalidating the Contract, may authorize changes in the Work consisting of additions, deletions, or other revisions, with the Contract Sum and Contract Time being adjusted accordingly, if necessary. All such changes in the Work shall be authorized by Change Order or Construction Change Directive and Contractor shall perform such changes in the Work according to the applicable requirements of the Contract Documents.

6.02 NO ESTOPPEL

Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly and diligently with the change, unless otherwise provided in the Change Order or Construction Change Directive. It is of the essence to this Contract that all scope changes in the Work that form the basis of an adjustment of the Contract Sum or Contract Time must be authorized in advance in writing through either a Change Order or Construction Change Directive. A change in the Contract Sum or the Contract Time shall be accomplished only by Change Order or Construction Change Directive. Accordingly, no verbal directions, course of conduct or dealings between the Parties, express or implied acceptance of alterations or additions to the Work, or claim that the Contract has been abandoned or the City has been unjustly enriched by any alteration or addition to the Work shall be the basis of any claim for an increase in any amounts due under the Contract Documents or a change in any time period provided in the Contract Documents.

6.03 NOTICE OF SCOPE CHANGE

Contractor shall submit written notice of any change in scope to the Director if, in the Contractor's opinion, any instruction, request, Drawings, Specifications, action, condition, omission, default, or other situation occurs that the Contractor believes constitutes a scope change or other matter resulting in Extra Work, for which Contractor believes it is entitled to an adjustment of the Contract Sum or Contract Time. Such notice shall be provided prior to performance of the Work affected by such occurrence and within seven (7) calendar days after the discovery date of the circumstances of such scope change or other matters. The written notice shall state the date, circumstances, extent of adjustment to the Contract Sum or the Contract Time, if any, requested. The mere presentation of such notice shall not establish the existence of any right by Contractor to adjustment of the Contract Sum or Contract Time. Failure to provide such timely written notice described herein shall constitute a waiver by Contractor of the right to any adjustment to the Contract Sum or Contract Time on account thereof. Any Notice of Scope Change that is approved by the City pursuant to a COR shall be incorporated in a Change Order or Construction Change Directive.

6.04 CHANGE ORDERS

A. Computation

Methods used in determining adjustments to the Contract Sum by Change Order may include those listed in Paragraph 6.06 below.

B. Accord and Satisfaction

Agreement on any Change Order shall be a full compromise and settlement of all adjustments to Contract Time and Contract Sum, and compensation for any and all delay, extended or additional field and home office overhead, disruption, acceleration, inefficiencies, lost labor or equipment productivity, differing Site conditions, construction interferences and other extraordinary or consequential damages (hereinafter called "Impacts"), including any ripple or cumulative effects of said Impacts on the overall Work under the Contract arising directly or indirectly from the performance of Work described in the Change Order. By execution of any Change Order, Contractor agrees that the Change Order constitutes a complete accord and satisfaction with respect to all claims for schedule extension, Impacts, or any costs of whatever nature, character or kind arising out of or incidental to the Change Order. No action, conduct, omission, product failure or course of dealing by the City shall act to waive, modify, change, or alter the requirement that (i) Change Order's must be in writing, signed by the City and Contractor and; (ii) that such written Change Orders are the exclusive method for effectuating any change to the Contract Sum and/or Contract Time.

6.05 CONSTRUCTION CHANGE DIRECTIVE

- A. A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order. The City may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletion, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.
- B. If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be calculated in accordance with Paragraph 6.06 herein (Pricing Changes in the Work).
- C. Upon receipt of the Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the City of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive, for determining the proposed adjustment in the Contract Sum or Contract Time.
- D. If Contractor believes a Construction Change Directive constitutes a basis for adjustment to the Contract Sum or Contract Time, then Contractor shall give a Notice of Scope Change provided in Paragraph 6.03, followed by a submission of a Change Order Request as required by Paragraph 6.08. Contractor shall, if requested by City in such Construction Change Directive or in a subsequent Construction Change Directive, proceed with the performance of the Work as described in the Construction Change Directive. Failure of Contractor to proceed with the performance of Work, as described in the Construction Change Directive shall give the City the right to carry out the Work, as set forth in Paragraph 2.05.
- E. A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.
- F. If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the City on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in the case of an increase in the Contract Sum, Allowable Mark-Ups in accordance with Paragraph 6.06(E) herein.

6.06 PRICING CHANGES IN THE WORK

A. Alternative Methods of Pricing

The amount of any adjustment by Change Order or Construction Change Directive increasing or decreasing the Contract Sum shall be determined using one or a combination of the following methods:

1. Lump Sum. By mutual acceptance of a lump sum proposal from Contractor properly itemized and supported by sufficient substantiating data to permit evaluation. Such proposal shall be based solely on Allowable Costs, as defined in Subparagraph 6.06-C, and Allowable Mark-Ups, as defined in Subparagraph 6.06-E, and shall not include any costs or expense that is not permitted by the terms of any provision of the Contract Documents.
2. Unit Prices. By unit prices contained in Contractor's original Bid and incorporated in the Contract Documents or fixed by subsequent agreement between City and Contractor. Unless otherwise stated in the Bidding Documents, unit prices stated in the Contract Documents or agreed upon by the City and Contractor shall be deemed to include and encompass all Allowable Markups.
3. Time and Materials. By calculating the actual Allowable Costs directly incurred, plus a sum for Allowable Mark-Ups on such Allowable Costs.
4. Schedule of Values. For work not covered by a Unit Price, the Schedule of Values may be used to determine the value of the increase or decrease in the Contract Sum, less the value of any Work performed, plus a reasonable percentage of the decrease for the Contractor's saved overhead unless the Schedule of Values allocates general conditions costs to individual line items, in which case no percentage of the decrease shall be added. When a change consists of both addition and deletion of Work, the added costs and deleted costs shall be calculated separately, and then added together, resulting in the net cost for the change. The Allowable Mark-Up shall be applied to this net cost.

B. Contractor Maintenance of Daily Records for Changes

1. In the event that Contractor is directed to perform any Extra Work, or should Contractor encounter conditions which the Contractor believes would obligate the City to adjust the Contract Sum and/or the Contract Time, Contractor shall maintain detailed records of the cost of such changes on a daily basis summarized in a daily report supplemented by back-up records. Such records shall include without limitation:
 - a. Labor. At the close of each day on which such Extra Work is performed, Contractor shall submit an Extra Work labor report, on forms provided by Director, to Director that sets forth a list of the actual hours spent in performing the Extra Work, that clearly differentiates between the labor expended on the Extra Work and other Work, and the Allowable Costs for such Extra Work performed that day showing the names of workers, their classifications, hours worked and hourly rates.

- b. **Materials, Equipment.** A list of Allowable Costs of materials and equipment consumed in the performance of the Extra Work on the day on which such Extra Work is performed, together with copies of applicable delivery tickets and unit prices for all materials and for all equipment used the type of equipment, identification number, hours of operation (including loading and transportation) and hourly/daily rates involved for that day.
 - c. **Other Services or Expenditures.** A list of other services and expenditures constituting Allowable Costs incurred in performance of the Extra Work on the day on which such Extra Work is performed, along with documentation verifying the amounts thereof in such detail as Director may require.
 2. In the event that more than one change to the Work is performed by the Contractor in a calendar day, Contractor shall maintain separate records of labor, construction equipment, materials, and equipment for each such change. In the event that any Subcontractor of any tier shall provide or perform any portion of any change to the Work, Contractor shall require that each such Subcontractor maintain records in accordance with this section.
 3. Each daily record maintained hereunder shall be signed by Contractor; such signature shall be deemed Contractor's representation and warranty that all information contained therein is true, accurate, complete, and relates only to the change referenced therein. All records maintained by Subcontractors of any tier, relating to the costs of a change in the Work shall be signed by such Subcontractor's authorized project manager or superintendent.

All such records shall be forwarded to the Director on the day the Work is performed (same day) for independent verification. The Director shall attempt to review and reconcile costs for changes on a daily basis. Records not available on the day on which the Extra Work is performed, such as, but not limited to, material invoices, shall be submitted as soon as they are available but not later than five (5) calendar days after the earlier of the day of delivery or incorporation of the particular item of Extra Work at the Site.
 4. The Director may additionally require authentication of all time and material tickets and invoices by persons designated by the Director for such purpose. In the event that Contractor shall fail or refuse, for any reason, to maintain or make available for inspection, review, and/or reproduction such records, adjustments to the Contract Sum or Contract Time, if any, on account of any change to the Work may be deemed waived for that day. Contractor's obligation to maintain back-up records hereunder is in addition to, and not in lieu of, any other Contractor obligation under the Contract Documents with respect to changes to the Work.
 5. **Waiver by Contractor.** Failure to submit such records as are required by this Paragraph daily shall waive any rights for recovery of Allowable Costs incurred for Extra Work performed that day. The failure of the Contractor to secure any required authentication shall, if the City elects in its sole discretion to treat it as such, constitute a waiver by the Contractor of any right to adjustment of the Contract Sum for the Allowable Cost of all or that portion of the Extra Work covered by such non-authenticated ticket or invoice.

C. Allowable Costs

The term "Allowable Costs" means, in the case of Extra Work, actual costs incurred by Contractor and/or any Subcontractor, regardless of tier, and necessarily involved in direct performance of the Extra Work, or in the case of deleted Work, the actual costs that would have been incurred in performing deleted Work by Contractor and/or any Subcontractor, regardless of tier, and shall be limited to the following costs:

1. Labor. Straight-time wages or salaries, and overtime wages and salaries specifically authorized by City in writing, for employees employed at the site, or at fabrication sites off the site, in the direct performance of the Extra Work or that would have been incurred in the direct performance of the deleted Work, based on the actual cost for wages prevailing locally for each craft or type of workers at the time the Extra Work is done or the deleted Work is ordered eliminated. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental. The use of labor classification which would increase the Allowable Cost for Extra Work will not be permitted unless Contractor establishes the necessity for such additional costs.
2. Benefits. Payroll taxes, insurance, health and welfare, pension, vacation, apprenticeship funds and benefits required by lawful collective bargaining agreements for employees on straight-time wages or salaries, and on overtime wages and salaries specifically authorized by City in writing, for employees employed at the site, or at fabrication sites off the site, in the direct performance of the Extra Work or that would have been incurred in the direct performance of the deleted Work.
3. Materials, Consumables. Costs of materials and consumable items which are furnished and incorporated into the Work, as approved by City, or that would have been incorporated into the Work in the case of deleted Work shall be at the lowest price available to Contractor but in no event shall such costs exceed competitive wholesale prices obtainable from other Subcontractors, suppliers, manufacturers and distributors in the general vicinity of the site. If City determines, in its discretion, that the cost of materials is excessive, or if Contractor fails to furnish satisfactory evidence of the cost from the actual supplier thereof, then in either case the cost of the materials shall be deemed to be the lowest wholesale price at which similar materials are available in the quantities required at the time they were needed. The City reserves the right to furnish such materials as it deems advisable, and Contractor shall have no claim for costs or profits on materials so furnished.
4. Taxes. Sales taxes on the costs of materials and consumable items described in Paragraph 5.04-C.3 above.
5. Tool, Equipment Rental. Rental charges for necessary machinery and equipment, whether owned or hired, as authorized in writing by City, exclusive of hand tools, used directly in the performance of the Extra Work or that would have been used in the direct performance of the deleted Work. Regardless of ownership, such rental charges shall not exceed the hourly rate derived from the most recently published State of California, Department of Transportation, Equipment Rental Rates, which are in effect at the time of commencement of the changed work. The Labor surcharges and equipment markups will be applied per Paragraph E hereon. Contractor shall attach a copy of the rate schedule to the daily reports required by Paragraph 6.06-B, above. The charges for any machinery and equipment shall cease when the use thereof is no longer necessary for the Extra

Work or deleted Work. No charge shall be allowed for use of equipment or tools which have a replacement value of \$500 or less. The allowable rental rates shall include the cost of fuel, power oil, lubrication, supplies, small tools, necessary attachments, loading, transportation, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Notwithstanding the provisions of Paragraph 6.06-E below, no markup shall be allowed for overhead, profit or bond premiums for use of equipment if the equipment is supplied by an equipment rental firm. If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to City than holding it at the Site, it shall be returned, unless Contractor elects to keep it at the Site at no expense to City. Costs incurred while equipment is inoperative due to breakdowns, regular maintenance, or for non-Working Days shall not be allowed. The rental time shall include the time required to move the equipment to the Work from the nearest available source for rental of such equipment and to return it to the source. If such equipment is not moved by its own power, then loading and transportation will be allowed. Neither moving time nor loading and transportation costs will be paid if the equipment is for use on the Project unrelated to the Extra Work. All equipment shall be acceptable to City, in good working condition, and suitable for the purpose for which it is to be used. Royalties. Additional or saved costs of royalties due to the performance of the Extra Work or deleted Work.

6. Insurance, Bonds. Additional or saved costs of insurance required by Exhibit 2 to the Agreement and payment and performance bonds required by the Contract Documents, provided, however, that for Extra Work such insurance costs shall not exceed one percent (1%) of Items 1 through 6 above and such bond costs shall not exceed one percent (1%) of Items 1 through 6 above.

D. Costs Not Allowed

Allowable Costs shall not include any of the following:

1. Wages, salaries, fringe benefits and payroll taxes of Contractor's and all Subcontractor's non-craft labor (above a Foreman level);
2. Overhead, administrative or general expenses of any kind including engineering, estimating, scheduling, drafting, detailing, etc., incurred in connection with Extra Work;
3. Vehicles not dedicated solely for the performance of the extra or deleted Work;
4. Small tools (replacement value not exceeding \$500);
5. Office expenses, including secretarial and administrative staff, materials and supplies;
6. On-site and off-site trailer and storage rental and expenses;
7. Site fencing;
8. Utilities, including gas, electric, sewer, water, telephone, telefax, copier equipment;
9. Computer and data processing personnel, equipment and software;

10. Federal, state or local business income and franchise taxes;
11. Losses of efficiency or productivity; and
12. Costs and expenses of any kind or item not specifically and expressly included in Paragraph 6.06-C.

E. Allowable Mark-Up

1. If the Net Cost of Extra Work is less than or equal to \$25,000, the Allowable Mark-Up shall be computed as follows:
 - a. For Extra Work performed directly by the Contractor's forces, the added cost for all expenses of overhead and profit ("Allowable Mark-Up") shall not exceed fifteen percent (15%) of the net cost of the Extra Work.
 - b. For Extra Work performed by a Subcontractor's forces, the Allowable Mark-Up for Contractor and all Subcontractor(s) shall not exceed twenty percent (20%) of the net cost of all Subcontractor(s)'s Extra Work.
2. If the net cost of Extra Work is greater than \$25,000 and less than or equal to \$100,000, the Allowable Mark-up shall be computed as follows:
 - a. For Extra Work performed directly by the Contractor's forces the Allowable Mark-Up shall not exceed twelve percent (12%) of the net cost of the Extra Work.
 - b. For Extra Work performed by a Subcontractor's forces, the Allowable Mark-Up for Contractor and all Subcontractor(s) shall not exceed seventeen percent (17%) of the net cost of all Subcontractor(s)'s Extra Work.
3. If the net cost of Extra Work is greater than \$100,000, the Allowable Mark-up shall be computed as follows:
 - a. For Extra Work performed directly by the Contractor's forces the Allowable Mark-Up shall not exceed ten percent (10%) of the net cost of the Extra Work.
 - b. For Extra Work performed by a Subcontractor's forces, the Allowable Mark-Up for Contractor and all Subcontractor(s) shall not exceed fifteen percent (15%) of the net cost of all Subcontractor(s)'s Extra Work.

F. Net Allowable Costs

If any one scope change involves both Extra Work and deleted Work in the same portion of the Work and the additive allowable costs exceed the deductive allowable costs, the Allowable Markups on the Extra Work will be only the difference between the two amounts.

6.07 CITY ORIGINATED REQUEST FOR ITEMIZED CHANGE ORDER PROPOSAL REQUEST

City may issue a Construction Change Directive or other written request to Contractor describing a proposed change to the Work and requesting the Contractor submit an itemized change order proposal in a format acceptable to City within ten (10) calendar days after City issues the request. The Contractor's change order proposal shall include an analysis of impacts to cost and time, if any, to perform additional

work, change Work or delete Work, as applicable, including the effects and impacts, if any, on unchanged Work, estimates of costs (broken down by the cost categories listed in this Paragraph), and Contractor's proposed methods to minimize costs, delay, and disruption to the performance of the Work. If Contractor fails to submit a written change order proposal within such period of time, it shall be presumed that the change described in the City's original proposal request will not result in an increase to the Contract Sum or Contract Time and the change shall be performed by Contractor without additional compensation to Contractor. City's request for itemized change order proposal request does not authorize the Contractor to commence performance of the change. If City desires that the proposed change be performed, the Work shall be authorized according to the Change Order or Construction Change Directive procedures set forth herein.

6.08 CONTRACTOR ORIGINATED CHANGE ORDER REQUEST (COR)

If the Contractor believes that instructions issued by the City after the effective date of the Contract will result in changes to the Contract Sum or Contract Time or if the Contractor otherwise becomes aware of the need for or desirability of a change in the Work, Contractor may submit a written Change Order Request ("COR") to the City in writing, in a format acceptable to City and in accordance with the notice provisions and other requirements of Article 7 below for Claims. The COR must specify the reasons for the proposed change, cost impacts and relevant circumstances and impacts on the Construction Schedule. The document shall be complete in its description of the Work, its material and labor quantities and detail, and must support and justify the costs and credits claimed by the Contractor. A CPM schedule Fragnet is required to support and justify any additional time of performance requested by the Contractor. The City will not review any COR which is incomplete. The Contractor may request additional compensation and/or time through a COR but not for instances that occurred more than seven (7) calendar days prior to the notice date. Contractor's failure to initiate a COR within this seven-day period or to provide detailed back-up documentation to substantiate the COR within thirty (30) calendar days of the initial written notice shall be deemed a waiver of the right to adjustment of the Contract Sum or the Contract Time for the alleged change. Any COR that is approved by the City shall be incorporated in a Change Order or Construction Change Directive as a condition to payment for the change. If the COR is denied but the Contractor believes that it does have merit, the Contractor shall proceed with the disputed Work and may submit a Claim in accordance with the procedures set forth herein.

6.09 In the event of a dispute as to whether or not Extra Work is required, City shall have the right to unilaterally issue a Work Directive; Contractor shall continue performance of disputed Work pending resolution and shall maintain and submit to City all accounting and cost data necessary to substantiate Contractor's cost of such disputed Work.

6.10 AUTHORITY TO APPROVE CHANGES

- A. The City's Project Manager has **no authority** to authorize changes in the Work or Modifications to the Contract Documents.
- B. The Architect/Engineer has **no authority** to authorize any change or Modification to the Work or the Contract Documents that affects the Contract Sum, Contract Time, or design of the Project approved by the City Council.
- C. The Director and the City Manager have **sole authority** to approve changes that affect the Contract Sum, Contract Time, or design of the Project, subject to the limits set forth in Paragraph 1.02. The total aggregate value of all Change Orders and Construction Change Directives approved by the Director shall not exceed the contingency amount established at the time of the award of the Contract. Any changes that will individually or in the aggregate exceed the

contingency amount must be approved by the City Council. Contractor must give the Director written notice if any individual changes or the aggregate of all approved and proposed changes in the Work will exceed the contingency amount, in order for the City to obtain additional funding for the Project.

- D. All changes to the Contract— whether resulting in an increase, decrease or no change in the Contract Sum or Contract Time— must be in writing and signed by an authorized representative of the City as provided in Paragraph 1.02. Any verbal direction, instruction, interpretation, or determination from the Architect/Engineer or the City's Project Manager which, in the opinion of the Contractor, causes a change or additional work, or otherwise requires an adjustment to the Contract Sum or the Contract Time, shall be treated as a Change Order Request only if the Contractor gives the City written notice within **ten (10) calendar days** of the verbal direction and prior to acting in accordance therewith. Time is of the essence in Contractor's written notice pursuant to the preceding sentence, so that the Director can promptly investigate and consider alternative measures to address the verbal direction giving rise to Contractor's notice.
- E. Contractor shall undertake, at its own risk, work included in any oral request, written order, Change Order or Construction Change Directive issued by a person in excess of that person's authority as provided herein or by law. Unauthorized work will not be measured or paid for, and no extension of Contract Time will be granted, on account thereof. Any unauthorized work may be ordered removed at the Contractor's sole cost and expense. The City's failure to direct or order removal of unauthorized work shall not constitute acceptance or approval of such work nor relieve Contractor from any liability on account thereof.

[END OF ARTICLE]

ARTICLE 7 CONTRACT PAYMENTS AND CLAIMS

7.01 GENERAL

- A. Payment will be made at the price for each item listed on the bidding form or as Extra Work as provided in the General Conditions.
- B. Initial progress payment will not be made prior to approval by the Director of the Schedule of Values, the Construction Progress Schedule, and the Schedule of Submittals.
- C. No subsequent progress payment will be made prior to receipt by the Director of the monthly revision of the Construction Progress Schedule.

7.02 SCHEDULE OF VALUES FOR PAYMENTS

A. Submission

Upon City's request, the three (3) lowest bidders shall complete and submit a Preliminary Schedule of Values, attached as Exhibit 4, within seven (7) calendar days.

In addition, Contractor shall complete and furnish, within seven (7) calendar days after the City's Notice of Award of the Contract, a Final Schedule of Values giving a complete breakdown of the Contract Sum for each component of the Work.

B. Content

The Schedule of Values shall be in sufficient detail as the Director may, in its discretion, deem necessary to evaluate progress at any point in the performance of the Work. Unless otherwise specified in the Contract Documents, the Schedule of Values shall include, without limitation, a breakdown of the general categories of Subcontractor work, direct overhead, profit and contingency, and a further breakdown of the general categories of Subcontractor work into separate trade line items of costs for Subcontractor services, labor and material, which is based on actual Subcontractor contract, subcontract, purchase order or vendor prices. If requested by Director, Contractor shall revise the Schedule of Values to allocate sums for Contractor overhead, profit and/or contingency among the individual line items for trade portions of the Work. No amounts shall be reflected in the Schedule of Values or Application for Payment for Extra Work or Deleted Work for which a Change Order has not been executed by Contractor and City or for which a Construction Change Directive has not been issued by City. Amounts that have been mutually agreed to by Change Order or unilaterally determined by City pursuant to a Construction Change Directive shall be segregated from the cost of the base Contract Work and separately listed by line item in the Schedule of Values. The Schedule of Values must be prepared in sufficient detail and supported by sufficient data to substantiate its accuracy as the Director may require.

C. Applications for Payment

The Schedule of Values, when approved by the Director, shall be used as a basis for Contractor's Applications for Payment and may be considered as fixing a basis for adjustments to the Contract Sum.

D. Revisions

If, at any time, it is determined that the Schedule of Values does not allocate the Contract Sum in a manner that reasonably and fairly reflects the actual costs anticipated to be progressively incurred by Contractor, it shall be revised and resubmitted for approval by the Director.

7.03 APPLICATIONS FOR PAYMENT

A. Marked Schedule of Values

Five (5) Days prior to the date set forth in Paragraph 7.03-B below for the monthly progress payment meeting, Contractor shall submit to Director a copy of the proposed Schedule of Values, marked to show the percentage of completion certified by Contractor for each line item in the Schedule of Values, including any stored materials approved for payment by City pursuant to Paragraph 7.03-D, below and any withholdings from Contractor proposed by Director.

B. Monthly Review

For the purpose of expediting the progress payment procedure, Contractor shall meet with the Director on or before the twentieth (20th) day of each month to review the Contractor's marked Schedule of Values prepared in accordance with Paragraph 7.03-A, above. The Director shall revise as appropriate and sign the marked Schedule of Values to verify such review. If any item in the marked Schedule of Values submitted for payment is disputed during this review, Contractor agrees to use its best efforts to resolve the disputed items with the Director before submitting its Application for Payment. If the Director and Contractor cannot agree, then the percentage completion shall be established at such percentage as the Director, in good faith, determines is appropriate to the actual progress of the Work. No inaccuracy or error in the Director's good faith estimate shall operate to release Contractor or Surety from any responsibility or liability arising from or related to performance of the Work. The Director shall have the right subsequently to correct any error and dispute any item submitted in Contractor's Application for Payment, regardless of whether an item was identified as disputed in the review process provided for herein.

C. Certification

Each Application for Payment shall be signed by Contractor with a certification by Contractor to City that:

1. The data comprising the Application for Payment is accurate and the Work has progressed to the point indicated;
2. To the best of Contractor's knowledge, information and belief, the Work is in accordance with the Contract Documents;
3. Contractor is entitled to payment in the amount certified; and
4. All sums previously applied for by Contractor on account of Work performed by Subcontractors and that have been paid by City have been paid to the Subcontractors performing such Work, without any retention, withholding or back charge by Contractor.

D. Stored Materials

Payments may be made by City, at its discretion, on account of materials or equipment not incorporated into the Work but delivered on the ground at the Site and suitably stored by Contractor or stored off-Site under the control of City. Such payments shall only be considered upon submission by Contractor of satisfactory evidence that it has acquired title to same, that the material or equipment will be utilized in the Work and that the material is satisfactorily stored, protected and insured, and that such other procedures are in place satisfactory to City to protect City's interests. To be considered for payment, materials or equipment stored off-Site shall, in addition to the above requirements and unless otherwise specifically approved by City in writing, be stored in a bonded warehouse, fully insured, and available to City for inspection. City shall have sole discretion to determine the amount of material and equipment that may be stored on the Site at any given time.

7.04 PROGRESS PAYMENTS

A. Conditions to Progress Payments

Contractor shall submit its Application for Payment to the Director, using such forms as required by City, once a month on or before the first (1st) Day of the month following the month in which the Work that is the subject of such Application for Payment was performed. Without limitation to any other provisions of the Contract Documents, the following shall be conditions precedent to a proper submission and to the Director approval of each Application for Payment:

1. Submission of a Schedule of Values that reflects the percentages of completion either agreed to or determined by Director in accordance with Paragraph 7.03-B, above;
2. Submission of the Contractor's certification required by Paragraph 7.03-C, above;
3. Submission of conditional releases of stop payment notice, if any, and bond rights upon progress payment, complying with California Civil Code Section 8132, for all Work performed during the time period covered by the current Application for Payment, signed by Contractor, its Subcontractors of every tier, and all material suppliers to each, and (2) forms of unconditional release of stop payment notice and bond rights upon progress payment, complying with California Civil Code Section 8134, for all Work performed during the time period covered by the previous Application for Payment, signed by Contractor, its Subcontractors of every tier and all material suppliers to each;
4. Compliance by Contractor with its obligation for submittal of As-Builts as required by the Contract Documents;
5. Compliance by Contractor with its obligation for submission of monthly and daily reports as required by the Contract Documents;
6. Compliance by Contractor with its obligations for submission of scheduling information and updating of the Construction Schedule as required by Article 4, above and other provisions of the Contract Documents pertaining to preparation or updating of schedule information;
7. Submission of certified payroll records as required by the Contract Documents;

8. Submission of certifications by Contractor and each Subcontractor as required by applicable collective bargaining agreements certifying that all employee benefit contributions due and owing pursuant to any applicable collective bargaining agreement have been paid in full; and
9. Compliance by Contractor with all of its other obligations for submission of documentation or performance of conditions which, by the terms of the Contract Documents, constitute conditions to Contractor's right to receive payment for Work performed.

B. Payments by City

Pursuant to California Public Contract Code Section 20104.50, City shall make progress payment of undisputed sums due within thirty (30) Days after receipt by Director of an undisputed and properly submitted Application for Payment, calculated on the basis of ninety percent (90%) of value determined pursuant to Paragraph 7.03-B above of the following:

1. The portion of the Work permanently installed and in place;
2. Plus, the value of materials delivered on the ground or in storage as approved by City pursuant to Paragraph 7.03-D, above,
3. Less, the aggregate of previous payments, and
4. Less, any other withholdings authorized by the Contract Documents.

C. Rejection by City

Any Application for Payment determined not to be undisputed, proper and suitable for payment shall be returned to Contractor as soon as practicable, but not later than seven (7) Days, after receipt by City accompanied by an written explanation of the reasons why the payment request was rejected. Failure by City or Director to either timely reject an Application for Payment or specify any grounds for rejection shall not constitute a waiver of any rights by City. Applications for Payment that are rejected shall be corrected and resubmitted within seven (7) Days after receipt by Contractor.

D. Interest

If City fails to make a progress payment to Contractor as required by Paragraph 7.04-B, above, City shall pay interest to Contractor equivalent to the legal rate set forth in subdivision (a) of California Code of Civil Procedure Section 685.010. The number of Days available to City to make payment pursuant to Paragraph 7.04-B, above without incurring interest pursuant to this Paragraph shall be reduced by the number of Days by which City exceeds the seven (7) Day return requirement applicable to City as set forth in Paragraph 7.04-C, above,

7.05 FINAL PAYMENT

A. Retention

In addition to withholdings permitted by Paragraph 7.09 below, a sum equal to five percent (5%) of all sums otherwise due to Contractor as progress payments shall be withheld by City pursuant to Paragraph 7.04-B from each progress payment ("Retention") and retained until such time as it is due as described below.

B. Conditions to Final Payment

Contractor shall submit its Application for Final Payment, using such forms as required by Director, prior to requesting a final inspection of the Work in accordance with Paragraph 3.06 above. Such Application for Final Payment shall be accompanied by all the following:

1. An affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Project for which City or City's property or funds might be liable have been paid or otherwise satisfied;
2. Contractor's certification as required by Paragraph 7.03-C, above;
3. Consent of surety to Final Payment;
4. A certificate evidencing that the insurance required by the Contract Documents is in force;
5. Conditional Waiver and Release Upon Final Payment in the form required by California Civil Code Section 8136 executed by Contractor, all Subcontractors of every tier and by all material suppliers of each, covering the final payment period;
6. Unconditional Waiver and Release Upon Progress Payment in the form required by California Civil Code Section 8134 executed by Contractor, all Subcontractors of every tier and by all material suppliers of each, covering the previous payment period;
7. All Record Documents (including, without limitation, complete and accurate As-Built drawings which shall be kept up to date during the performance of the Work);
8. Documentation that Contractor has inspected, tested, and adjusted performance of every system or facility of the Work to ensure that overall performance is in compliance with the terms of the Contract Documents;
9. Four (4) copies of all warranties from vendors and Subcontractors, operation and maintenance manuals, instructions and related agreements, and equipment certifications and similar documents;
10. Certifications by Contractor and each Subcontractor as required by applicable collective bargaining agreements that all employee benefit contributions due and owing pursuant to any applicable collective bargaining agreement have been paid in full;
11. Releases of rights and claims relating to patents and trademarks, as required by the Contract Documents; and
12. Any other documents or information required by the Contract Documents as a condition of Final Payment or Final Completion.

C. Final Payment

Pursuant to the Public Contract Code Section 7107, within sixty (60) Days after City issues the Notice of Completion to Contractor, the Final Payment, including Retention withheld, shall be released to Contractor, subject to the City's right to withhold 150% of any disputed amounts.

D. Disputed Amounts

Pursuant to California Public Contract Code 7107, City may deduct and withhold from the Final Payment due under Paragraph 7.05-C, above, an amount up to 150% of any disputed amounts, including, without limitation, amounts to protect City against any loss caused or threatened as a result of Contractor's failing to fully perform all of those obligations that are required to be fulfilled by Contractor as a condition to Final Completion and Final Payment. Alternatively, City may elect, in its sole discretion, to accept the Work without correction or completion and adjust the Contract Sum pursuant to the Contract Documents.

E. Acceptance of Final Payment

Acceptance of Final Payment by Contractor shall constitute a waiver of all rights by Contractor against City for recovery of any loss, excepting only those Claims that have been submitted by Contractor in the manner required by the Contract Documents prior to or at the time of the Final Payment.

7.06 MISCELLANEOUS

A. Joint Payment

City shall have the right, if deemed necessary in its sole discretion, to issue joint checks made payable to Contractor and any Subcontractor(s) of any Tier. The joint check payees shall be solely responsible for the allocation and disbursement of funds included as part of any such joint payment. Endorsement on such check by a payee shall be conclusively presumed to constitute receipt of payment by such payee. In no event shall any joint check payment be construed to create any contract between City and a Subcontractor of any Tier, any obligation from City to such Subcontractor or any third party rights against City or Director.

B. Withholding/Duty to Proceed

The payment, withholding or retention of all or any portion of any payment claimed to be due and owing to Contractor shall not operate in any way to relieve Contractor from its obligations under the Contract Documents. Contractor shall continue diligently to prosecute the Work without reference to the payment, withholding or retention of any payment. The partial payment, withholding or retention by City in good faith of any disputed portion of a payment, whether ultimately determined to be correctly or incorrectly asserted, shall not constitute a breach by City of the Construction Contract and shall not be grounds for an adjustment of the Contract Sum or Contract Time.

C. No Acceptance

No payment by City or partial or entire use of the Work by City shall be construed as approval or acceptance of the Work, or any portion thereof.

D. Contractor Payment Warranty

Submission of an Application for Payment shall constitute a representation and warranty by Contractor that:

1. Title to Work covered by an Application for Payment will pass to City either by incorporation into the construction or upon receipt of payment by Contractor, whichever occurs first; and
2. Work covered by previous Applications for Payment are free and clear of liens, stop payment notices, claims, security interests or encumbrances imposed by the Contractor or any other person.

E. Corrections

No inaccuracy or error in any Application for Payment provided by Contractor shall operate to release Contractor from the error, or from losses arising from the Work, or from any obligation imposed by the Contract Documents. City retains the right to subsequently correct any error made in any previously approved Application for Payment, or progress payment issued, by adjustments to subsequent payments.

7.07 PAYMENTS BY CONTRACTOR

Contractor shall not include in its Applications for Payment sums on account of any Subcontractor's portion of the Work that it does not intend to pay to such Subcontractor. Upon receipt of payment from City, Contractor shall pay the Subcontractor performing Work on the Project, out of the amount paid to Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled in accordance with the terms of its contract with Contractor and applicable laws, including, without limitation, California Public Contract Code Section 7107. Contractor shall remain responsible notwithstanding a withholding by City pursuant to the terms of these Contract Documents, to promptly satisfy from its own funds sums due to all Subcontractors who have performed Work that is included in Contractor's Application for Payment. Contractor shall, by appropriate agreement, require each Subcontractor to make payments to its subcontractors and material suppliers in similar manner. City shall have no obligation to pay or be responsible in any way for payment to a Subcontractor of any tier or material supplier.

7.08 PAYMENTS WITHHELD

A. Withholding by City

In addition to any other amounts which City may have the right to retain under the Contract Documents, City may withhold a sufficient amount of any payment otherwise due to Contractor as City, in its sole discretion, may deem necessary to cover actual or threatened loss due to any of the following:

1. Third Party Claims. Third-party claims or stop payment notices filed or reasonable evidence indicating probable filing of such claims or stop payment notices;
2. Defective Work. Defective Work not remedied;
3. Nonpayment. Failure of Contractor to make proper payments to its Subcontractors for services, labor, materials or equipment;
4. Inability to Complete. Reasonable doubt that the Work can be completed for the then unpaid balance of the Contract Sum or within the Contract Time;

5. Violation of Applicable Laws. Failure of Contractor or its Subcontractors to comply with applicable laws or lawful orders of governmental authorities;
6. Penalty. Any claim or penalty asserted against City by virtue of Contractor's failure to comply with applicable laws or lawful orders of governmental authorities (including, without limitation labor laws);
7. Failure to Meet Contract Time. Any damages which may accrue as a result of Contractor failing to meet the Construction Schedule or failing to perform within the Contract Time;
8. Setoff. Any reason specified elsewhere in the Contract Documents as grounds for a withholding offset or set off or that would legally entitle City to a set-off or recoupment;
9. Consultant Services. Additional professional, consultant or inspection services required due to Contractor's failure to comply with the Contract Documents.
10. Liquidated Damages. Liquidated damages assessed against Contractor
11. Materials. Materials ordered by City pursuant to the Contract Documents.
12. Damages. Loss caused by Contractor or Subcontractor to City, Separate Contractors or any other person or entity under contract to City.
13. Clean Up. Clean up performed by City and chargeable to Contractor pursuant to the Contract Documents.
14. Employee Benefits. Failure of Contractor to pay contributions due and owing to employee benefits funds pursuant to any applicable collective bargaining agreement or trust agreement.
15. Required Documents. Failure of Contractor to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, Construction Schedule updates, 'look ahead' schedules, Submittals, Schedules of Values, information on Subcontractors, Change Orders, certifications and other required reports or documentation.
16. Other Breach. A breach of any obligation or provision of the Contract Documents.

B. Release of Withholding

If and when City determines, in its sole discretion, that the above grounds for withholding have been removed and that all losses incurred or threatened have been paid, credited or otherwise satisfied, then payment shall be made for amounts withheld because of them.

C. Application of Withholding

City may apply sums withheld pursuant to Paragraph 7.08-A above, in payment of any loss or threatened loss as City determines, in its sole discretion, to be appropriate. Such payments may be made without a prior judicial determination of City's actual rights with respect to such loss. Contractor agrees and hereby designates City as its agent for such purposes, and agrees that such payments shall be considered as payments made under Construction Contract by City to Contractor. City shall not be liable to Contractor for such payments made in good faith. City shall

submit to Contractor an accounting of such funds disbursed on behalf of Contractor. As an alternative to such payment, city may, in its sole discretion, elect to exercise its right to adjust the Contract Sum as provided in the Contract Documents.

D. Continuous Performance

Provided City pays the undisputed portion, if any, of funds withheld in good faith, Contractor shall maintain continuous and uninterrupted performance of the Work during the pendency of any disputes or disagreements with City.

7.09 SUBSTITUTION OF SECURITIES

A. Public Contract Code

Pursuant to the requirements of California Public Contract Code Section 22300, upon Contractor's request, City will make payment to Contractor of any funds withheld from payments to ensure performance under the Contract Documents if Contractor deposits with City, or in escrow with a California or federally chartered bank in California acceptable to City ("Escrow Agent"), securities eligible for the investment of State Funds under Government Code Section 16430, or bank or savings and loan certificates of deposit, interest-bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the City, upon the following conditions:

1. Contractor shall be the beneficial owner or any securities substituted for monies withheld for the purpose of receiving any interest thereon.
2. All expenses relating to the substitution of securities under said Section 22300 and under this Paragraph 7.04, including, but not limited to City's overhead and administrative expenses, and expenses of Escrow Agent shall be the responsibility of Contractor.
3. Securities or certificates of deposit substituted for monies withheld shall be of a value of at least equivalent to the amounts of retention to be paid to Contractor pursuant to the Contract Documents.
4. If Contractor chooses to deposit securities in lieu of monies withheld with an Escrow Agent, Contractor, City and Escrow Agent shall, as a prerequisite to such deposit, enter into an escrow agreement, using the City's form, "Escrow Agreement for Deposit of Securities in Lieu of Retention."
5. Contractor shall obtain the written consent of Surety to such agreement.
6. Securities, if any, shall be returned to Contractor only upon satisfactory Final Completion of the Work.

B. Substitute Security

To minimize the expense caused by such substitution of securities, Contractor shall, prior to or at the time Contractor requests to substitute security, deposit sufficient security to cover the entire amount to be withheld. Should the current market value of such substituted security fall below the amount for which it was substituted, or any other amounts which the City withholds pursuant to the Contract Documents, Contractor shall immediately and at Contractor's expense and at no cost to City deposit additional security qualifying under said Section 22300 until the current market value of the total

security deposited is no less than the amount subject to withholding under the Contract Documents. Securities shall be valued as often as conditions of the securities market warrant, but in no case less frequently than once per month.

C. Deposit of Retentions

Alternatively, subject to the conditions set forth in Paragraph 7.04-A above, upon request of Contractor, City shall make payment of retentions directly to Escrow Agent at the expense of Contractor, provided that Contractor, City and Escrow Agent shall, as a prerequisite such payment, enter into an escrow agreement in the same form as prescribed in Part 4 of Paragraph A, above. At the expense of Contractor and at no cost to City, Contractor may direct the investment of the payments into securities and interest bearing accounts, and Contractor shall receive the interest earned on the investments. Escrow Agent shall hold such direct payments by City under the same terms provided herein for securities deposited by Contractor. Upon satisfactory Final Completion of the Work, Contractor shall receive from Escrow Agent all securities, interest and payments received by Escrow Agent from City, less escrow fees and charges of the Escrow Account, according to the terms of said Section 22300 and the Contract Documents.

D. Time for Election of Substitution of Securities

Notwithstanding the provision of 7.04 A, B, and C above and California Public Contract Code Section 22300, the failure of Contractor to request the Substitution of eligible securities for monies to be withheld by City within ten (10) days of the award of Contract to Contractor shall be deemed to be a waiver of all such rights.

7.10 CLAIM

A. Definition of Claim and 9204 Claim.

1. For purposes of accrual and triggering the initial notice, content and backup documentation requirements of the Contract Documents including, but not limited, to those set forth in Article 3 for delays and extensions of time, Article 6 for Changes in the Work and this Paragraph 7.10; a "claim" means a separate demand by the Contractor for (a) a time extension; (b) payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to this Contract and payment of which is not otherwise expressly provided or the Contractor is not otherwise entitled to, (c) an amount the payment of which is disputed by the City; or (d) or an assertion that Contractor's performance is excused because of the acts or omissions of City.
2. For purposes of the Public Contract Code Section 9204 Claims Procedures in Article 15 below, the term "9204 Claim" shall have the meaning set forth in Public Contract Code Section 9204(c)(1), which Contractor must send to the Director by registered or certified mail, return receipt requested.

B. Accrual of Claim.

1. Scope Change. When Contractor has a claim for an increase in the Contract Sum or Contract Time due to a scope change which has not yet become final, a "claim" will be deemed to arise once the Director has issued a written decision denying, in whole or in part, the Contractor's Change Order Request.
2. Other Claims. In the case of a claim by Contractor that does not involve a scope change and which has not become final, the claim may be asserted if, and only if, Contractor gives written

notice to City of intent to file the claim within seven (7) calendar days of the date of discovery relative to such circumstances (even if Contractor has not yet been damaged or delayed). Such written notice of intent to file a claim shall be valid if, and only if, it identifies the event or condition giving rise to the claim, states its probable effect, if any with respect to Contractor's entitlement to an adjustment of the Contract Sum or Contract Time and complies with the requirements of Paragraph 3.04 for delays and Paragraph 7.10-C, below. For purposes of this Paragraph 7.10, a claim for which such written notice is required and has been given by Contractor shall be deemed to arise on the date that such valid initial written notice is received by City.

C. Content of Claim.

A claim by Contractor must include all of the following:

1. A statement that it is a claim and a request for a decision on the claim;
2. A detailed description of the act, error, omission, unforeseen condition, event or other circumstance giving rise to the Claim.
3. If the claim involves an adjustment to the Contract Sum or Contract Time due to a change in scope, a statement demonstrating that all requisite notices were provided, including, without limitation, timely written notice of a Scope Change and a Change Order Request as required by Article 6 of these General Conditions and timely notice of delay and request for extension of time in accordance with Article 3. If the claim does not involve an adjustment to the Contract Sum or Contract Time due to a change in scope, a statement demonstrating that a notice of intent to file the Claim was timely submitted as required by Paragraph 7.10-B.2, above;
4. A detailed justification for any remedy or relief sought by the claim including, without limitation, a detailed cost breakdown in the form required for submittal of Change Order Requests and actual contemporaneous job cost records and job cost report summaries demonstrating that the costs have been incurred;
5. If the claim involves a request for adjustment of the Contract Time, written documentation demonstrating that Contractor has complied with the requirements of the Contract Documents and written substantiation (including, without limitation, a CPM schedule Fragnet) demonstrating that Contractor is entitled to an extension of time under the Contract Documents; and
6. A written certification signed by a managing officer of Contractor's organization, who has the authority to sign contracts and purchase orders on behalf of Contractor and who has personally investigated and confirmed the truth and accuracy of the matters set forth in such certification, in the following form:

"I hereby certify and declare under penalty of perjury under the laws of the State of California, that I am a managing officer of (Contractor's name) and that I have reviewed the claim presented herewith on Contractor's behalf and/or on behalf of (Subcontractor's name) and that, to the best of my knowledge after conducting a diligent inquiry into the facts of the Claim, the following statements are true and correct:

The facts alleged in or that form the basis for the claim are, to the best of my knowledge following diligent inquiry, true and accurate; and,

- a. I do not know of any facts or circumstances, not alleged in the claim, that by reason of their not being alleged render any fact or statement alleged in the claim materially misleading; and,
- b. I have, with respect to any request for money or damages alleged in or that forms the basis for the claim, reviewed the job cost records (including those maintained by Contractor and by any Subcontractor, of any tier, that is asserting all or any portion of the claim) and confirmed with reasonable certainty that the losses or damages suffered by Contractor and/or such Subcontractor were in fact suffered in the amounts and for the reasons alleged in the claim; and,
- c. I have, with respect to any request for extension of time or claim of delay, disruption, hindrance or interference alleged in or that forms the basis for the claim, reviewed the job schedules (including those maintained by Contractor and the Subcontractor, of any tier, that is asserting all or any portion of the claim) and confirmed on an event-by-event basis that the delays or disruption suffered by Contractor and/or such Subcontractor were in fact experienced for the durations, in the manner, and with the consequent effects on the time and/or sequence of performance of the Work, as alleged in the claim; and,
- d. I have not received payment from City for, nor has Contractor previously released City from, any portion of the claim."

Signature: _____ Date: _____
 Name: _____
 Title: _____
 Company _____
 Location _____

D. Noncompliance

Failure to submit any of the information, documentation or certifications required by this Paragraph 7.10 and within the deadlines established by the Contract Documents, shall render the claim invalid and shall result in the claim being returned to Contractor without any decision and shall be deemed rejected in its entirety.

E. Submission of Claims

- 1. Director. Claims must be first submitted to the City for decision by the Director.
- 2. Continuous Work. Notwithstanding the making of any Claim or the existence of any dispute regarding any Claim, unless otherwise directed by City, Contractor shall not delay, slow or stop performance of the Work, but shall diligently proceed with performance in accordance with the Contract Documents and City will continue, to make undisputed payments as by the Contract Documents.
- 3. Time for Filing. After compliance with the notice deadlines, all claims and supporting documentation and certifications must be filed within thirty (30) calendar days after the claim arises. No claims shall be filed after Final Payment.

4. Conditions Precedent. No Claim may be asserted unless Contractor has strictly complied with the notice and content requirements of Contract Documents including, but not limited to, this Paragraph 7.10, which shall be considered conditions precedent to Contractor's right to assert the claim and to initiate the Dispute Resolution Process set forth in Article 15 below with respect to such claim.
City Response to Claims, Meet and Confer, Mediation [See Article 15 below].

G. Finality of Decision

If Contractor disputes the Director's decision under this Article, it shall commence the Dispute Resolution Process as set forth in Article 15 of these General Conditions by filing a 9204 Claim within seven (7) calendar days after receipt of the Director's response or rejection or deemed rejection of the claim.

H. Continuing Contract Performance/Duty to Proceed with Disputed Work

Contractor shall not delay or postpone any Work pending resolution of any claims, disputes or disagreements. Pending final resolution of a claim, the Contractor shall proceed diligently with performance of the Contract and the City shall continue to make payments for undisputed Work in accordance with the Contract Documents. In the event of disputed Work, City shall have the right to unilaterally issue a Work Directive and Contractor shall continue performance pending resolution of the dispute and shall maintain the accounting and cost data to substantiate the cost of such disputed Work.

[END OF ARTICLE]

ARTICLE 8 MATERIALS AND EQUIPMENT

8.01 GENERAL

- A. The Contractor shall furnish all materials and equipment needed to complete the Work and installations required under the terms of this Contract, except those materials and equipment specified to be furnished by the City.
- B. The Contractor shall submit satisfactory evidence that the materials and equipment to be furnished and used in the work are in compliance with the Specifications. Materials and equipment incorporated in the Work and not specifically covered in the Specifications shall be the best of their kind. Unless otherwise specified, all materials and equipment incorporated in the Work under the Contract shall be new.

8.02 QUALITY AND WORKMANSHIP

All material and equipment furnished by the Contractor shall be new, high grade, and free from defects and imperfections, unless otherwise hereinafter specified. Workmanship shall be in accordance with the best standard practices. All materials and equipment must be of the specified quality and equal to approved samples, if samples have been required. All Work shall be done and completed in a thorough, Workmanlike manner, notwithstanding any omission from the Specifications or Drawings, and it shall be the duty of the Contractor to call attention to apparent errors or omissions and request instructions before proceeding with the Work. The Director may, by appropriate instructions, correct errors and supply omissions, which instructions shall be binding upon the Contractor as though contained in the original Specifications or Drawings. All Work performed under the Specifications will be inspected by the Director as provided in Paragraph 8.04. All materials and equipment furnished and all Work done must be satisfactory to the Director. Work, material, or equipment not in accordance with the Specifications, in the opinion of the Director shall be made to conform thereto. Unsatisfactory materials and equipment will be rejected, and if so ordered by the Director, shall, at the Contractor's expense, be immediately removed from the vicinity of the Work.

8.03 TRADE NAMES AND "OR APPROVED EQUAL" PROVISION

Whenever in the Specifications or Drawings the name or brand of a manufactured article is used it is intended to indicate a measure of quality and utility or a standard. Except in those instances where the product is designated to match others in use on a particular improvement either completed or in the course of completion, the Contractor may substitute any other brand or manufacture of equal appearance, quality, and utility on approval of the Director, provided the use of such brand or manufacture involves no additional cost to the City.

8.04 APPROVAL OF MATERIALS

- A. The Contractor shall furnish without additional cost to the City such quantities of construction materials as may be required by the Director for test purposes. He/she shall place at the Director's disposal all available facilities for and cooperate with him in the sampling and testing of all materials and workmanship. The Contractor shall prepay all shipping charges on samples. No samples are to be submitted with the bids unless otherwise specified.
- B. Each sample submitted shall be labeled. A letter, in duplicate, submitting each shipment of samples shall be mailed to the Director by the Contractor. Both the label on the sample and the letter of

transmittal shall indicate the material represented, its place of origin, the names of the producer and the Contractor, the Specifications number and title, and a reference to the applicable Drawings and Specifications paragraphs.

- C. Materials or equipment of which samples are required shall not be used on the Work until approval has been given by the Director in writing. Approval of any sample shall be only for the characteristics of the uses named in such approval and no other. No approval of a sample shall be taken in itself to change or modify any Contract requirement.
- D. Failure of any material to pass the specified tests, including life cycle maintenance data may be sufficient cause for refusal to consider under this Contract, any further sample of the same brand or make of that material.

8.05 ORDERING MATERIALS AND EQUIPMENT

One copy of each of the Contractor's purchase orders for materials and equipment forming a portion of the Work must be furnished to the Director, if requested. Each such purchase order shall contain a statement that the materials and equipment included in the order are subject to inspection by the City. Materials and equipment purchased locally will, at the City's discretion, be inspected at the point of manufacture or supply, and materials and equipment supplied from points outside the Los Angeles area will be inspected upon arrival at the job, except when other inspection requirements are provided for specific materials in other sections of the Contract Documents.

8.06 AUTHORITY OF THE DIRECTOR

- A. On all questions concerning the acceptability of materials or machinery, the classification of materials, the execution of the Work, and conflicting interests of Contractors performing related work, the decision of the Director shall be final and binding.
- B. The Director will make periodic observations of materials and completed work to observe their compliance with Drawings, Specifications, and design and planning concepts, but he/she is not responsible for the superintendence of construction processes, site conditions, operations, equipment, personnel, or the maintenance of a safe place to work or any safety in, on, or about the site of work.

8.07 INSPECTION

All materials furnished and work done under this Contract will be subject to rigid inspection. The Contractor shall furnish, without extra charge, the necessary test pieces and samples, including facilities and labor for obtaining them, as requested by the Director. The Director, or his/her authorized agent or agents, at all times shall have access to all parts of the shop and the works where such materials under his/her inspection is being manufactured or the work performed. Work or material that does not conform to the Specifications, although accepted through oversight, may be rejected at any stage of the Work. Whenever the Contractor is permitted or directed to do night work or to vary the period during which work is carried on each day, he/she shall give the Director due notice, so that inspection may be provided. Such work shall be done under regulations to be furnished in writing by the Director.

8.08 INFRINGEMENT OF PATENTS

The Contractor shall hold and save the City, its officers, agents, servants, and employees harmless from and against all and every demand or demands, of any nature or kind, for or on account of the use of any patented

invention, process, equipment, article, or appliance employed in the execution of the Work or included in the materials or supplies agreed to be furnished under this Contract, and should the Contractor, his/her agents, servants, or employees, or any of them, be enjoined from furnishing or using any invention, process, equipment, article, materials, supplies or appliance supplied or required to be supplied or used under this Contract, the Contractor shall promptly substitute other inventions, processes, equipment, articles, materials, supplies, or appliances in lieu thereof, of equal efficiency, quality, finish, suitability, and market value, and satisfactory in all respects to the Director. Or in the event that the Director elects, in lieu of such substitution, to have, supplied, and to retain and use, any such invention, process, equipment, article, materials, supplies, or appliances, as may by this Contract be required to be supplied and used, in that event the Contractor shall at his/her expense pay such royalties and secure such valid licenses as may be requisite and necessary to enable the City, its officers, agents, servants, and employees, or any of them, to use such invention, process, equipment, article, materials, supplies, or appliances without being disturbed or in way interfered with by any proceeding in law or equity on account thereof. Should the Contractor neglect or refuse promptly to make the substitution hereinbefore required, or to pay such royalties and secure such licenses as may be necessary and requisite for the purpose aforesaid, then in that event the Director shall have the right to make such substitution, or the City may pay such royalties and secure such licenses and charge the cost thereof against any money due the Contractor from the City, or recover the amount thereof from him/her and his/her surety, notwithstanding final payment under this Contract may have been made.

[END OF ARTICLE]

ARTICLE 9 SUBMITTALS

9.01 GENERAL

- A. The Contractor shall submit samples, drawings, and data for the Director's approval which demonstrate fully that the construction, and the materials and equipment to be furnished will comply with the provisions and intent of the Drawings and Specifications.
- B. Specific items to be covered by the submittals shall include, as a minimum, the following:
 - 1. For structures, submit all shop, setting, equipment, miscellaneous iron and reinforcement drawings and schedules necessary.
 - 2. For conduits, submit a detailed layout of the conduit with details of bends and fabricated specials and furnish any other details necessary. Show location of shop and field welds.
 - 3. For equipment which requires electrical service, submit detailed information to show power supply requirements, wiring diagrams, control and protection schematics, shop test data, operation and maintenance procedures, outline drawings, and manufacturer's recommendation of the interface/interlock among the equipment.
 - 4. For mechanical equipment submit all data pertinent to the installation and maintenance of the equipment including shop drawings, manufacturer's recommended installation procedure, detailed installation drawings, test data and curves, maintenance manuals, and other details necessary.
 - 5. Samples
 - 6. Colors
 - 7. Substitutions
 - 8. Manuals
 - 9. As-built drawings
 - 10. Safety plans required by Article 10

9.02 PRODUCT HANDLING

- A. Submittals shall be accompanied by a letter of transmittal and shall be in strict accordance with the provisions of this Article.
- B. Submit priority of processing when appropriate.

9.03 SCHEDULE OF SUBMITTALS

- A. The Contractor shall prepare and submit a schedule of submittals. The schedule of submittals shall be in the form of a submittal log. Refer to Paragraph 9.12.

9.04 SHOP DRAWINGS

- A. All shop drawings shall be produced to a scale sufficiently large to show all pertinent features of the item and its method of connection to the Work.
- B. All shop drawing prints shall be made in blue or black line on white background. Reproductions of City/Contract Drawings are not acceptable.
- C. The overall dimensions of each drawing submitted to the Director shall be equal to one of the City's standard sheet sizes as listed below. The title block shall be located in the lower right hand corner of each drawing and shall be clear of all line Work, dimensions, details, and notes.

Sheet Sizes
<u>Height X Width</u>
11" X 8 1/2"
11" X 17"
24" X 36"
30" X 42"

9.05 COLORS

Unless the precise color and pattern are specified elsewhere, submit accurate color charts and pattern charts to the Director for his/her review and selection whenever a choice of color or pattern is available in a specified product. Label each chart naming the source, the proposed location of use on the project, and the project.

9.06 MANUFACTURERS' LITERATURE

Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly show which portions of the contents are being submitted for review.

9.07 SUBSTITUTIONS

- A. The Contract is based on the materials, equipment, and methods described in the Contract Documents. Any Contractor proposed substitutions are subject to the Director's approval.

The Director will consider proposals for substitution of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data, and all other information, including life cycle maintenance data, required by the Director to evaluate the proposed substitution.

- B. No requests for substitution of any material, device, product, equipment, fixture, form, or type of construction shall be considered by City prior to award of the Contract. Bidders shall submit all requests for substitution and substantiating data, on "Substitution Form" (Appendix 5), within **ten (10) calendar days** from the date of the Notice to Proceed. Bidder shall refer to the appropriate provisions of the General Conditions for additional information regarding substitutions. Authorization of a substitution is solely within the discretion of the City. Otherwise, such requests will not be considered.
- C. Trade names and "or approved equal" provision as set forth in Paragraph 8.03.

9.08 MANUALS

- A. When manuals are required to be submitted covering items included in this Work, prepare and submit such manuals in approximately 8-1/2" X 11" format in durable plastic binders. In addition, manuals shall be submitted in electronic format. Manuals shall contain at least the following:
1. Identification on, or readable through, the front cover stating general nature of the manual.
 2. Neatly typewritten index near the front of the manual, furnishing immediate information as to location in the manual of all emergency data regarding the installation.
 3. Complete instructions regarding operation and maintenance of all equipment involved.
 4. Complete nomenclature of all replaceable parts, their part numbers, current cost, and name and address of nearest vendor of parts.
 5. Copy of all guarantees and warranties issued.
 6. Copy of drawings with all data concerning changes made during construction.
- B. Where contents of manuals include manufacturers' catalog pages, clearly indicate the precise items included in this installation and delete, or otherwise clearly indicate, all manufacturers' data with which this installation is not concerned.

9.09 AS-BUILT DRAWINGS

- A. When required to be submitted covering items included in this Work, the Contractor shall deliver to the City one complete set of final As-Built hard copy drawings together with a set of AutoCAD drawing files in electronic format showing completed building, "as-built" for City records before the Contract will be accepted by the City.
- B. The drawings shall be duplicates and at the same size and dimensional scale as the originals. They shall be on a polyester translucent base material with a minimum sheet thickness of .003 inch (.08mm).
- C. The legibility and contrast of each drawing submitted to the City shall be such that every line, number, letter, and character is clearly readable in a full size blow back from a 35 mm microfilm negative of the drawing.

9.10 SUBMITTALS QUANTITIES

- A. Submit seven (7) copies of all data and drawings unless specified otherwise.
- B. Submit all samples, unless specified otherwise, in the quantity to be returned, plus two, which will be retained by the Director.

9.11 IDENTIFICATION OF SUBMITTALS

Completely identify each submittal and re-submittal by showing at least the following information:

- A. Name and address of submitter, plus name and telephone number of the individual who may be contacted for further information.

- B. Name of project as it appears in the Contract Documents and Specification No.
- C. Drawing number and Specifications section number other than this section to which the submittal applies.
- D. Whether this is an original submittal or re-submittal.
- E. For samples, indicate the source of the sample.

9.12 SCHEDULE OF SUBMITTALS

- A. Submit initial schedule of submittals within five (5) Working Days after the Issuance Date on Notice to Proceed.
- B. Submit revised schedule of submittals within five (5) Working Days after date of request from the Director.
- C. The Director will review schedule of submittals and will notify Contractor that schedule is acceptable or not acceptable within five (5) Working Days after receipt.

9.13 COORDINATION OF SUBMITTALS

- A. Prior to submittal for the Director's review, use all means necessary to fully coordinate all material, including the following procedures:
 - 1. Determine and verify all field dimensions and conditions, materials, catalog numbers, and similar data.
 - 2. Coordinate as required with all trades and with all public agencies involved.
 - 3. Secure all necessary approvals from public agencies and others and signify by stamp, or other means, that they have been secured.
 - 4. Clearly indicate all deviations from the Specifications.
- B. Unless otherwise specifically permitted by the Director, make all submittals in groups containing all associated items; the Director may reject partial submittals as not complying with the provisions of the Specifications.

9.14 TIMING FOR SUBMITTALS

- A. Make all submittals far enough in advance of scheduled dates of installation to provide all required time for reviews, for securing necessary approvals, for possible revision and re-submittal, and for placing orders and securing delivery.
- B. In scheduling, allow at least 15 Working Days for the Director's review, plus the transit time to and from the City office.
- C. Manuals shall be submitted prior to performing functional tests.

9.15 APPROVAL BY CITY

- A. Up to three (3) copies of each submittal, except manuals, schedule of costs for progress payments, and as-built drawings will be returned to the Contractor marked "No Exceptions Taken," "Make Corrections Noted - Do Not Resubmit," or "Make Corrections Noted - Resubmit." Manuals, schedule of costs, and as-built drawings will be returned for re-submittal if incomplete or unacceptable.
- B. Submittals marked "Approved as Noted" need not be resubmitted, but the notes shall be followed.
- C. If submittal is returned for correction, it will be marked to indicate what is unsatisfactory.
- D. Resubmit revised drawings or data as indicated, in five (5) copies.
- E. Approval of each submittal by the Director will be general only and shall not be construed as:
 - 1. Permitting any departures from the Specifications requirements.
 - 2. Relieving the Contractor of the responsibility for any errors and omissions in details, dimensions, or of other nature that may exist.
 - 3. Approving departures from additional details or instructions previously furnished by the Director.

9.16 CHANGES TO APPROVED SUBMITTALS

- A. A re-submittal is required for any proposed change to an approved submittal. Changes which require re-submittal include, but are not necessarily limited to, drawing revisions, changes in materials and equipment, installation procedures and test data. All re-submittals shall include an explanation of the necessity for the change.
- B. Minor corrections to an approved submittal may be accomplished by submitting a "Corrected Copy".

[END OF ARTICLE]

ARTICLE 10 SAFETY

10.01 PROTECTION OF PERSONS AND PROPERTY

Contractor's Responsibility: Notwithstanding any other provision of the Contract Documents, the Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property, during performance of the Work. This requirement will apply continuously and will not be limited to normal working hours. Safety and sanitary provisions shall conform to all applicable Federal, State, County, and local laws, regulations, ordinances, standards, and codes. Where any of these are in conflict, the more stringent requirement shall be followed.

10.02 PROTECTION FROM HAZARDS

A. Trench Excavation

Excavation for any trench four (4) feet or more in depth shall not begin until the Contractor has received approval from the Director of the Contractor's detailed plan for worker protection from the hazards of caving ground during the excavation of such trench. Such plan shall show the details of the design of shoring, bracing, sloping or other provisions to be made for worker protection during such excavation. No such plan shall allow the use of shoring, sloping or protective system less effective than that required by the Construction Safety Orders of the Division of Occupational Safety and Health, and if such plan varies from the shoring system standards established by the Construction Safety Orders, the plan shall be prepared and signed by an engineer who is registered as a Civil or Structural Director in the State of California.

B. Confined Spaces

Contractor shall comply with all of the provisions of General Industry Safety Orders of the California Code of Regulations. Entry of a confined space shall not be allowed until the Contractor has received approval from the Director of the Contractor's program for confined space entry. Confined space means a space that (1) Is large enough and so configured that an employee can bodily enter and perform assigned Work; and (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and (3) Is not designed for continuous employee occupancy. Failure to submit a confined space entry program may result in actions as provided in Article 5: "Suspension or Termination of Contract".

C. Material Safety Data Sheet

Contractor shall comply with all of the provisions of General Industry Safety Orders of the California Administrative Code. The Contractor shall submit to the Director a Material Safety Data Sheet (MSDS) for each hazardous substance proposed to be used, ten (10) days prior to the delivery of such materials to the job site or use of such materials at a manufacturing plant where the Director is to perform an inspection. For materials which are to be tested in City laboratories, the MSDS shall be submitted with the sample(s). Hazardous substance is defined as any substance included in the list (Director's List) of hazardous substances prepared by the Director, California Department of Industrial Relations, pursuant to Labor Code Section 6382. Failure to submit an MSDS for any hazardous substance may result in actions as provided in Article 5, "Suspension or Termination of Contract".

10.03 DIFFERING SITE CONDITIONS

- A. Differing Site Conditions Defined. The Contractor shall promptly, and before such conditions are disturbed, notify the Director in writing of any Differing Site Conditions. Differing Site Conditions are those conditions, located at the project site or in existing improvements and not otherwise ascertainable by Contractor through the exercise of due diligence in the performance of its inspection obligations in the Contract Documents, encountered by Contractor in digging trenches or other excavations(s) that extend deeper than four feet below the surface of the ground that constitute:
 - 1. Material that the Contractor believes may be material that is hazardous waste as defined in Section 25117 of the Health and Safety Code, which is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.
 - 2. Subsurface or latent physical conditions at the site differing materially from those indicated in these Contract Documents.
 - 3. Unknown physical conditions at the site, of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in these Contract Documents.
- B. Notice by Contractor. If the Contractor encounters conditions it believes constitute Differing Site Conditions, then notice of such conditions shall, before such conditions are disturbed, be promptly reported to the Director followed within twenty-four (24) hours by a further written notice stating a detailed description of the conditions encountered.
- C. The Director will promptly investigate the conditions and If he/she finds that such conditions do materially differ, or do involve hazardous waste, and do cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work under this Contract, an equitable adjustment will be made, as determined by the Director.
- D. Change Order Request. If Contractor intends to seek an adjustment to the Contract Sum or Contract Time based upon Differing Site Conditions, it must, within seven (7) calendar days after the Discovery Date relative to such conditions, submit a Notice of Scope Change and thereafter submit a Change Order Request setting forth a detailed cost breakdown and CPM schedule Fragnet, as required by Articles 3 and 6 of these General Conditions, of the additional Allowable Costs and Excusable Delay resulting from such Differing Site Conditions.
- E. Failure to Comply. Failure by Contractor to strictly comply with the requirements of this Paragraph 10.03 concerning the timing and content of any notice of Differing Site Conditions or request for adjustment in Contract Sum or Contract Time based on Differing Site Conditions shall be deemed waiver of any right by the Contractor for an adjustment in the Contract Sum or Contract Time by reason of such conditions.
- F. Final Completion. No claim by the Contractor for additional compensation for Differing Site Conditions shall be allowed if asserted after Final Payment.
- G. In the event of disagreement between the Contractor and the Director whether the conditions do materially differ or whether a hazardous waste is involved or whether the conditions cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any completion date required by the Contract, but shall proceed with all Work to be performed under the Contract Documents.

- H. The Contractor shall retain all rights provided by, and shall be subject to all requirements of, this Contract which pertain to the resolution of disputes and protests.
- I. Contractor Responsibility. Except as otherwise provided in this Paragraph 10.03 for Differing Site Conditions, Contractor agrees to solely bear the risk of additional cost and Delay due to concealed or unknown conditions, surface or subsurface, at the Site or in Existing Improvements, without adjustment to the Contract Sum or Contract Time.

10.04 TRAFFIC REGULATION

- A. During the performance of the Work the Contractor shall erect and maintain necessary temporary fences, bridges, railings, lights, signals, barriers, or other safeguards as shall be appropriate under the circumstance in his/her judgment for the prevention of accidents; and he/she shall take other precautions as necessary for public safety including, but not limited to, traffic control. Traffic control shall be conducted in accordance with the latest edition of the California Manual on Uniform Traffic Control Devices (MUTCD) or Work Area Traffic Control ("WATCH") handbook, published by BNI Books, whichever requirements are more stringent, and as directed and approved by the Traffic and Transportation Division.
- B. Contractor shall submit at least ten (10) Working Days prior to Work a detailed traffic control plan, that is approved by all agencies having jurisdiction and that conforms to all requirements of the Specifications.
- C. No changes or deviations from the approved detailed traffic control plan shall be made, except temporary changes in emergency situations, without prior approval of the City Traffic and Transportation Division and all agencies having jurisdiction.

Contractor shall immediately notify the Director, the City Traffic and Transportation Division and the agencies having jurisdiction of occurrences that necessitate modification of the approved traffic control plan.

- D. Contractor's failure to comply with this provision may result in actions as provided in Article 5: "Suspension or Termination of Contract" of these General Conditions.

10.05 TRAFFIC CONTROL DEVICES

- A. Traffic signs, flashing lights, barricades and other traffic safety devices used to control traffic shall conform to the requirements of the WATCH handbook or the manual of traffic control, whichever is more stringent, and as approved by the City Traffic and Transportation Division.
 - 1. Portable signals shall not be used unless permission is given in writing by the agency having jurisdiction.
 - 2. Warning signs used for nighttime conditions shall be reflectorized or illuminated. "Reflectorized signs" shall have a reflectorized background and shall conform to the current State of California Department of Transportation specification for reflective sheeting on highway signs.
- B. If the Contractor fails to provide and install any of the signs or traffic control devices required hereby or ordered by the City staff, staff may cause such signs or traffic control devices to be placed by others, charge the costs therefore against the Contractor, and deduct the same from the next

progress payment.

10.06 EXECUTION

- A. The Contractor shall provide written notification to the Police Department, Traffic Bureau (818) 548-3130, at least two (2) weeks prior to the beginning of construction at any particular location. Notification will include the specific location, project dates, what lanes of the roadway will be closed and when, the construction project manager's name and business phone number, and the construction inspector's name and business phone number.
- B. The Contractor shall notify, by telephone, the Police Department Traffic Bureau (818) 548-3130 and Patrol Operations (818) 548-4890 at the completion of the posting of temporary no parking signs. Notification will include the times, dates and locations of the posting. When vehicles must be towed for violation of temporary no parking signs, the person who actually posted the signs, or on-view supervisor of that posting, will be present to answer pertinent questions that may be asked by the parking enforcement officer or police officer towing the vehicles.
- C. The Contractor shall notify the Glendale Fire Department, on a daily basis during the entire period that construction is in progress whenever roadways are reduced in width or blocked. Notification shall be made to the Fire Dispatch (818) 956-4800 and the Contractor shall provide the information required to identify which roadways would have accessibility problems due to his/her operations. The Contractor shall submit to Fire Department schedule of Work for their use and files.
- D. Roads subject to interference from the Work covered by this Contract shall be kept open, and the fences subject to interference shall be kept up by the Contractor until the Work is finished. Except where public roads have been approved for closure, traffic shall be permitted to pass through designated traffic lanes with as little inconvenience and delay as possible.
- E. Where alternating one-way traffic has been authorized, the maximum time that traffic will be delayed shall be posted at each end of the one-way traffic section. The maximum delay time shall be approved by the agency having jurisdiction.
- F. Contractor shall install temporary traffic markings where required to direct the flow of traffic and shall maintain the traffic markings for the duration of need. Contractor shall remove the markings by abrasive blasting when no longer required.
- G. Convenient access to driveways and buildings in the vicinity of Work shall be maintained as much as possible. Temporary approaches to, and crossing of, intersecting traffic lanes shall be provided and kept in good condition.
- H. When leaving a Work area and entering a roadway carrying public traffic, the Contractor's equipment, whether empty or loaded, shall in all cases yield to public traffic.

10.07 FLAGGING

- A. Contractor shall provide flaggers to control traffic where required by the approved traffic control plan.
 - 1. Flaggers shall perform their duties and shall be provided with the necessary equipment in accordance with the current "Instructions to Flaggers" of the California Department of Transportation.

2. Flaggers shall be employed full time on traffic control and shall have no other duties.

10.08 PEDESTRIAN CANOPIES OR BARRICADE IMPROVEMENTS

Refer to City of Glendale for requirements for building or access road safety improvements that the Contractor shall construct during construction period. These devices or improvements, as the City deems necessary or prudent, shall be at the expense of the Contractor.

[END OF ARTICLE]

ARTICLE 11 INDEMNITY

11.01 INDEMNITY

To the maximum extent permitted by law, the Contractor shall fully indemnify, hold harmless, protect, and defend the City, its officers, employees, agents, representatives and their successors and assigns ("Indemnitees") from and against any and all demands, liability, loss, suit, claim, action, cause of action, damage, cost, judgment, settlement, decree, arbitration award, stop payment notice, penalty, loss of revenue, and expense (including any fees of accountants, attorneys, experts or other professionals, and costs of investigation, mediation, arbitration, litigation and appeal), in law or in equity, of every kind and nature whatsoever, arising out of or in connection with, resulting from or related to, or claimed to be arising out of the Work performed by Contractor, or any of its officers, agents, employees, Subcontractors, Sub-Subcontractors, design consultants or any person for whose acts any of them may be liable, regardless of whether such claim, suit or demand is caused, or alleged to be caused, in part, by an Indemnatee, including but not limited to:

- A. Bodily injury, emotional injury, sickness or disease, or death to any persons;
- B. Property damage;
- C. Infringement of any patent rights, licenses, copyrights or intellectual property which may be brought against the Contractor or City arising out of Contractor's Work, for which the Contractor is responsible;
- D. Stop payment notices and claims for labor performed or materials used or furnished to be used in the Work, including all incidental or consequential damages resulting to City from such stop payment notices and claims;
- E. Failure of Contractor or its Subcontractors to comply with the provisions for insurance;
- F. Failure to comply with any Governmental Approval or similar authorization or order;
- G. Misrepresentation, misstatement, or omission with respect to any statement made in or any document furnished by the Contractor in connection therewith;
- H. Breach of any duty, obligation, or requirement under the Contract Documents;
- I. Failure to provide notice to any Party as required under the Contract Documents;
- J. Failure to protect the property of any utility provider or adjacent property owner; or
- K. Failure to make payment of all employee benefits.

This indemnity provision is effective regardless of any prior, concurrent, or subsequent passive negligence by Indemnitees, except that, to the limited extent mandated by California Civil Code Section 2782, the Contractor shall not be responsible for liabilities which arise from (1) the sole negligence or willful misconduct of Indemnitees; (2) defects in design furnished by the City; or (3) the active negligence of the City.

11.02 ENFORCEMENT

Contractor's obligations under this Article extend to claims occurring after termination of the Contractor's performance of the Contract or Final Payment to Contractor. The obligations apply regardless of any actual or alleged negligent act or omission of Indemnitees. Contractor, however, shall not be obligated under this Agreement to indemnify an Indemnitee for claims arising from the sole or active negligence or willful misconduct of the Indemnitee or independent contractors who are directly responsible to Indemnitees or from defects in design furnished by the City. Contractor's obligations under this Article are in addition to any other rights or remedies which the Indemnitees may have under the law or under the Contract Documents. In the event of any claim, suit or demand made against any Indemnitees, the City may in its sole discretion reserve, retain or apply any monies due to the Contractor under the Contract for the purpose of resolving such claims; provided, however, that the City may release such funds if the Contractor provides the City with reasonable assurance of protection of the City's interests. The City shall in its sole discretion determine whether such assurances are reasonable.

11.03 NO LIMITATIONS

Contractor's indemnification and defense obligations set forth in this Article are separate and independent from the insurance provisions set forth in Article 12 herein; and do not limit, in any way, the applicability, scope, or obligations set forth in those insurance provisions. In claims, suits, or demands against any Indemnitee by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the Contractor's indemnification and defense obligations shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefits acts, or other employee benefits acts.

[END OF ARTICLE]

ARTICLE 12 INSURANCE

12.01 CONDITION TO COMMENCEMENT

Contractor shall not commence Work under this Contract until Contractor has obtained all insurance required hereunder from a company or companies acceptable to City, nor shall the Contractor allow any Subcontractor to commence Work on a subcontract until all insurance required of said Subcontractor has been obtained. Proof of insurance, in the form required by Exhibit 2, must be submitted by the Contractor prior to the City's execution of the Contract.

12.02 MINIMUM COVERAGE AND LIMITS

Contractor shall maintain the insurance coverage as set forth in Exhibit 2 throughout the term of the Contract.

12.03 CONDITIONS REGARDING INSURANCE COVERAGE AND LIMITS

City and Contractor agree as follows:

- A. All insurance coverage and limits provided pursuant to the Contract Documents shall apply to the full extent of the policies involved, available or applicable. Nothing contained in the Contract Documents or any other agreement relating to City or its operations limits the application of such insurance coverage.
- B. None of the policies required by this Contract shall be in compliance with these requirements if they include any limiting endorsement that has not been first submitted to City and approved in writing by the City Attorney or City's Risk Manager.

12.04 INSURANCE OBLIGATION IS SEPARATE FROM INDEMNITY OBLIGATION

The Construction Contract's insurance provisions:

- A. Are separate and independent from the indemnification and defense provisions in Article 11 of the General Conditions; and
- B. Do not limit, in any way, the applicability, scope, or obligations of the indemnification and defense provisions in Article 11 of the General Conditions.

[END OF ARTICLE]

ARTICLE 13 BONDS

13.01 REQUIRED BONDS

A. Contractor shall furnish the following bonds:

1. A Performance Bond in an amount equal to one hundred percent (100%) of the total Contract price in the form shown in Appendix 1 attached hereto.
2. A Payment Bond (Labor and Material) in an amount equal to one hundred percent (100%) of the total Contract price in the form shown in Appendix 2 attached hereto.

13.02 POWER OF ATTORNEY

All bonds must be accompanied by a power of attorney from the surety company authorizing the person executing the bond to sign on behalf of the company. The signature of the person executing the bond on behalf of Surety shall be acknowledged by a Notary Public as the signature of the person designated in the power of attorney.

13.03 APPROVED SURETY

All bonds must be issued by a California admitted surety insurer with the minimum A.M. Best Company Financial strength rating of "A: VII", or better. Bonds issued by a California admitted surety not listed on Treasury Circular 570 will be deemed accepted unless specifically rejected by the City. Bonds issued from admitted surety insurers not listed in Treasury Circular 570 must be accompanied by all documents enumerated in California Code of Civil Procedure Section 995.660.

13.04 REQUIRED PROVISIONS

Every bond must display the surety's bond number and incorporate the Contract for construction of the Work by reference. The terms of the bonds shall provide that the surety agrees that no change, extension of time, alteration, or modification of the Contract Documents or the Work to be performed thereunder shall in any way affect its obligations and shall waive notice of any such change, extension of time, alteration, or modification of the Contract Documents.

13.05 NEW OR ADDITIONAL SURETIES

If, during the continuance of the Contract, any of the sureties, in the opinion of the City, are or become non-responsible or otherwise unacceptable to City, City may require other new or additional sureties, which the Contractor shall furnish to the satisfaction of City within ten (10) days after notice, and in default thereof the Contract may be suspended and the materials may be purchased or the Work completed as provided in Article 5 herein.

13.06 WAIVER OF MODIFICATIONS AND ALTERATIONS

No modifications or alterations made in the Work to be performed under the Contract or the time of performance shall operate to release any surety from liability on any bond or bonds required to be given herein. Notice of such events shall be waived by the surety.

13.07 APPROVAL OF BONDS

The Contract will not be executed by City nor the Notice to Proceed issued until the required bonds have been received and approved by City. City's decision as to the acceptability of all sureties and bonds is final. No substitution of the form of the documents will be permitted without the prior written consent of City.

[END OF ARTICLE]

ARTICLE 14 LABOR PROVISIONS

14.01 WORKING HOURS

- A. Work or activity of any kind shall be limited to the hours from 7:00 a.m. to 7:00 p.m. No construction noise shall be permitted between the hours of 7:00 p.m. and 7:00 a.m. of the next day as set forth in the Glendale Municipal Code.
- B. Work in excess of eight (8) hours per day, on Saturdays, Sundays, or on City holidays requires prior consent of the Director and is subject to Cost of Overtime Construction Inspection.
- C. Night, Sunday and Holiday Work:

No Work shall be performed at night, Sunday, or the ten (10) legal holidays to wit: New Year's Day, Martin Luther King, Jr. Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Friday following Thanksgiving Day, and Christmas Day, except Work pertaining to the public safety or with the permission of the Director, and accordance with such regulations as he/she shall furnish in writing. Before performing any Work at said times, except Work pertaining to the public safety, the Contractor shall give written notice to the Director so that proper inspection may be provided. "Night" as used in this Paragraph shall be deemed to include the hours from 7:00 P.M. to 7:00 A.M. of the next succeeding day.

14.02 COST OF OVERTIME CONSTRUCTION SERVICES AND INSPECTIONS

- A. Overtime construction Work performed at the option of, or for the convenience of, the Contractor will be inspected by the City at the expense of the Contractor. For any such overtime beyond the regular 8-hour day and for any time worked on Saturday, Sunday, or holidays the charges will be determined by the City, and submitted to the Contractor for payment.
- B. Equipment, materials, or services provided by the City, in connection with Contractor-initiated overtime construction Work described in Paragraph 14.02(A), will also be at the expense of the Contractor. The charges will be determined by the City, and submitted to the Contractor for payment.
- C. There will be no charges to the Contractor for the inspection of overtime Work ordered by the Director or required by the Contract Documents.

14.03 COMPLIANCE WITH STATE LABOR CODE

- A. Contractor shall comply with the provisions of the Labor Code of the State of California and any amendments thereof.
 - 1. The time of service of any worker employed upon the Work shall be limited and restricted to eight (8) hours during any one-calendar day, and 40 hours during any one-calendar week.
 - 2. Work performed by employees of the Contractor in excess of eight (8) hours per day, and 40 hours during any one calendar week, shall be permitted upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.

3. The Contractor and every Subcontractor shall keep an accurate record showing the name of and the actual hours worked each calendar day and each calendar week by each worker employed by him/her in connection with the Work; the record shall be kept open at all reasonable hours to the inspection of the City and to the Division of Labor Standards Enforcement of the State of California.

14.04 WAGE RATES

A. Prevailing Wages

1. Contractor shall comply with the general prevailing rates of per diem wages and the general prevailing rates for holiday and overtime Work in the locality in which the Work is to be performed, for each craft, classification, or type of worker needed to execute the Contract. The Director of the Department of Industrial Relations of the State of California (pursuant to California Labor Code) and the United States Secretary of Labor (pursuant to the Davis-Bacon Act) have determined the general prevailing rates of wages in the locality in which the Work is to be performed. The rates are available online at www.dir.ca.gov/DLSR/PWD/ and www.wdol.gov/. To the extent that there are any differences in the federal and state prevailing wage rates for similar classifications of labor, the Contractor and its Subcontractors shall pay the highest wage rate.
2. The Contractor shall post a copy of the general prevailing rate of per diem wages at the job site.
3. The Contractor and any Subcontractor under him/her shall pay not less than the specified prevailing rate of wages to all workers employed in the execution of the Contract.
4. The holidays upon which such rates shall be paid shall be all holidays recognized in the collective bargaining Contract applicable to the particular craft, classification, or type of worker employed on the project.
5. The Contractor shall, as a penalty to the State or the City, forfeit not less than Forty Dollars (\$40.00) and not more than Two Hundred Dollars (\$200) for each calendar day, or portion thereof, for each worker paid less than the prevailing rates for the Work or craft in which the worker is employed under the Contract by the Contractor or by any Subcontractor under him. The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which such worker was paid less than the stipulated prevailing wage rate shall be paid to such worker by the Contractor.
6. The specified wage rates are minimum rates only and the City will not consider and shall not be liable for any claims for additional compensation made by the Contractor because of payment by him/her of any wage rate in excess of the general prevailing rates. All disputes in regard to the payment of wages in excess of those specified herein shall be adjusted by the Contractor at his/her own expense.

B. Payroll Records

1. The Contractor and each Subcontractor shall keep an accurate payroll record, showing the name, address, social security number, Work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed in connection with the Work.

The payroll records shall be certified and shall be available for inspection.

2. The Contractor shall inform the City of the location of the payroll records, including the street address, city and county, and shall, within five (5) Working Days, provide a notice of change in location and address.
3. Upon request by the Director, the Contractor shall provide a copy of the certified payroll records along with a statement of compliance.

14.05 APPRENTICESHIP STANDARDS

A. Compliance with California Labor Code Section 1777.5 requires all public works contractors and subcontractors to:

1. Prior to commencing work on a public works contract, submit Contract Award information to the applicable joint apprenticeship committee, including an estimate of the journeyman hours to be performed under the Contract, the number of apprentices to be employed, and the approximate dates the apprentices will be employed. Use Form DAS-140 (Appendix 7). The City reserves the right to require Contractor and Subcontractors to submit a copy of said form to the City.
2. Employ apprentices for the public work at a ratio of no less than one (1) hour of apprentice work for every five (5) hours or labor performed by a journeyman. To request dispatch of apprentices, use Form DAS-142 (Appendix 8). The City reserves the right to require Contractor and Subcontractors to submit a copy of said form to the City.
3. Pay the apprentice rate on public works projects only to those apprentices who are registered, as defined in Labor Code Section 3077.
4. Contribute to the training fund in the amount identified in the Prevailing Wage Rate publication for journeyman and apprentices. Contractors who choose not to contribute to the local training trust fund must make their contributions to the California Apprenticeship Council, P.O. Box 420603, San Francisco, CA 94142.

B. Pursuant to Labor Code Section 1777.1, failing to comply with the provisions of California Labor Code Section 1777.5 may result in the loss of the right to bid on all public works projects for a period of one to three years and the imposition of a civil penalty of Five Thousand Dollars (\$5,000) for each calendar day of noncompliance. Contractor should make a separate copy of this material for each of his/her Subcontractors.

C. Payroll Records

The Contractor and each Subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman apprentice, worker or other employee employed in connection with the work. The payroll records shall be certified and shall be submitted to the City's Project Manager every two weeks.

D. Statement of Employer Fringe Benefit Payments

Within five (5) calendar days of signing the Contract or Subcontract, as applicable, the Statement of Employer Payments (DLSE Form PW 26, Appendix 9) shall be completed for each Contractor and Subcontractor of any tier who pays benefits to a third party trust, plan or fund for health and welfare benefits, vacation funds or makes pension contributions. The form must contain, for each worker classification, the fund, plan or trust name, address, administrator, the amount per hour contributed and the frequency of contributions. Training fund contributions shall also be reported in this form. City reserves the right to require Contractors and Subcontractors to submit a copy of said form to the City.

14.06 EMPLOYMENT OF APPRENTICES

- A. In the performance of this Contract, the Contractor and any Subcontractor shall comply with the provisions concerning the employment of apprentices in the Labor Code of the State of California and any amendments thereof.

In the event the Contractor or any Subcontractor willfully fails to comply with the aforesaid provisions of the Labor Code, such Contractor or Subcontractor shall be subject to the penalties for noncompliance in the Labor Code of the State of California and any amendments thereof.

14.07 CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS – PUBLIC WORKS CONTRACTOR REGISTRATION

- A. Beginning **July 1, 2014**, under the Public Works Contractor Registration Law (California Senate Bill No. 854 - See Labor Code Section 1725.5), contractors must register and meet requirements using the online application <https://efiling.dir.ca.gov/PWCR/ActionServlet?action=displayPWCRRegistrationForm> before bidding on public works contracts in California. The application also provides agencies that administer public works programs with a searchable database of qualified contractors. Application and renewal are completed online with a non-refundable fee of \$300. More information is available at the following links:

http://www.dir.ca.gov/DLSE/PublicWorks/SB854FactSheet_6.30.14.pdf

<http://www.dir.ca.gov/Public-Works/PublicWorks.html>

- B. Beginning **April 1, 2015**, the City must award public works projects only to contractors and subcontractors who comply with the Public Works Contractor Registration Law.

- C. Notice to Bidders and Subcontractors:

1. No contractor or subcontractor may be listed on a Bid proposal for a public works project (**submitted on or after March 1, 2015**) unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code Section 1771.1(a)].
2. No contractor or subcontractor may be awarded a contract for public work on a public works project (**awarded on or after April 1, 2015**) unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.
3. This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.
4. The prime contractor must post job site notices prescribed by regulation. (See 8 Calif. Code Reg. Section 16451(d) for the notice that previously was required for projects monitored by the DIR Compliance Monitoring Unit.)

- D. Furnishing of Electronic Certified Payroll Records to Labor Commissioner. **For all new projects awarded on or after April 1, 2015**, contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement).

14.08 CHARACTER OF WORKERS

The Contractor shall not allow his/her agents or employees, Subcontractors, or any agent or employee thereof, to trespass on premises or lands in the vicinity of the Work. Only skilled foremen and workers shall be employed on Work requiring special qualifications, and when required by the Director, the Contractor shall discharge any person who commits trespass, or in the opinion of the Director, acts in a disorderly, dangerous, insubordinate, incompetent, or otherwise objectionable manner. Any employee being intoxicated or bringing or having intoxicating liquors or controlled substances on the Work shall be discharged. Such discharge shall not be the basis of any claim for compensation of damages against the City or any of its officers, agents, and employees.

14.09 NO SMOKING – STATE LABOR CODE SECTION 6404.5 AND GLENDALE MUNICIPAL CODE, 1995, SECTIONS 8.52.010 *ET SEQ.*

The Contractor and its agents, employees, Subcontractors, representatives, and any person under Contractor's control, are prohibited from smoking in— or within a 20-foot distance from— the Site, which is a "place of employment" under California Labor Code Section 6404.5 and Glendale Municipal Code, 1995, Sections 8.52.010 *et seq.*

[END OF ARTICLE]

ARTICLE 15 DISPUTE RESOLUTION

15.01 PUBLIC CONTRACT CODE SECTION 9204 CLAIMS AND DISPUTE RESOLUTION PROCEDURES

- A. See Paragraph 7.10 above for notice and accrual of claims provisions.
- B. Click the following link for the full text of Public Contract Code Section 9204:
http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PCC§ionNum=9204
- C. Summary of Key Provisions of Public Contract Code Section 9204:
 - 1. The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.
 - 2. Notwithstanding any other law, including, but not limited to, Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, Public Contract Code Section 9204 shall apply to any 9204 Claim, as hereinafter defined, by a contractor in connection with a public works project.
 - 3. Public Contract Code Section 9204 applies to contracts entered into on or after January 1, 2017.
 - 4. "9204 Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:
 - a. A time extension, including, without limitation, for relief from damages or penalties for delay assessed by City under the Contract.
 - b. Payment by the City of money or damages arising from work done by, or on behalf of, the Contractor pursuant to the Contract and payment for which is not otherwise expressly provided or to which the Contractor is not otherwise entitled.
 - c. Payment of an amount that is disputed by the City.
 - 5. "Contractor" is defined in Paragraph 1.01 above.
 - 6. "Public Entity" means the City as defined in Paragraph 1.01 above.
 - 7. "Public work" and "public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.
 - 8. "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who is either in direct contract with Contractor or is a lower tier subcontractor.

9. City's Receipt of a 9204 Claim; Governing Body Approval; Undisputed Amount Payment:
- a. Upon receipt of a 9204 Claim, the City shall conduct a reasonable review of the 9204 Claim and, within a period not to exceed forty-five (45) calendar days, shall provide the Contractor a written statement identifying what portion of the 9204 Claim is disputed and what portion is undisputed. The City and the Contractor may, by mutual agreement, extend the time period provided in Section 9204(d).
 - b. The Contractor shall furnish reasonable documentation to support the 9204 Claim in accordance with GC 3.04, 6.04, 6.06, 6.08, 7.10, 10.03 and this Article 15.
 - c. If the City needs approval from its governing body to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the 9204 Claim, and the governing body does not meet within the 45-day period or within the mutually agreed to extension of time following receipt of a 9204 Claim sent by registered mail or certified mail, return receipt requested, the City shall have up to three (3) calendar days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.
 - d. Any payment due on an undisputed portion of the 9204 Claim shall be processed and made within sixty (60) calendar days after the City issues its written statement. If the City fails to issue a written statement, Paragraph 11 below shall apply.
10. Informal Conference to Meet and Confer; Nonbinding Mediation:
- a. If the Contractor disputes the City's written response, or if the City fails to respond to a 9204 Claim within the time prescribed, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the City shall schedule a meet and confer conference within thirty (30) calendar days for settlement of the dispute.
 - b. Within ten (10) *business* days following the conclusion of the meet and confer conference, if the 9204 Claim or any portion of the 9204 Claim remains in dispute, the City shall provide the Contractor a written statement identifying the portion of the 9204 Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the 9204 Claim shall be processed and made within sixty (60) calendar days after the City issues its written statement. Any disputed portion of the 9204 Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the City and the Contractor sharing the associated costs equally. The City and Contractor shall mutually agree to a mediator within ten (10) *business* days after the disputed portion of the 9204 Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the 9204 Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the 9204 Claim remaining in dispute shall be subject to applicable procedures outside Public Contract Code Section 9204.

- c. For purposes of Public Contract Code Section 9204, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in Public Contract Code Section 9204.
 - d. Unless otherwise agreed to by the City and the Contractor in writing, the mediation conducted pursuant to Public Contract Code Section 9204 shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.
 - e. Public Contract Code Section 9204 does not preclude the City entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under Public Contract Code Section 9204 does not resolve the parties' dispute.
11. Failure by the City to respond to a 9204 Claim from the Contractor within the time periods described in this subdivision or to otherwise meet the time requirements of Public Contract Code Section 9204 shall result in the 9204 Claim being deemed rejected in its entirety. A 9204 Claim that is denied by reason of the City's failure to have responded to a 9204 Claim, or its failure to otherwise meet the time requirements of Public Contract Code Section 9204, shall not constitute an adverse finding with regard to the merits of the 9204 Claim or the responsibility or qualifications of the Contractor.
 12. Amounts not paid in a timely manner as required by Public Contract Code Section 9204 shall bear interest at seven (7) percent per annum.
 13. If a subcontractor or a lower tier subcontractor lacks legal standing to assert a 9204 Claim against the City because privity of contract does not exist, the Contractor may present to the City a 9204 Claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the Contractor present a 9204 Claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the 9204 Claim be presented to the City shall furnish reasonable documentation to support the 9204 Claim in accordance with GC 3.04, 6.04, 6.06, 6.08, 7.10, 10.03 and this Article 15. Within forty-five (45) calendar days of receipt of this written request, the Contractor shall notify the subcontractor in writing as to whether the Contractor presented the 9204 Claim to the City and, if the Contractor did not present the 9204 Claim, provide the subcontractor with a statement of the reasons for not having done so.
 14. A waiver of the rights granted by Public Contract Code Section 9204 is void and contrary to public policy, provided, however, that (1) upon receipt of a 9204 Claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) the City may prescribe reasonable change order (See Article 6 above), claim (See Paragraphs 3.04 and 7.10 above), and dispute resolution procedures and requirements (See Paragraphs 15.03 - 15.06) in addition to the provisions of Public Contract Code Section 9204, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in Public Contract Code Section 9204.

15. Nothing in Public Contract Code Section shall 9204 impose liability upon the City when it makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

15.02 PUBLIC CONTRACT CODE SECTIONS 20104 – 20104.6 (“ARTICLE 1.5”) RESOLUTION OF CONSTRUCTION CLAIMS PROCESS

Click the following link for the full text of Article 1.5:

http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PCC&division=2.&title=&part=3.&chapter=1.&article=1.5

15.03 MUTUAL AGREEMENT FOR CONSOLIDATED CLAIMS REVIEW AND DISPUTE RESOLUTION PROCEDURES

In order to avoid potential duplication of claims review and dispute resolution procedures, by submitting a bid and signing the Contract, Contractor agrees that all claims subject to Article 1.5 shall be governed by the definitions and timelines for review and mediation established in Public Contract Code Section 9204 set forth in 15.01 above.

15.04 SUBMISSION OF 9204 CLAIMS

A. By Contractor

Contractor’s right to commence the 9204 Claim Dispute Resolution Process shall arise upon the Director’s written response denying all or part of a 9204 Claim or deemed rejection should Director return an invalid claim without decision as provided in Paragraph 7.10.D. Contractor shall submit a written Statement of 9204 Claim Dispute to the Director within seven (7) calendar days after the Director rejects all or a portion of Contractor’s initial claim. Contractor’s Statement of 9204 Claim Dispute shall be signed under penalty of perjury under the laws of the State of California and shall state with specificity the events or circumstances giving rise to the 9204 Claim, the dates of their occurrence and the effect, if any, on the compensation due or performance obligations of Contractor under the Construction Contract. Such Statement of 9204 Claim Dispute shall include adequate supporting data to substantiate the disputed 9204 Claim in accordance with GC 3.04, 6.04, 6.06, 6.08, 7.10, 10.03 and this Article 15. Adequate supporting data for a 9204 Claim relating to the adjustment of the Contractor’s obligations relative to time of performance shall include a detailed, event-by-event description of the impact of each delay on Contractor’s time for performance and a CPM schedule Fragnet. Adequate supporting data to a Statement of 9204 Claim Dispute submitted by Contractor involving Contractor’s compensation shall include a detailed cost breakdown and supporting cost data in such form and including such detailed information and other supporting data as required to demonstrate the grounds for, and precise amount of, the 9204 Claim.

15.05 9204 CLAIMS DISPUTE RESOLUTION PROCESS

The parties shall utilize the 9204 Claims Dispute Resolution Process as provided in Paragraphs 15.01 and 15.03 above.

A. Deferral of Claims

Following the completion of the meet and confer process, the parties may reach mutual agreement for the final resolution of the 9204 Claim to be deferred pending Final Completion of the Work. In such event, all 9204 Claims that have been deferred until such Final Completion shall be consolidated within a reasonable time after such Final Completion and thereafter pursued to resolution pursuant to the requirements of the Contract and Public Contract Code Section 9204. Nothing contained in this Article 15 shall be interpreted as limiting the parties' rights to continue informal negotiations of 9204 Claims that have been deferred until such Final Completion; provided, however, that such informal negotiations shall not be interpreted as altering the provisions of this Article 15 deferring final determination and resolution of unresolved Claims until after Final Completion of the Work.

B. Government Code Claim

Notwithstanding Contractor's participation in dispute resolution proceedings or other claims procedures under the Contract, such proceedings are in addition to Contractor's obligation to present a written Government Code claim, in accordance with Section 900 et seq. of the California Government Code, which is a prerequisite to filing a lawsuit for money or damages against City.

C. Legal Proceedings

If the 9204 Claim is not resolved by direct negotiations or mediation, then the party wishing to further pursue resolution or determination of the 9204 Claim shall submit the 9204 Claim for determination by commencing legal proceedings in a court of competent jurisdiction.

15.06 NO WAIVER

Participation in the 9204 Claims Dispute Resolution Process shall not constitute a waiver, release or compromise of any defense of either party, including, without limitation, any defense based on the assertion that the rights of Contractor that are the basis of a 9204 Claim were previously waived by Contractor due to failure to comply with the Contract Documents, including, without limitation, Contractor's failure to comply with any time periods for providing notices or for submission or supporting documentation of 9204 Claims.

15.07 NOTICE OF THIRD PARTY CLAIMS.

The City shall provide Contractor with prompt written notice of the receipt of any third-party claim relating to the Contract by sending a copy of the third-party claim to Contractor at the address indicated in the Agreement.

[END OF ARTICLE]

ARTICLE 16 ACCOUNTING RECORDS

16.01 MAINTENANCE OF RECORDS

Contractor shall keep, and shall include in its contracts with its Subcontractors, provisions requiring its Subcontractors to keep full and detailed books and records in accordance with the requirements of the Contract Documents, including the following: all information, materials and data of every kind and character (hard copy, as well as computer readable data if it exists), that have any bearing on or pertain to any matters, rights, duties or obligations relating to the Project or the performance of the Work, including, without limitation, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, change orders, change order requests, estimates, field orders, schedules, diaries, logs, reports, shop drawings, samples, exemplars, Drawings, Specifications, invoices, delivery tickets, receipts, vouchers, cancelled checks, memoranda; accounting records; job cost reports; job cost files (including complete documentation covering negotiated settlements); back charge; general ledgers; documentation of cash and trade discounts earned; insurance rebates and dividends, and other documents relating in way to Claims or Change Orders, Construction Change Directives, Work Directives, or other claims for payment related to the Project asserted by Contractor or any Subcontractor ("Accounting Records"). Contractor shall exercise such controls as may be necessary for proper financial management of the Work. Such accounting and control systems shall comply with prevailing custom and practice for similar projects, be satisfactory to City and shall include preservation of such records for a period of five (5) years after approval of the Notice of Completion and Acceptance by City, or for such longer period as may be required by applicable laws.

16.02 ACCESS TO RECORDS

Contractor shall allow, and shall include in its contracts with its Subcontractors provisions requiring its Subcontractors to allow, City and its authorized representative(s), auditors, attorneys and accountants, upon twenty-four (24) hours' notice to Contractor, full access to inspect and copy all books and records relating to the Project that Contractor is required to maintain pursuant to Paragraph 16.01, above.

16.03 CONTRACTOR NONCOMPLIANCE, WITHHOLDING

Contractor's compliance with Paragraphs 16.01 and 16.02, above, shall be a condition precedent to maintenance of any legal action or arbitration by Contractor against City. In addition to and without limitation upon City's other rights and remedies for breach, including any other provisions for withholding set forth in the Contract Documents, City shall have the right, exercised in its sole discretion, to withhold from any payment to Contractor due under a current Application for Payment an additional sum of up to ten percent (10%) of the total amount set forth in such Application for Payment, until Contractor and its Subcontractors have complied with any outstanding and unsatisfied request by City under this Article 16. Upon such compliance with this Article 16, any additional monies withheld pursuant to this Paragraph 16.03 shall be released to Contractor.

16.04 SPECIFIC ENFORCEMENT BY CITY

Contractor agrees that any failure by Contractor or any Subcontractor to provide access to its books and records as required by this Article 16 shall be specifically enforceable, by issuance of a preliminary and/or permanent mandatory injunction by a court of competent jurisdiction based on affidavits submitted to such court and without the necessity of oral testimony, to compel Contractor to permit access, inspection, audits

and/or reproduction of such books and records or to require delivery of such books and records to City for inspection, audit and/or reproduction.

[END OF ARTICLE]

**ARTICLE 17
MISCELLANEOUS PROVISIONS**

17.01 COMPLIANCE WITH APPLICABLE LAWS

A. Notices, Compliance

Contractor shall give all notices required by governmental authorities and comply with all applicable laws and lawful orders of governmental authorities, including but not limited to the provisions of the California Code of Regulations applicable to contractors performing construction and all laws, ordinances, rules, regulations and lawful orders relating to safety, prevailing wage and equal employment opportunities.

B. Taxes, Employee Benefits

Contractor shall pay at its own expense, at no cost to the City and without adjustment to the Contract Sum, all local, state and federal taxes, including, without limitation all sales, consumer, business license, use and similar taxes on materials, labor or other items furnished for the Work or portions thereof provided by Contractor or Subcontractors, all taxes arising out of its operations under the Contract Documents and all benefits, insurance, taxes and contributions for social security and unemployment insurance which are measured by wages, salaries or other remuneration paid to Contractor's employees. If under federal excise tax law any transaction hereunder constitutes a sale on which a federal excise tax is imposed and the sale is exempt from such excise tax because it is a sale to meet for its exclusive use, then City, upon request, will execute documents necessary to show that is a political subdivision of the State for the purposes of such exemption and that the sale is for the exclusive use of the City, in which case no excise tax for such materials shall be included in the Bid or Contract Sum.

C. Notice of Violations

Contractor shall immediately notify the City and Director in writing of any instruction received from the City, Director, Architect or other person or entity that, if implemented, would cause a violation of any applicable law or lawful order of a governmental authority. If Contractor fails to provide such notice, then Director and Architect shall be entitled to assume that such instruction is in compliance with applicable laws and lawful orders of governmental authorities. If Contractor observes that any portion of the Drawings and Specifications or Work are at variance with applicable laws or lawful orders of governmental authorities, or should Contractor become aware of conditions not covered by the Contract Documents which will result in Work being at variance therewith, Contractor shall promptly notify Director in writing. If, without such notice to Director, Contractor or any Subcontractor performs any Work which it knew, or through the exercise of reasonable care should have known, was contrary to lawful orders of governmental authorities or applicable laws, then Contractor shall bear all resulting losses at its own expense, at no cost to City and without adjustment to the Contract Sum.

D. Campaign Contributions

1. Glendale Municipal Code Section 1.10.060 places limitations on Contractor's and its subcontractors' ability to make campaign contributions to certain elected City officials or candidates for elected City office. Specifically, Section 1.10.060 prohibits:

- a. A contractor (including a subcontractor)— who has a contract with the City of Glendale, Glendale Successor Agency or Glendale Redevelopment Agency, or the Housing Authority of the City of Glendale and that contract is subject to approval by the City Council, Successor Agency or Redevelopment Agency, or Housing Authority— from making a contribution to a City Council member, Successor Agency member or Redevelopment Agency member, Housing Authority member, City Clerk, or City Treasurer; and
 - b. A City Council member, Successor Agency member or Redevelopment Agency member, or Housing Authority member from voting on a matters concerning a contract affecting a contractor or subcontractor who has provided a campaign contribution.
2. Contractor acknowledges that even though Contractor was not subject to Municipal Code Section 1.10.060 when Contractor received its Contract (because the Contract was awarded through a competitive bidding process), Contractor still may be subject to the campaign contribution limitations in Municipal Code Section 1.10.060, when later amendments or modifications to the Contract require discretionary approval by the City Council, Successor Agency or Redevelopment Agency, or Housing Authority.
3. Contractor represents and certifies that:
- a. Contractor has read and fully understands the provisions of Municipal Code Section 1.10.060;
 - b. Contractor and its subcontractors will fully comply with Municipal Code Section 1.10.060;
 - c. Contractor will not: (i) make a prohibited campaign contribution to an individual holding City elective office; or (ii) otherwise violate Municipal Code Section 1.10.060; and
 - d. Contractor will timely complete, return, and update one or more disclosure or reporting forms that City provides.

17.02 OWNERSHIP OF DESIGN DOCUMENTS

A. Property of City

All Design Documents, Contract Documents and Submittals (including, without limitation, all copies thereof) and all designs and building designs depicted therein are and shall remain the sole and exclusive property of the City and the City shall solely and exclusively hold all copyrights thereto. Without derogation the City's rights under this Paragraph, the Contractor and Subcontractors are granted a limited, non-exclusive license, revocable at will of City, to use and reproduce applicable portions of the Contract Documents and Submittals as appropriate to and for use in the execution of the Work and for no other purpose.

B. Documents on Site

Contractor shall keep on the Project site, at all times and for use by City, Director, Inspectors of Record and City's Consultants, a complete set of the Contract Documents that have been approved by applicable Governmental Authorities.

C. Delivery to City

All Design Documents, Contract Documents and Submittals in the possession of Contractor or Subcontractors shall be returned to the City upon the earlier of Final Completion or termination of the Construction Contract; provided, however, that Contractor and each Subcontractor shall have the right to retain one (1) copy of the Contract Documents and Submittals for its permanent records.

D. Subcontractors

Contractor shall take all necessary steps to assure that a provision is included in all subcontracts with Subcontractors, of every tier, who perform Work on the Project establishing, protecting and preserving the, City's rights set forth in this Paragraph.

17.03 AMENDMENTS

The Contract Documents may be amended only by a written instrument duly executed by the parties or their respective successors or assigns.

17.04 WAIVER

Either party's waiver of any breach or failure to enforce any of the terms, covenants, conditions or other provisions of the Contract Documents at any time shall not in any way limit or waive that party's right thereafter to enforce or compel strict compliance with every term, covenant, condition or other provision, any course of dealing or custom of the trade notwithstanding. Furthermore, if the parties make and implement any interpretation of the Contract Documents without documenting such interpretation by an instrument in writing signed by both parties, such interpretation and implementation thereof will not be binding in the event of any future disputes.

17.05 INDEPENDENT CONTRACTOR

Contractor is an independent contractor, and nothing contained in the Contract Documents shall be construed as constituting any relationship with City other than that of Project Owner and independent contractor. In no event shall the relationship between City and Contractor be construed as creating any relationship whatsoever between City and Contractor's employees. Neither Contractor nor any of its employees is or shall be deemed to be an employee of City. Except as otherwise specified in the Contract Documents, Contractor has sole authority and responsibility to employ, discharge and otherwise control its employees and has complete and sole responsibility as a principal for its agents, for all Subcontractors and for all other Persons that Contractor or any Subcontractor hires to perform or assist in performing the Work.

17.06 SUCCESSORS AND ASSIGNS

The Contract Documents shall be binding upon and inure to the benefit of City and Contractor and their permitted successors, assigns and legal representatives.

- A. City may assign all or part of its right, title and interest in and to any Contract Documents, including rights with respect to the Payment and Performance Bonds, to (a) any other governmental person as permitted by governmental rules, provided that the successor or assignee has assumed all of City's obligations, duties and liabilities under the Contract Document then in effect; and (b) any other Person with the prior written approval of Contractor.
- B. Contractor may collaterally assign its rights to receive payment under the Contract Documents. Contractor may not delegate any of its duties hereunder, except to Subcontractors as expressly otherwise permitted in the Contract Documents. Contractor's assignment or delegation of any of its Work under the Contract Documents shall be ineffective to relieve Contractor of its responsibility for the Work assigned or delegated, unless City, in its sole discretion, has approved such relief from responsibility.

Any assignment of money shall be subject to all proper set-offs and withholdings in favor of City and to all deductions provided for in the Contract. All money withheld, whether assigned or not, shall be subject to being used by City for completion of the Work, should Contractor be in default.

- C. Except for the limited circumstances set forth in Paragraph 17.06-B, above, Contractor may not, without the prior written consent of City in its sole discretion, voluntarily or involuntarily assign, convey, transfer, pledge, mortgage or otherwise encumber its rights or interests under the Contract Documents. No partner, joint venturer, member or shareholder of Contractor may assign, convey, transfer, pledge, mortgage or otherwise encumber its ownership interest in Contractor without the prior written consent of City, in City's sole discretion.

17.07 SURVIVAL

Contractor's representations and warranties, the dispute resolution provisions contained in Article 15, and all other provisions which by their inherent character should survive termination of the Contract and/or Final Acceptance, shall survive the termination of the Contract and the Final Acceptance Date.

17.08 LIMITATION ON THIRD PARTY BENEFICIARIES

It is not intended by any of the provisions of the Contract Documents to create any third party beneficiary hereunder or to authorize anyone not a party hereto to maintain a suit for personal injury or property damage pursuant to the terms or provisions hereof, except to the extent that specific provisions (such as the warranty and indemnity provisions) identify third parties and state that they are entitled to benefits hereunder. The duties, obligations and responsibilities of the parties to the Contract Documents with respect to such third parties shall remain as imposed by law. The Contract Documents shall not be construed to create a contractual relationship of any kind between City and a Subcontractor or any other Person except Contractor.

17.09 PERSONAL LIABILITY OF CITY EMPLOYEES

City's authorized representatives are acting solely as agents and representatives of City when carrying out the provisions of or exercising the power or authority granted to them under the Contract. They shall not be liable either personally or as employees of City for actions in their ordinary course of employment.

No agent, consultant, Council member, officer or authorized employee of City, shall be personally responsible for any liability arising under the Contract.

17.10 NO ESTOPPEL

City shall not, nor shall any officer thereof, be precluded or estopped by any measurement, estimate or certificate made or given by the City representative or other officer, agent, or employee of City under any provisions of the Contract from at any time (either before or after the final completion and acceptance of the Work and payment therefor) pursuant to any such measurement, estimate or certificate showing the true and correct amount and character of the work done, and materials furnished by Contractor or any person under the Contract or from showing at any time that any such measurement, estimate or certificate is untrue and incorrect, or improperly made in any particular, or that the work and materials, or any part thereof, do not in fact conform to the Contract Documents. Notwithstanding any such measurement, estimate or certificate, or payment made in accordance therewith, City shall not be precluded or estopped from recovering from Contractor and its Sureties such damages as City may sustain by reason of Contractor's failure to comply or to have complied with the Contract Documents.

17.11 GOVERNING LAW AND JURISDICTION

- A. California's laws govern the Contract Documents' construction and interpretation, without regard to conflict of law principles. Unless the Contract Documents provide otherwise, any reference to laws, ordinances, rules, or regulations include their later amendment, modifications, and successor legislation.
- B. If Contractor or City brings a lawsuit to enforce or interpret one or more provisions of the Contract Documents, jurisdiction is in the Superior Court of the County of Los Angeles, California, or where otherwise appropriate, in the United States District Court, Central District of California. Contractor and City acknowledge that the Contract Documents were negotiated, entered into, and executed—and the Work was performed—in the City of Glendale, California.

17.12 FURTHER ASSURANCES

Contractor shall promptly execute and deliver to City all such instruments and other documents and assurances as are reasonably requested by City to further evidence the obligations of Contractor hereunder, including assurances regarding assignments of Subcontractors contained herein.

17.13 SEVERABILITY

If any clause, provision, section, paragraph or part of the Contract is ruled invalid by a court having proper jurisdiction, then the parties shall: (a) promptly meet and negotiate a substitute for such clause, provision, section, paragraph or part, which shall, to the greatest extent legally permissible, effect the original intent of the parties, including an equitable adjustment to the Contract Price to account for any change in the Work resulting from such invalidated portion; and (b) if necessary or desirable, apply to the court or other decision maker (as applicable) which declared such invalidity for an interpretation of the invalidated portion to guide the negotiations. The invalidity or unenforceability of any such clause, provision, section, paragraph or part shall not affect the validity or enforceability of the balance of the Contract, which shall be construed and enforced as if the Contract did not contain such invalid or unenforceable clause, provision, section, paragraph or part.

17.14 HEADINGS

The captions of the sections of the Contract are for convenience only and shall not be deemed part of the Contract or considered in construing the Contract.

17.15 ENTIRE AGREEMENT

The Contract Documents contain the entire understanding of the parties with respect to the subject matter hereof and supersede all prior agreements, understandings, statements, representations and negotiations between the parties with respect to its subject matter.

17.16 COUNTERPARTS

This instrument may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

[END OF ARTICLE]

**GENERAL CONDITIONS
REFERENCE DOCUMENTS**

GENERAL CONDITIONS REFERENCE DOCUMENTS

Reference 1	Hydrology Study
Reference 2	Artsakh Street Improvement Plans Sections
Reference 3	Marketplace Parking Structure Assessment
Reference 4	Maryland Ave B/T Broadway and Harvard St. (4236-E1) Street Electrical As-Built
Reference 5	Maryland Ave B/T Wilson Ave. & Broadway & Harvard St. (4218-E) Water Facility As-Built
Reference 6	Harvard St Drain Line F (4-256) (No. 181-156-D1.7) As-Built-1
Reference 6	Harvard St. Drain Line F (4-256) (No. 181-156-D1.8) As-Built-2
Reference 7	Broadway, Wilson Ave B/T Maryland Ave. & Louise St. GWP Plan (3963)
Reference 8	Artsakh Ave. Fire Code Modification FMOD2110967 Plans

HYDROLOGY STUDY

ARTSAKH

Prepared For

City of Glendale
Department of Public Works
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October 11, 2021

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Appendix A	Hydrology Maps <ul style="list-style-type: none"> • Existing Condition Hydrology Map • Post Development Hydrology Map 	
Appendix B	Site Characteristics <ul style="list-style-type: none"> • Los Angeles County Isohyet Map • 85th Percentile Map 	
Appendix C	Pre Development Hydrology Calculations <ul style="list-style-type: none"> • 25 yr storm frequency • 85th Percentile storm frequency 	
Appendix D	Post Development Hydrology Calculations <ul style="list-style-type: none"> • 25 yr storm frequency • 85th Percentile storm frequency 	
Appendix E	LACFCD Hydraulic Design Manual Catch Basin & Street Capacity Calculations	
Appendix F	Street Hydraulic Calculations	

1.0 INTRODUCTION

1.1 PROJECT INTRODUCTION AND BACKGROUND

The Artsakh project consists of the redevelopment of Artsakh Avenue in Glendale, CA between Harvard Street to the south and Wilson Avenue to the north. The existing street is classified as a local street with a crowned section, curb and gutter on both the east and west sides of the roadway, and some existing median islands. The intention of the project is to “activate” the public street within the limits of the existing right of way by increasing the width of some of the sidewalk sections, thus reducing the roadway width, as well as installing new landscape and art features.

1.2 PURPOSE OF THIS REPORT

The purpose of this Hydrology Report is to analyze the pre and post development hydrologic conditions of Artsakh Avenue.

1.3 REFERENCES

Los Angeles County Hydrology Manual, January 2006

1.4 PROJECT SITE LOCATION MAP

The Project site is identified in red in the location map shown below.



2.0 EXISTING TOPOGRAPHIC & HYDROLOGIC CONDITIONS

2.1 EXISTING SITE LOCATION AND TOPOGRAPHY

The proposed Artsakh project is a two-block stretch of public roadway from Wilson Avenue to Harvard Street in Glendale, CA. The street is fully paved and developed, consisting of a crown section configuration with a concrete curb and gutter on either side. The roadway slopes from the north to the south.

2.2 EXISTING DRAINAGE PATTERN

Surface runoff and street flows are conveyed to concrete gutters that line the street, which ultimately route the stormwater to existing catch basins. As previously mentioned, Artsakh Avenue is a crown section with street cross slopes ranging from 2% to 3% on average. The gutters flow in the north to south direction with an average slope of approximately 1.6%.

Along the street there are existing curb drain outlets which discharge roof drainage from the adjacent buildings. It is assumed that approximately half of the roof drainage from the adjacent buildings is routed towards Artsakh Ave, with the other half routed to alleys on the opposite sides of the buildings.

Based on the locations of the catch basins and the crown section of the street, the project limits are divided into five (5) drainage subareas.

2.3 EXISTING STORM DRAIN FACILITIES

There is an existing County of Los Angeles Flood Control District (LACFCD) storm drain main that runs north to south, just east of Artsakh's street centerline. The existing RCP storm drain ranges in size from 48" to 57". Additionally, there are several curb opening catch basins located along the street which collect surface runoff and adjacent roof drainage and route it to the existing RCP storm drain main.

There are existing catch basins located on the east and west sides of Artsakh just north of the intersection with E Broadway. Each of these curb opening catch basins have a width of 7'. There are two more catch basins on the east and west sides of Artsakh north of the intersection with Harvard Street. The catch basin on the west has a width of 7' and the catch basin on the east has a width of 11'. There is one additional catch basin on the eastern side of Artsakh approximately midblock. This catch basin is the smallest with a width of 3.5'. All of the exiting catch basins connect to the large RCP main in Artsakh.

Additionally, there are existing catch basins on both Artsakh Ave and Wilson Drive upstream from the proposed project site which also connect to the existing RCP main.

3.0 HYDROLOGY

3.1 STORM FREQUENCY

Per LA County’s requirements for urban floods, the design storm for this project is the 25-year storm event.

3.2 METHODOLOGY

This study was prepared using HydroCalc software in conformance with the Los Angeles County Hydrology Manual. Delta flow rates and volumes are provided for comparison purposes (see Appendix C & D – Pre & Post Development Hydrology Calculations).

3.3 EXISTING CONDITION HYDROLOGY

Based on existing site flows the project limits were divided into five drainage subareas, A1, A2, B1, B2, and B3 (see Appendix A – Existing Condition Hydrology Map). The project is considered to have two major drainage areas, A and B, which account for each major block. The blocks run from Wilson to Broadway and then Broadway to Harvard. Upstream flows were not included in this analysis as there are existing catch basins upstream of the project site which would capture those flows.

Within the two major block drainage areas the street is divided into multiple subareas, two for “A” and three for “B.” These boundaries were established based on each of the five catch basin tributary areas.

The existing condition 25 year flow rates have been provided on the existing condition hydrology map, and are shown in Table 3.3.1 below. The street is fully developed with some landscaping and therefore is considered to have an imperviousness of approximately 90%.

Table 3.3.1

EXISTING CONDITION DRAINAGE AREAS					
DRAINAGE AREA	DRAINAGE AREA ACREAGE	50YR Rainfall Depth (in)	85 th Percentile Rainfall Depth (in)	25YR DISCHARGE (CFS)	85 th Percentile Peak Q (cfs)
A1	1.40	6.5	1.0	3.63	0.32
A2	1.39	6.5	1.0	3.60	0.32
B1	0.67	6.5	1.0	2.04	0.18
B2	0.85	6.5	1.0	2.59	0.23
B3	1.51	6.5	1.0	3.67	0.33

3.4 PROPOSED CONDITION HYDROLOGY

The proposed project will follow the same drainage patterns as the existing conditions, with five separate tributary areas established based on the existing catch basins to remain (see Appendix A – Proposed Hydrology Map).

For Drainage Basin “A” there will still be two subareas, A1 and A2. Subarea A1 will not have any significant change in acreage or flow pattern from the existing conditions. The design intent for the street within subarea A2 is to extend the sidewalk into the street, thus essentially eliminating the half street drive area. In order to maintain existing flow patterns and collect sidewalk runoff, a trench drain style grate will be installed above the existing gutter to allow sidewalk flows to continue to drain to the street gutter, mimicking existing drainage patters. There will be curb openings at existing driveways to allow continuous gutter flow, and a parkway culvert curb opening will be installed adjacent to the existing catch basin. The maintaining of the existing gutter with the installation of the trench grate, allows for the drainage patterns to remain consistent with the existing condition hydrology.

For Drainage Basin “B” the hydrologic patterns also match existing conditions with three separate subareas tributary to each of the existing catch basins. There are no changes to subarea B1 from the existing conditions. Similar to subarea A2, both subareas B2 and B3 will have some portions of the drive lane street half width removed and replaced with a raised sidewalk and/or landscape areas. Like area A2, runoff will still be collected in the existing concrete gutter and catch basins by means of curb openings and a trench drain grate installed at the existing curb.

The proposed condition 25 year flow rates have been provided on the existing condition hydrology map, and are shown in Table 3.4.1 below. There is no significant change or replacement of impervious or pervious areas, therefore the proposed redevelopment is considered to maintain an imperviousness of approximately 90%, consistent with the existing conditions.

Table 3.4.1

PROPOSED CONDITION DRAINAGE AREAS					
DRAINAGE AREA	DRAINAGE AREA ACREAGE	50YR Rainfall Depth (in)	85 th Percentile Rainfall Depth (in)	25YR Q (CFS)	85 th Percentile Peak Q (cfs)
A1	1.41	6.5	1.0	3.65	0.32
A2	1.38	6.5	1.0	3.58	0.32
B1	0.67	6.5	1.0	2.04	0.18
B2	0.84	6.5	1.0	2.56	0.23
B3	1.52	6.5	1.0	3.69	0.33

Tables 3.4.2 and 3.4.3 below indicate the changes in flow rates between the existing and proposed conditions. Increase and reductions are deemed to be less than significant, with no net increase in flow overall.

Table 3.4.2

PRE & POST 85 th PERCENTILE STORM DISCHARGE DIFFERENCES (CFS)					
DRAINAGE MANAGEMENT AREA	A1	A2	B1	B2	B3
EXISTING	0.32	0.32	0.18	0.23	0.33
PROPOSED	0.32	0.32	0.18	0.23	0.33
DIFFERENCE	0	0	0	0	0

Table 3.4.3

PRE & POST 25YR STORM DISCHARGE DIFFERENCES (CFS)					
DRAINAGE MANAGEMENT AREA	A1	A2	B1	B2	B3
EXISTING	3.63	3.6	2.04	2.59	3.67
PROPOSED	3.65	3.58	2.04	2.56	3.69
DIFFERENCE	+0.02	-0.02	0	-0.03	+0.02

3.6 IMPACT TO STREET & EXISTING INFRASTRUCTURE

With respect to Artsakh Avenue, impacts to the existing street are determined based upon a comparison of pre and post storm water flows. As indicated above, the difference in pre and post 25-year storm water flows is less than significant, and there is no change in the 85th percentile flow.

Existing Catch Basin Capacity

Each of the five existing catch basins capacity was evaluated based on the LACFCD Hydraulic Design Manual (see Appendix X...). The five catch basins are all curb opening and have widths of either 3.5' or 7'. Based on the City and Standard Plans

for Public Works Construction curb and gutter detail, the existing gutter is assumed to have a standard depression of 2". Table 3.6.1 illustrates the existing catch basin capacities as well as a comparison of both the existing and proposed tributary flows.

Table 3.6.1

STORM DRAIN INFRASTRUCTURE CAPACITY COMPARISON					
	CB-A1 W=7'	CB-A2 W=7'	CB-B1 W=3.5'	CB-B2 W=7'	CB-B3 W=7'
EXISTING INFRASTRUCTURE CAPACITY (CFS)	7.8	7.8	4.0	7.8	7.8
EXISTING 25YR TRIBUTARY FLOW (CFS)	3.63	3.6	2.04	2.59	3.67
EXISTING FLOWRATES VS. EXISTING CAPACITY (CFS)	-4.17	-4.2	-1.96	-5.21	-4.13
PROPOSED 25YR TRIBUTARY FLOW (CFS)	3.65	3.58	2.04	2.56	3.69
PROPOSED FLOWRATES VS. EXISTING CAPACITY (CFS)	-4.15	-4.22	-1.96	-5.24	-4.11

Capacity Comp

As indicated, in both the existing and proposed conditions, the existing catch basins have sufficient capacity to service the street runoff and adjacent building roof drainage.

Existing Street Capacity

Street capacity for both the existing and proposed condition was calculated per the LACFCD Hydraulic Design Manual (see Appendix E). The street is classified as a local street with a 30' half street width, 18' or which is roadway. Assuming an average street slope of 1.5% and a depth (D) of 0.5' based on the existing curb height, the street capacity is calculated to be 18cfs. Both existing and proposed 25-yr storm flows are all significantly less than the 18cfs capacity.

In addition to calculating the street capacity based on the LACFCD Hydraulic Design Manual, the proposed 85th percentile and 25yr storm flows were used to calculate the spread (see Appendix F). The spread was calculated based on street longitudinal and cross slopes, gutter slope, gutter width, and the roughness coefficient. Table 3.6.2 below summarizes the results of these calculations.

Table 3.6.2

GUTTER CAPACITY & SPREAD				
SUBAREA	85TH PERCENTILE SPREAD (FT)	DEPTH (IN)	25YR STORM SPREAD (FT)	DEPTH (IN)
A1	1.9	1.6	8.4	3.4
A2	2.1	1.6	9.5	3.3
B1	1.3	1.3	9.8	2.7
B2	1.5	1.5	7.3	3.2
B3	2.1	1.7	8.4	3.5

In the case of the 85th percentile storm event, the spread would be contained within the width of the gutter for areas B1 and B2 and extend approximately 6 inches beyond the gutter for the remaining three subareas.

As previously mentioned, part of the design intent for the proposed development is to increase the width of the walk areas in several locations by installing a concrete sidewalk on top of the existing roadway, which as a result eliminates portions of the street storage capacity for the stormwater runoff. Subareas A1 and B1 do not have any new raised sidewalk portions and have sufficient width to cover the projected 25yr storm spread.

Subarea A2 has the largest portion of new raised sidewalk, with the full 18' half roadway width only occurring at the existing driveways. The proposed condition transitions the gutter into a type of trench drain with a 24" grate inlet above the gutter and built-up sidewalk/curb on either side. Based on this, the gutter and street capacity should be analyzed by evaluating a trench drain flow capacity, and not the spread.

Using Manning's Equation and assuming a constant depth of 6" for the gutter/trench invert, with a minimum slope of 1.5%, and a width of 2', the flow rate capacity for the trench drain is approximately 4.27cfs. The capacity of this new formed trench drain, in combination with the existing catch basin, indicates the proposed street development still has sufficient capacity to accommodate the 25yr storm event.

Similar to subarea A2, subareas B2 and B3 also have portions of new raised sidewalk that reduce the areas where spread can occur. The gutter sections for these raised areas would have the same trench drain solution which as shown above, provides sufficient capacity to accommodate the 25yr storm events.

Capacity Imp

4.0 CONCLUSIONS

In conclusion, the proposed development did not increase the amount of runoff being generated from the existing conditions. By implementing a trench drain type system within the existing gutter, in combination with the adequately sized existing catch basins, the proposed improvements are adequately designed to accommodate the 85th percentile and 25yr storm events.

5.0 APPENDICES

- Appendix A Hydrology Maps
- Appendix B Site Characteristics
- Appendix C Pre Development Hydrology Calculations
- Appendix D Post Development Hydrology Calculations
- Appendix E LACFCD Hydraulic Design Manual Catch Basin & Street Capacity Calculations
- Appendix F Street Hydraulic Calculations

APPENDIX A

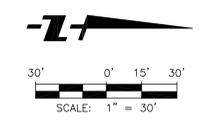
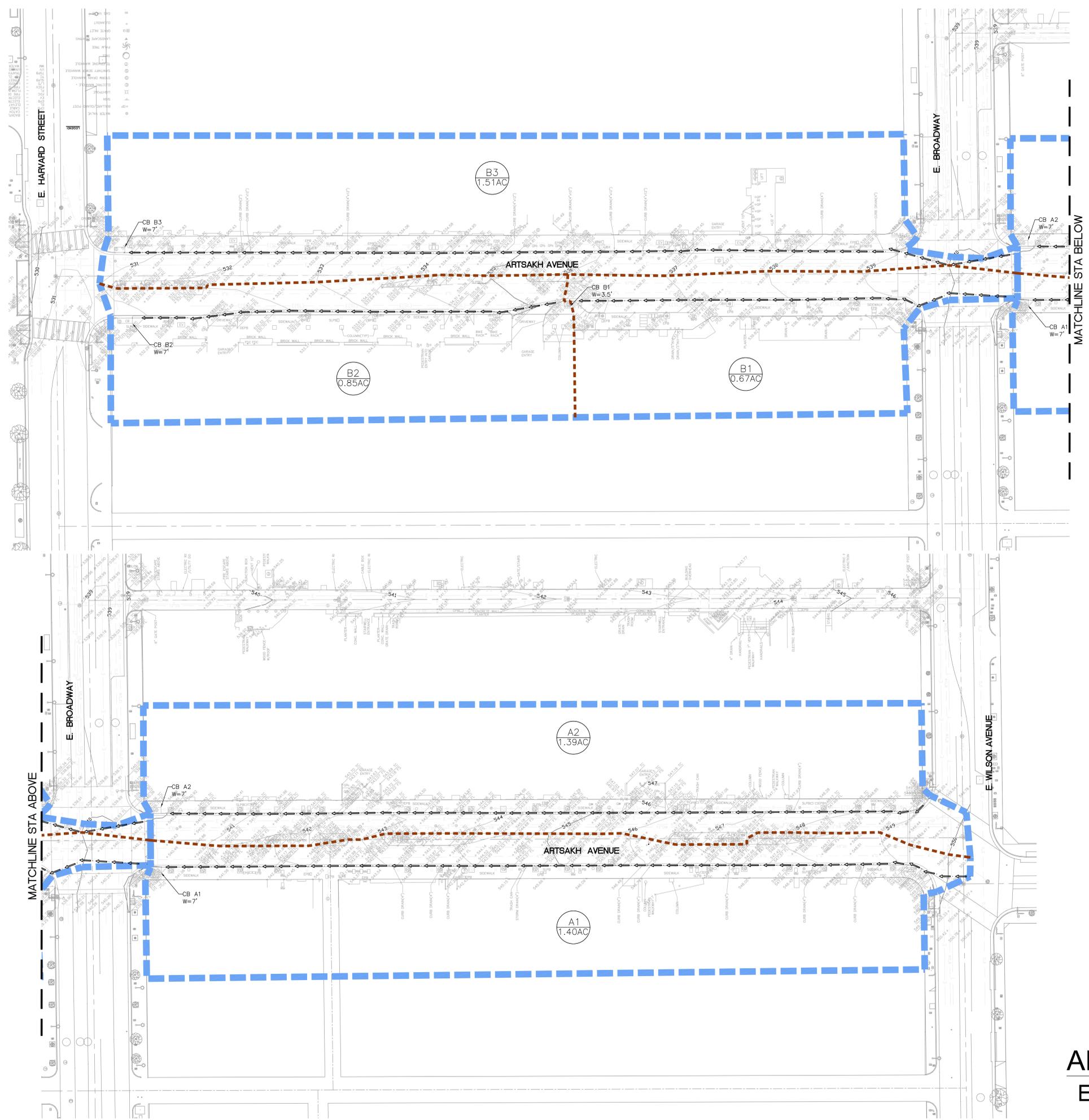
Hydrology Maps

LEGEND

-  PROJECT WATERSHED AREA (8.06 Ac)
-  SUBAREA BOUNDARY
-  SUB-AREA NUMBER
ACREAGE
-  FLOW DIRECTION

HYDROLOGIC RUN-OFF CALCULATIONS

SITE PARAMETERS: 50 YR ISOHYET = 6.5 IN
85TH PERCENTILE ISOHYET = 1 IN
SOIL CLASSIFICATION = 006



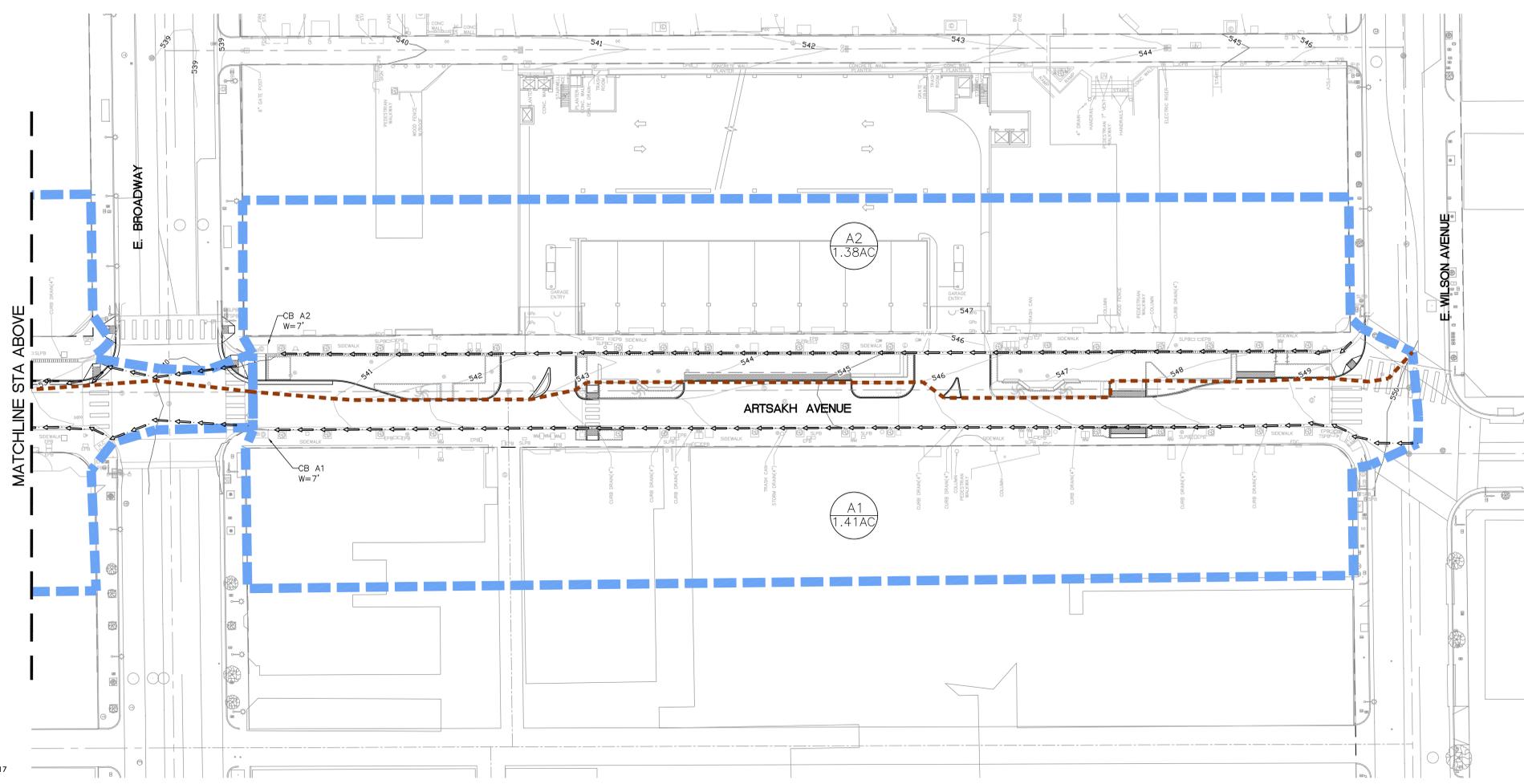
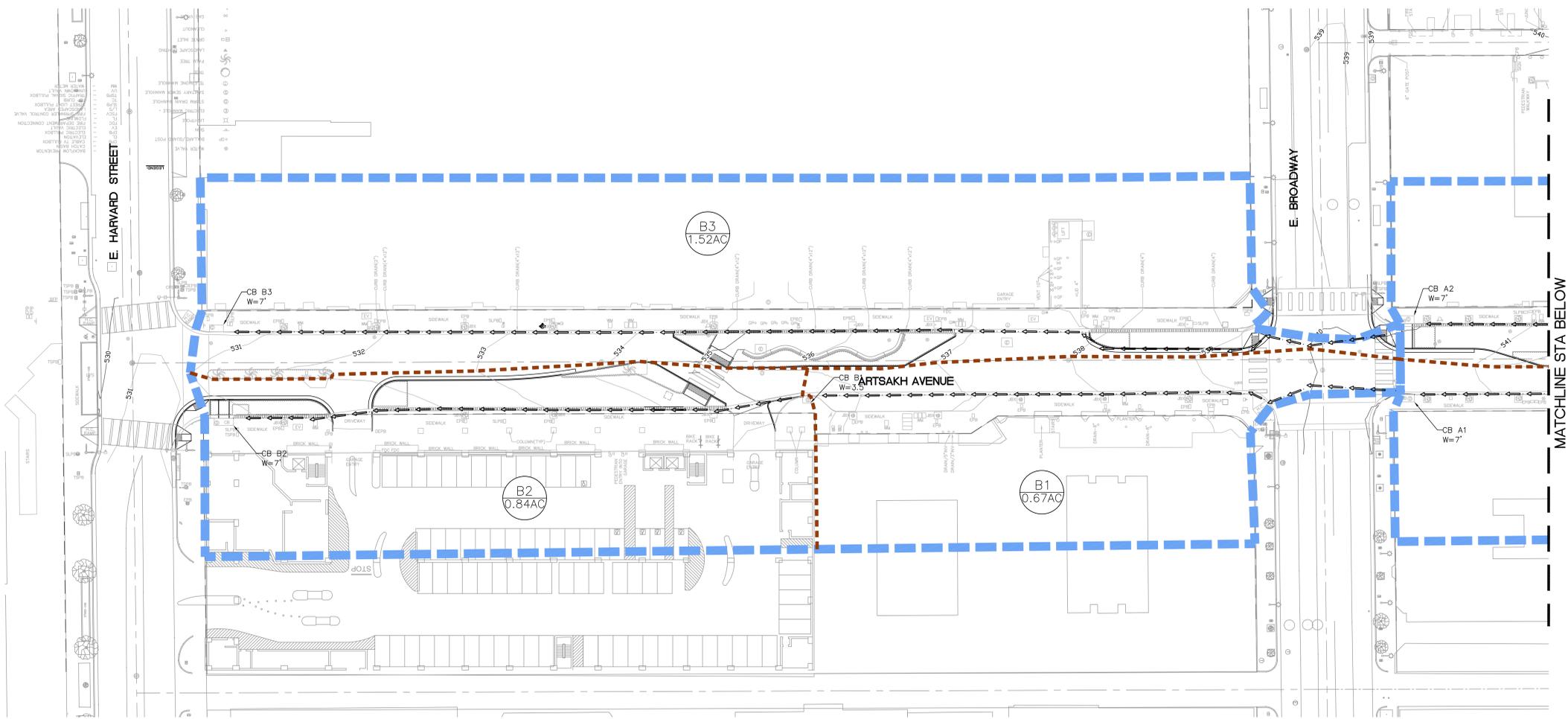
**ARTSAKH AVENUE
EXISTING HYDROLOGY**

LEGEND

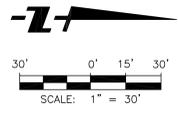
-  PROJECT WATERSHED AREA (8.06 Ac)
-  SUBAREA BOUNDARY
-  SUB-AREA NUMBER
ACREAGE
-  FLOW DIRECTION

HYDROLOGIC RUN-OFF CALCULATIONS

SITE PARAMETERS: 50 YR ISOHYET = 6.5 IN
85TH PERCENTILE ISOHYET = 1 IN
SOIL CLASSIFICATION = 006



Proposed Flow Map with Subareas



**ARTSAKH AVENUE
PROPOSED HYDROLOGY**

APPENDIX B

Site Characteristics

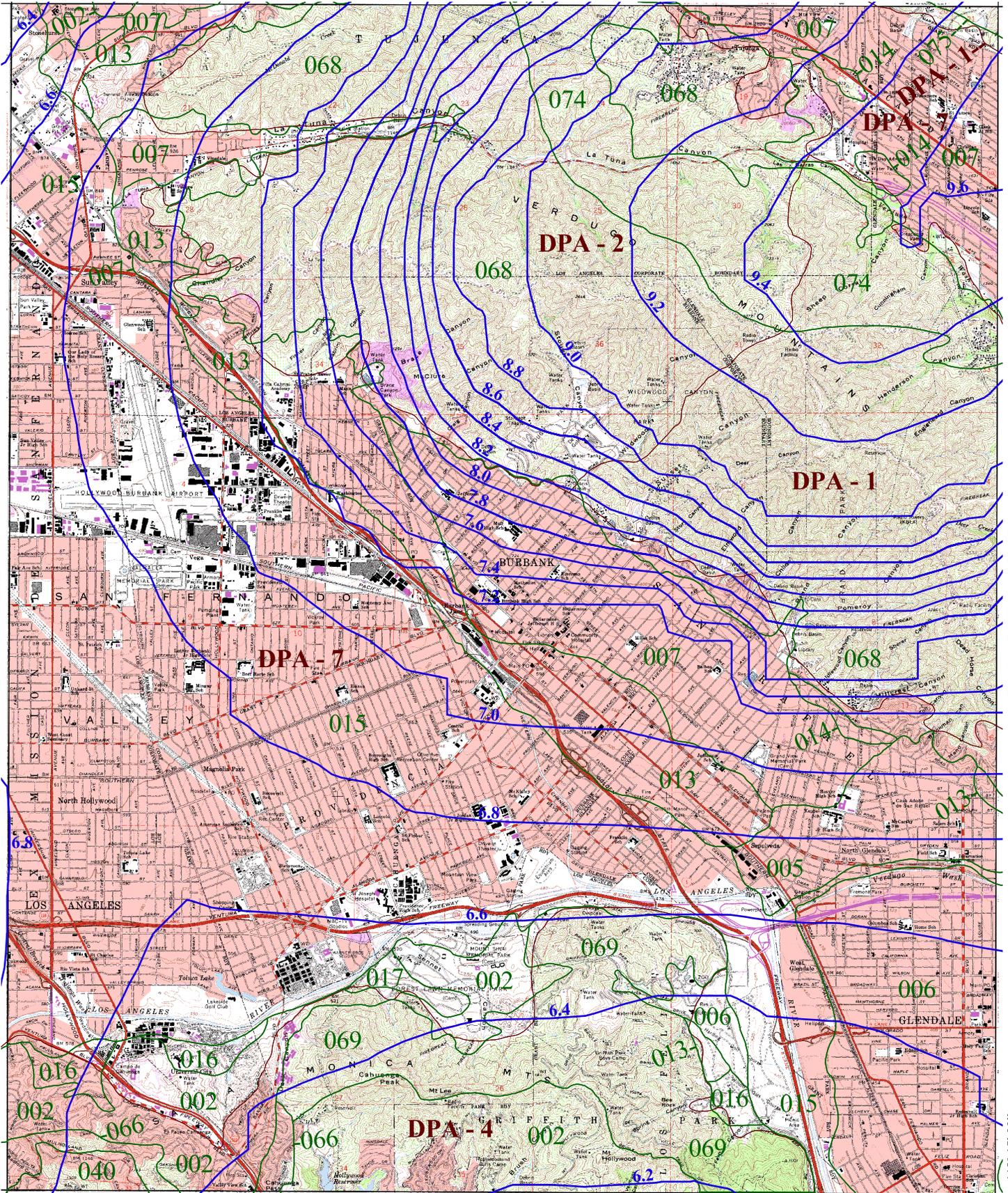
34° 15' 00"

SUNLAND 1-HI.37

-118° 22' 30"

VAN NUYS 1-HI.27

PASADENA 1-HI.29



-118° 15' 00"

HOLLYWOOD 1-HI.18

34° 07' 30"



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

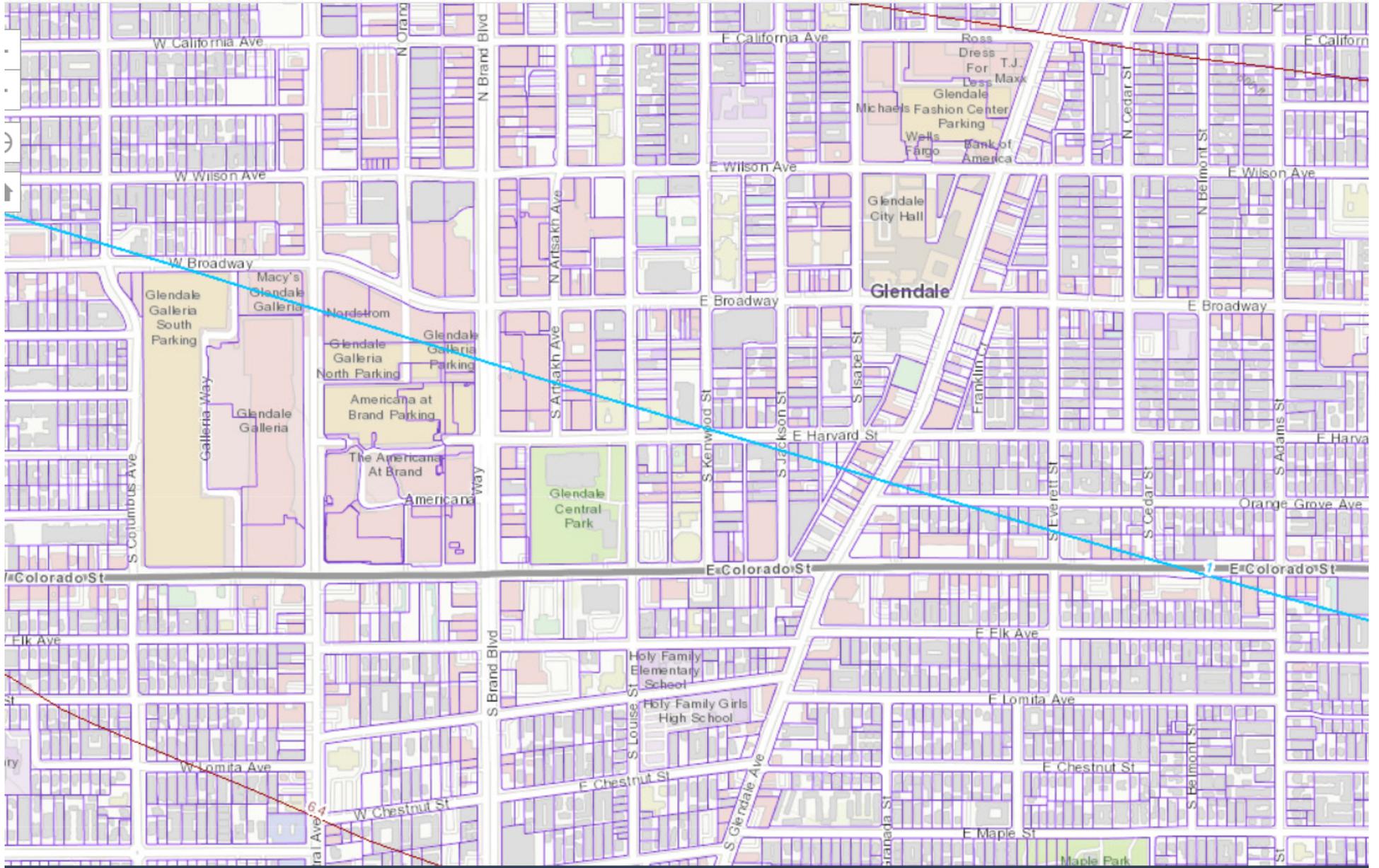
BURBANK 50-YEAR 24-HOUR ISOHYET

1-HI.28



LA County Hydrology Map

Find address or pl



APPENDIX C

Pre-Development Hydrology Calculations

Peak Flow Hydrologic Analysis

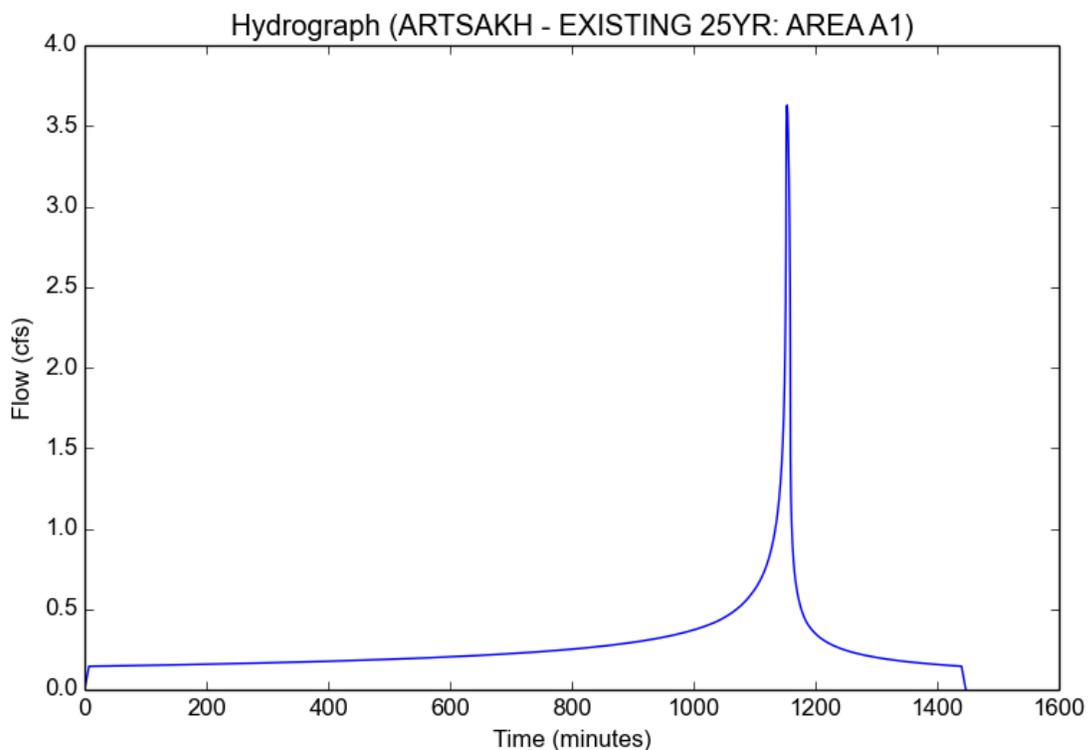
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH - EXISTING 25YR
Subarea ID	AREA A1
Area (ac)	1.4
Flow Path Length (ft)	610.0
Flow Path Slope (vft/hft)	0.017
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	2.9069
Undeveloped Runoff Coefficient (Cu)	0.8157
Developed Runoff Coefficient (Cd)	0.8916
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.6284
Burned Peak Flow Rate (cfs)	3.6284
24-Hr Clear Runoff Volume (ac-ft)	0.5487
24-Hr Clear Runoff Volume (cu-ft)	23900.7085



Peak Flow Hydrologic Analysis

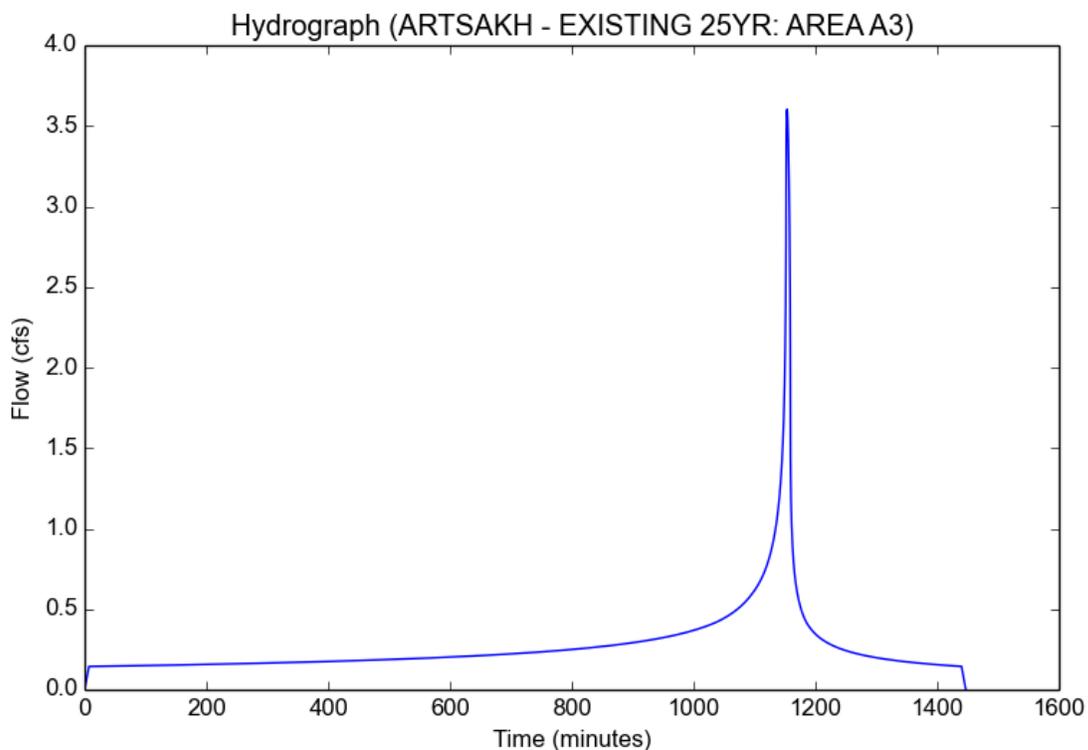
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH - EXISTING 25YR
Subarea ID	AREA A3
Area (ac)	1.39
Flow Path Length (ft)	582.0
Flow Path Slope (vft/hft)	0.016
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	2.9069
Undeveloped Runoff Coefficient (Cu)	0.8157
Developed Runoff Coefficient (Cd)	0.8916
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.6025
Burned Peak Flow Rate (cfs)	3.6025
24-Hr Clear Runoff Volume (ac-ft)	0.5448
24-Hr Clear Runoff Volume (cu-ft)	23729.9892



Peak Flow Hydrologic Analysis

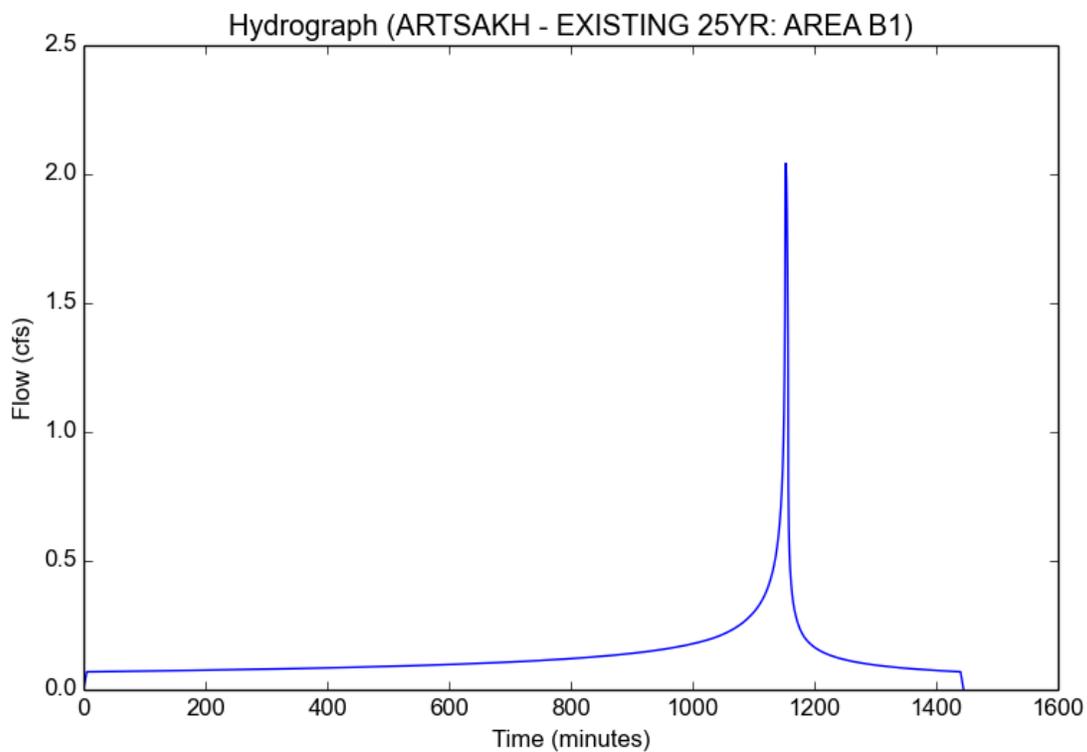
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH - EXISTING 25YR
Subarea ID	AREA B1
Area (ac)	0.67
Flow Path Length (ft)	337.0
Flow Path Slope (vft/hft)	0.016
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	3.405
Undeveloped Runoff Coefficient (Cu)	0.8507
Developed Runoff Coefficient (Cd)	0.8951
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.0419
Burned Peak Flow Rate (cfs)	2.0419
24-Hr Clear Runoff Volume (ac-ft)	0.2626
24-Hr Clear Runoff Volume (cu-ft)	11439.0319



Peak Flow Hydrologic Analysis

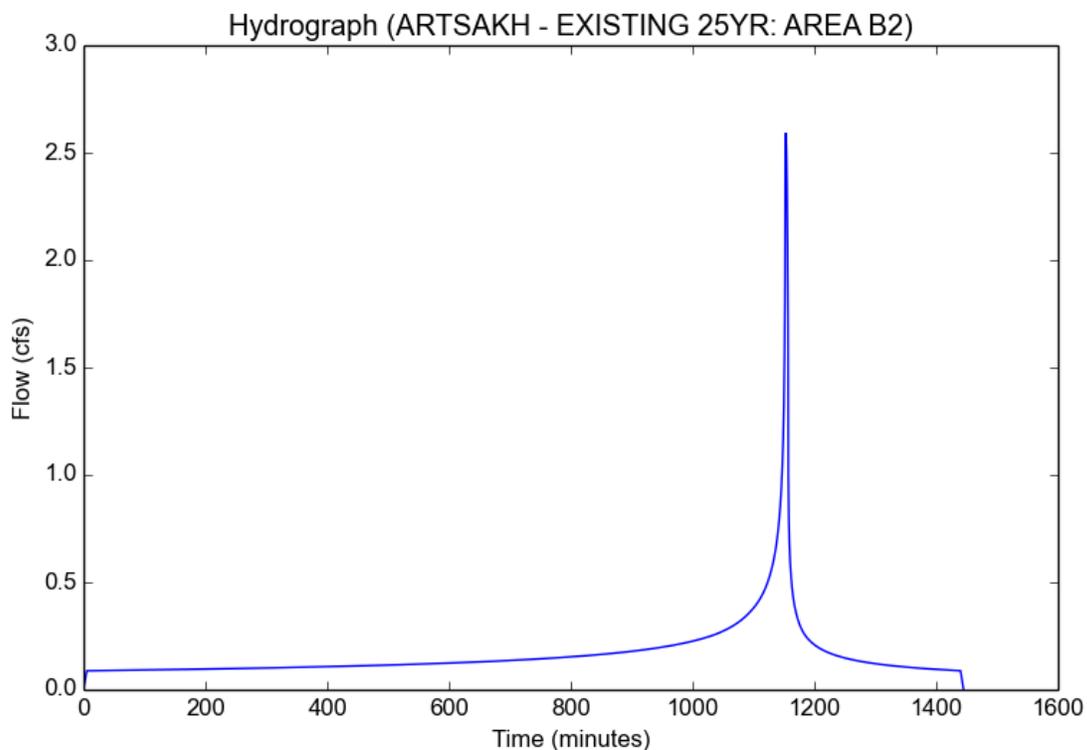
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH - EXISTING 25YR
Subarea ID	AREA B2
Area (ac)	0.85
Flow Path Length (ft)	326.0
Flow Path Slope (vft/hft)	0.013
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	3.405
Undeveloped Runoff Coefficient (Cu)	0.8507
Developed Runoff Coefficient (Cd)	0.8951
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.5905
Burned Peak Flow Rate (cfs)	2.5905
24-Hr Clear Runoff Volume (ac-ft)	0.3332
24-Hr Clear Runoff Volume (cu-ft)	14512.2046



Peak Flow Hydrologic Analysis

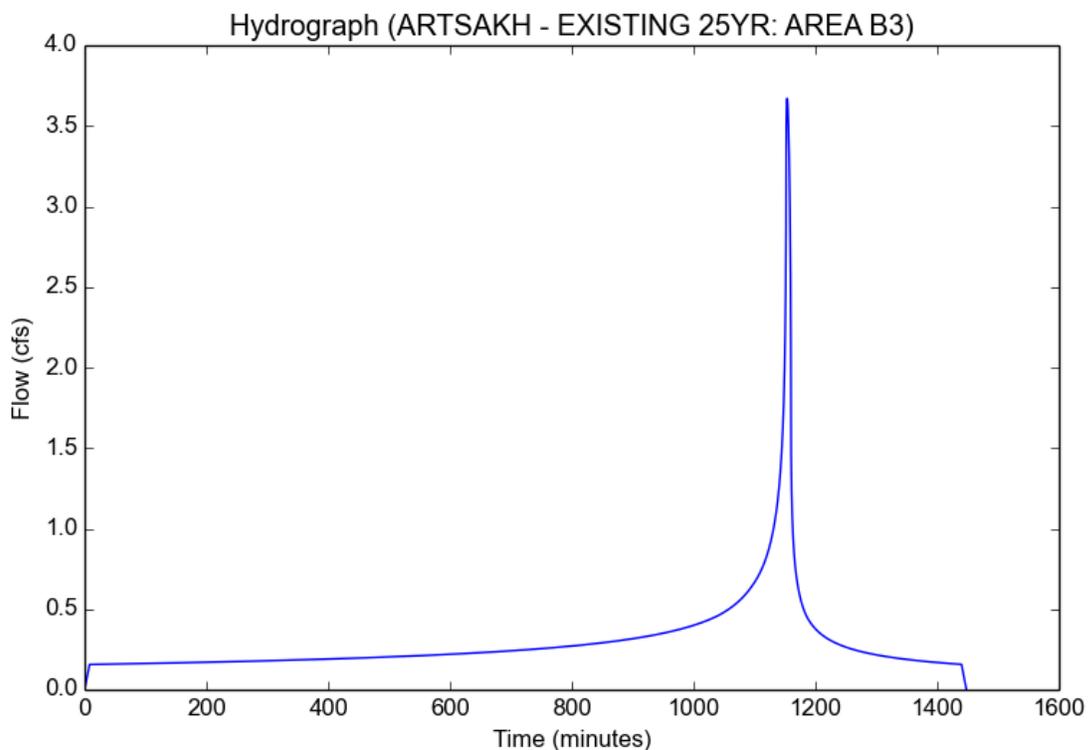
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Input Parameters

Project Name	ARTSAKH - EXISTING 25YR
Subarea ID	AREA B3
Area (ac)	1.51
Flow Path Length (ft)	671.0
Flow Path Slope (vft/hft)	0.015
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	2.7301
Undeveloped Runoff Coefficient (Cu)	0.8033
Developed Runoff Coefficient (Cd)	0.8903
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	3.6703
Burned Peak Flow Rate (cfs)	3.6703
24-Hr Clear Runoff Volume (ac-ft)	0.5918
24-Hr Clear Runoff Volume (cu-ft)	25777.9142



Peak Flow Hydrologic Analysis

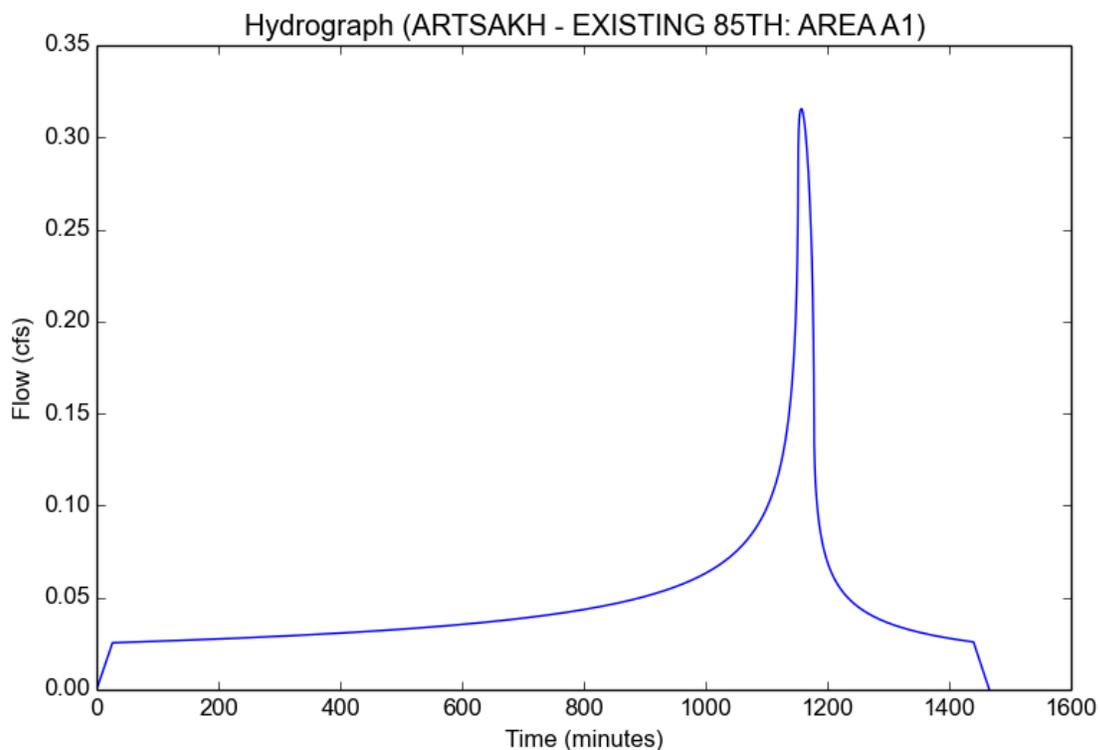
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Input Parameters

Project Name	ARTSAKH - EXISTING 85TH
Subarea ID	AREA A1
Area (ac)	1.4
Flow Path Length (ft)	610.0
Flow Path Slope (vft/hft)	0.017
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2749
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	0.3156
Burned Peak Flow Rate (cfs)	0.3156
24-Hr Clear Runoff Volume (ac-ft)	0.0949
24-Hr Clear Runoff Volume (cu-ft)	4132.8355



Peak Flow Hydrologic Analysis

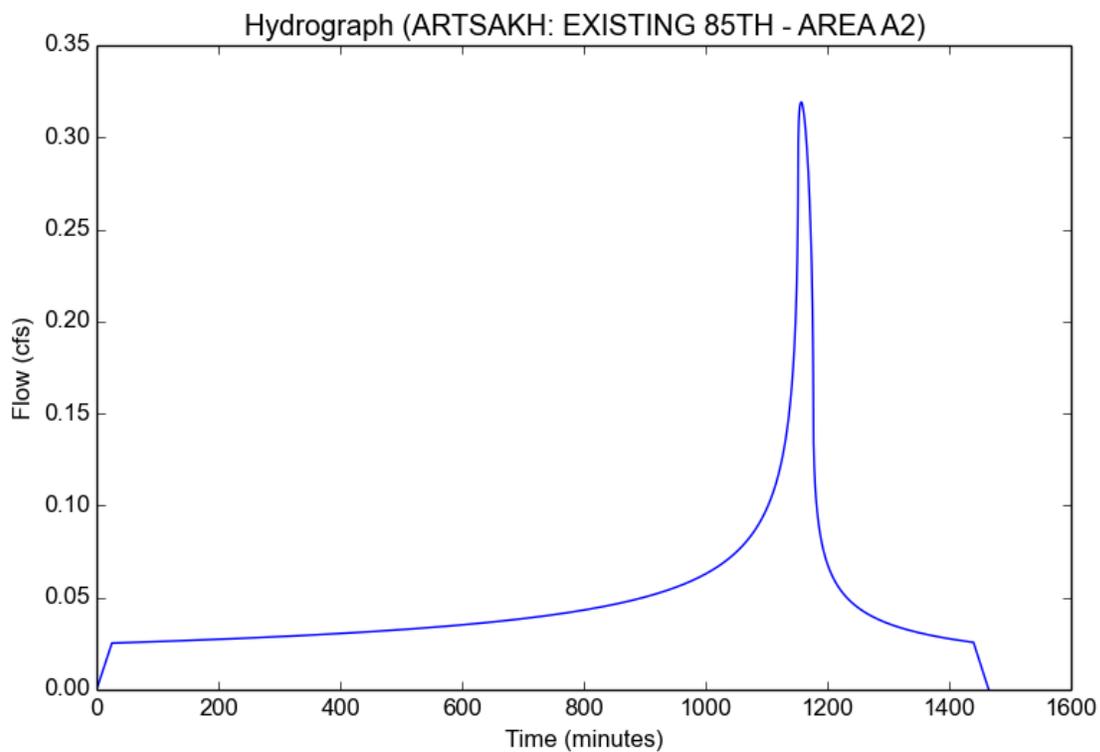
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	EXISTING 85TH - AREA A2
Area (ac)	1.39
Flow Path Length (ft)	582.0
Flow Path Slope (vft/hft)	0.016
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.28
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	25.0
Clear Peak Flow Rate (cfs)	0.3192
Burned Peak Flow Rate (cfs)	0.3192
24-Hr Clear Runoff Volume (ac-ft)	0.0942
24-Hr Clear Runoff Volume (cu-ft)	4103.3126



Peak Flow Hydrologic Analysis

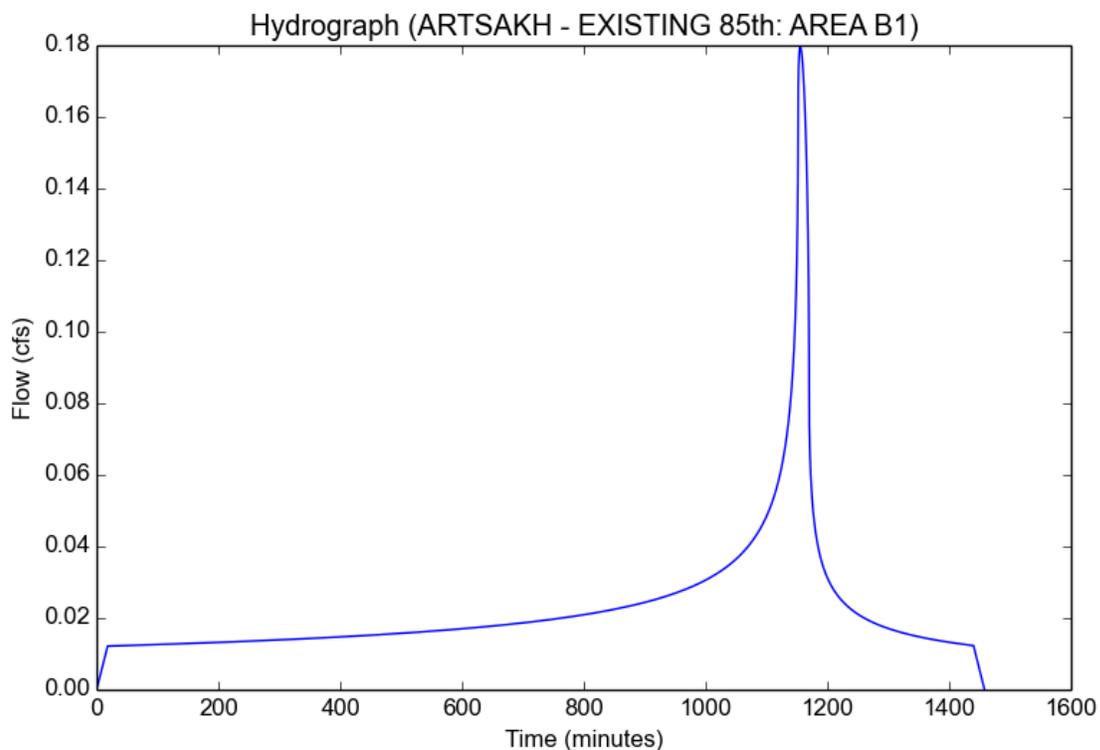
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH - EXISTING 85th
Subarea ID	AREA B1
Area (ac)	0.67
Flow Path Length (ft)	337.0
Flow Path Slope (vft/hft)	0.016
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3268
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	18.0
Clear Peak Flow Rate (cfs)	0.1795
Burned Peak Flow Rate (cfs)	0.1795
24-Hr Clear Runoff Volume (ac-ft)	0.0454
24-Hr Clear Runoff Volume (cu-ft)	1977.8481



Peak Flow Hydrologic Analysis

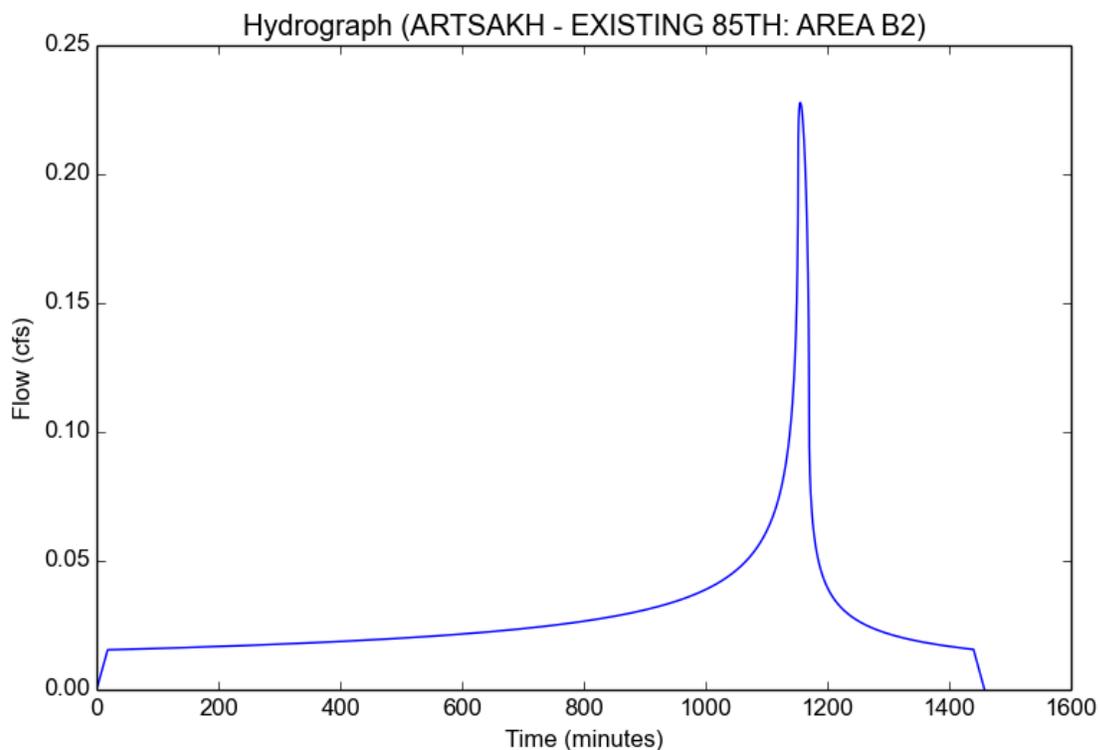
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH - EXISTING 85TH
Subarea ID	AREA B2
Area (ac)	0.85
Flow Path Length (ft)	326.0
Flow Path Slope (vft/hft)	0.013
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3268
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	18.0
Clear Peak Flow Rate (cfs)	0.2278
Burned Peak Flow Rate (cfs)	0.2278
24-Hr Clear Runoff Volume (ac-ft)	0.0576
24-Hr Clear Runoff Volume (cu-ft)	2509.2103



Peak Flow Hydrologic Analysis

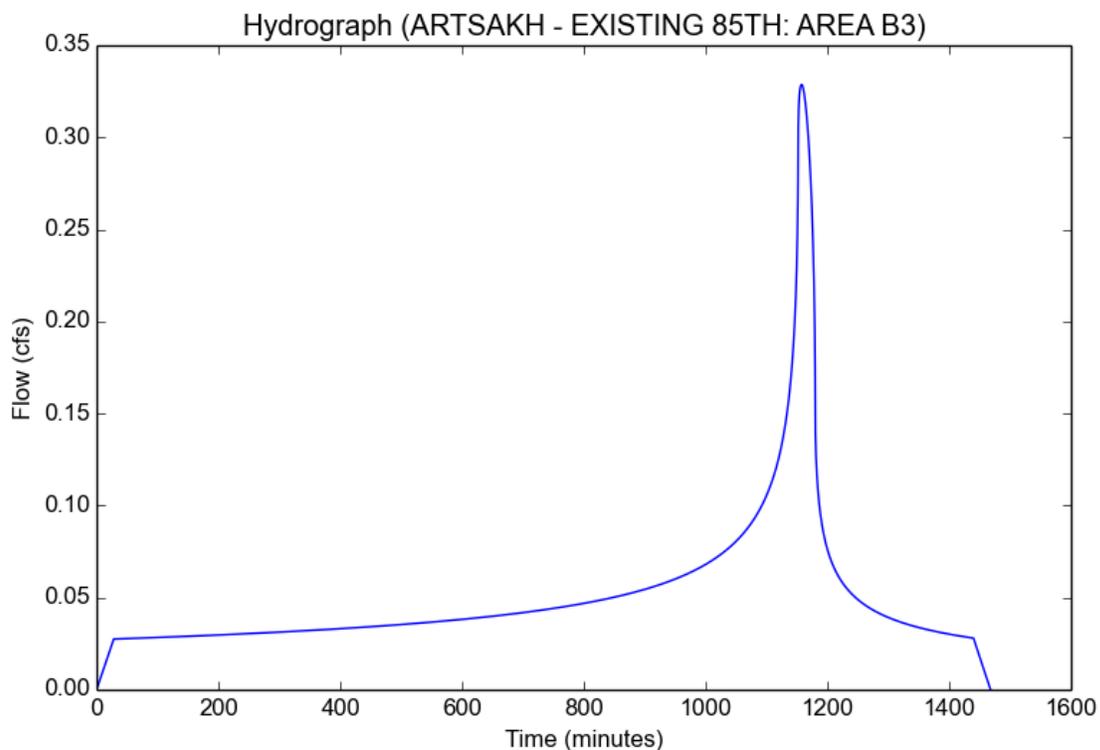
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH - EXISTING 85TH
Subarea ID	AREA B3
Area (ac)	1.51
Flow Path Length (ft)	671.0
Flow Path Slope (vft/hft)	0.015
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2655
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.3287
Burned Peak Flow Rate (cfs)	0.3287
24-Hr Clear Runoff Volume (ac-ft)	0.1023
24-Hr Clear Runoff Volume (cu-ft)	4457.5645



APPENDIX D

Post Development Hydrology Calculations

Peak Flow Hydrologic Analysis

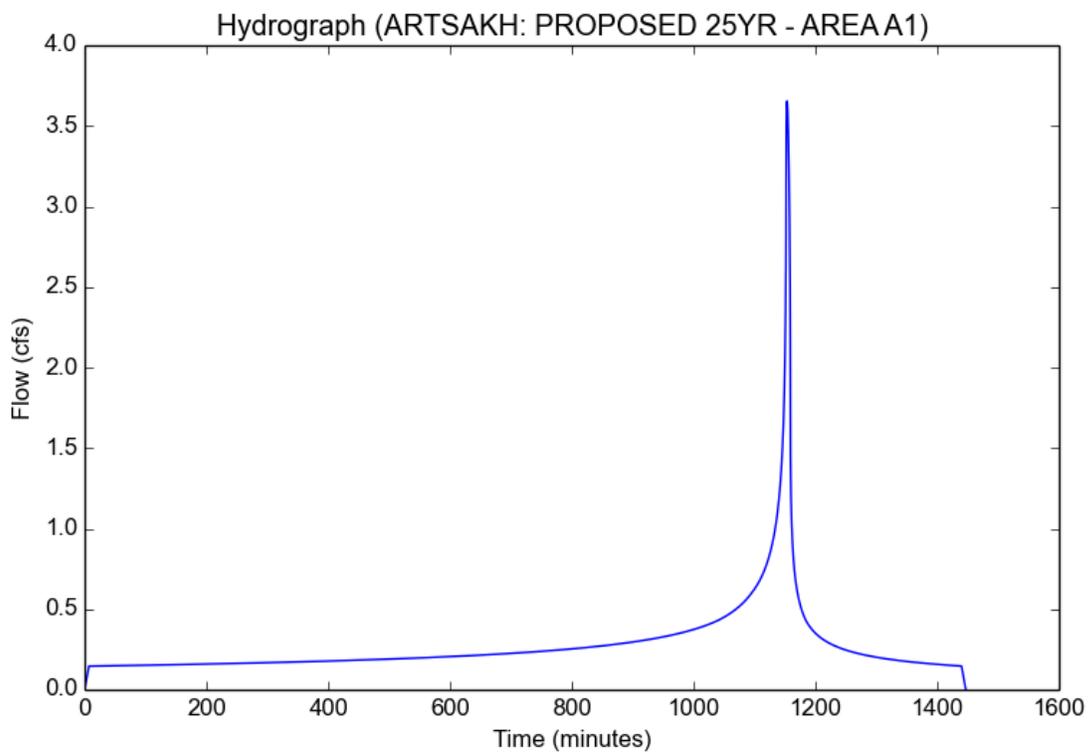
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 25YR - AREA A1
Area (ac)	1.41
Flow Path Length (ft)	610.0
Flow Path Slope (vft/hft)	0.017
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	2.9069
Undeveloped Runoff Coefficient (Cu)	0.8157
Developed Runoff Coefficient (Cd)	0.8916
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.6543
Burned Peak Flow Rate (cfs)	3.6543
24-Hr Clear Runoff Volume (ac-ft)	0.5526
24-Hr Clear Runoff Volume (cu-ft)	24071.4279



Peak Flow Hydrologic Analysis

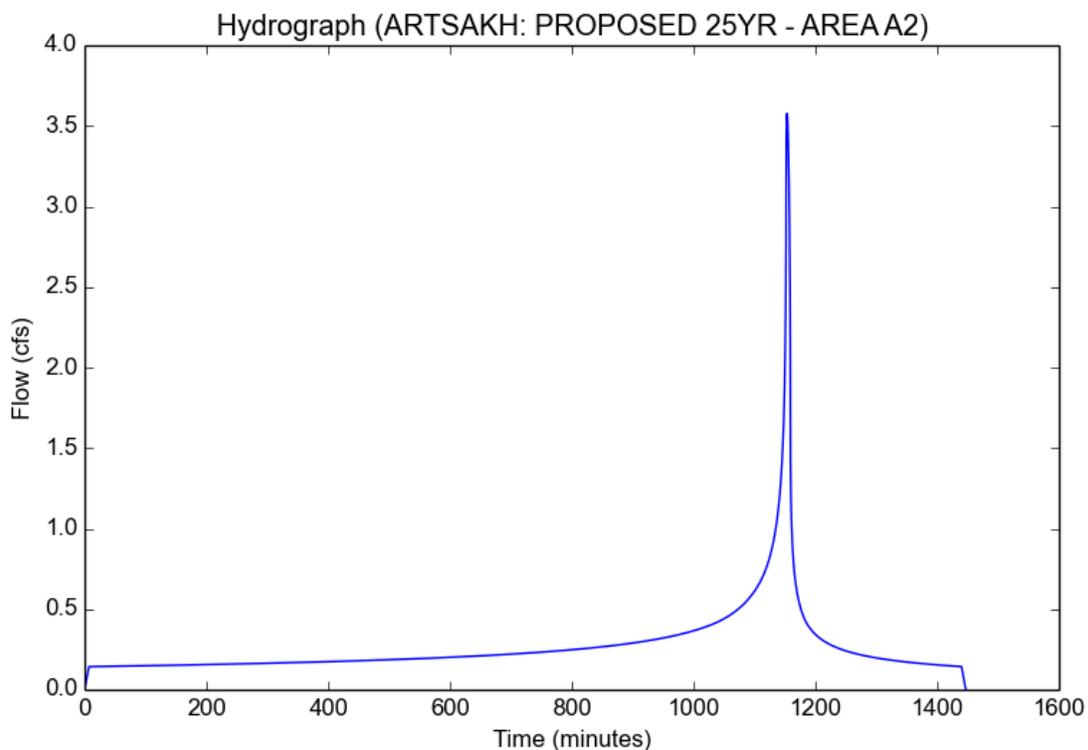
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 25YR - AREA A2
Area (ac)	1.38
Flow Path Length (ft)	582.0
Flow Path Slope (vft/hft)	0.016
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	2.9069
Undeveloped Runoff Coefficient (Cu)	0.8157
Developed Runoff Coefficient (Cd)	0.8916
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.5766
Burned Peak Flow Rate (cfs)	3.5766
24-Hr Clear Runoff Volume (ac-ft)	0.5408
24-Hr Clear Runoff Volume (cu-ft)	23559.2698



Peak Flow Hydrologic Analysis

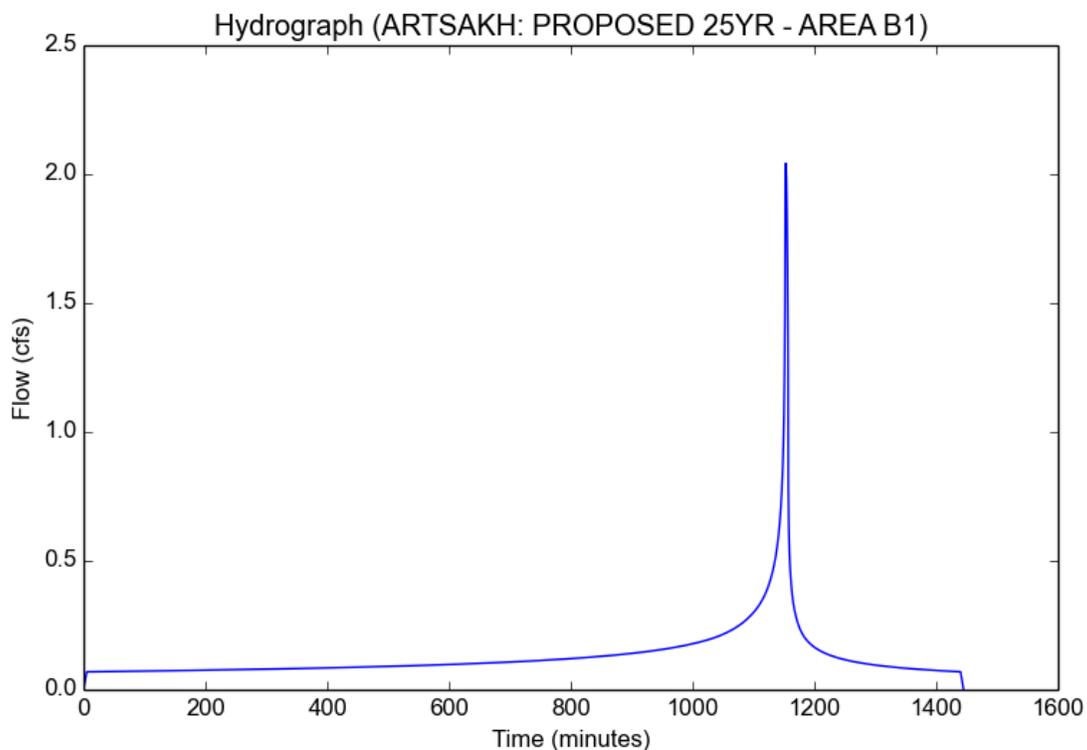
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 25YR - AREA B1
Area (ac)	0.67
Flow Path Length (ft)	337.0
Flow Path Slope (vft/hft)	0.016
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	3.405
Undeveloped Runoff Coefficient (Cu)	0.8507
Developed Runoff Coefficient (Cd)	0.8951
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.0419
Burned Peak Flow Rate (cfs)	2.0419
24-Hr Clear Runoff Volume (ac-ft)	0.2626
24-Hr Clear Runoff Volume (cu-ft)	11439.0319



Peak Flow Hydrologic Analysis

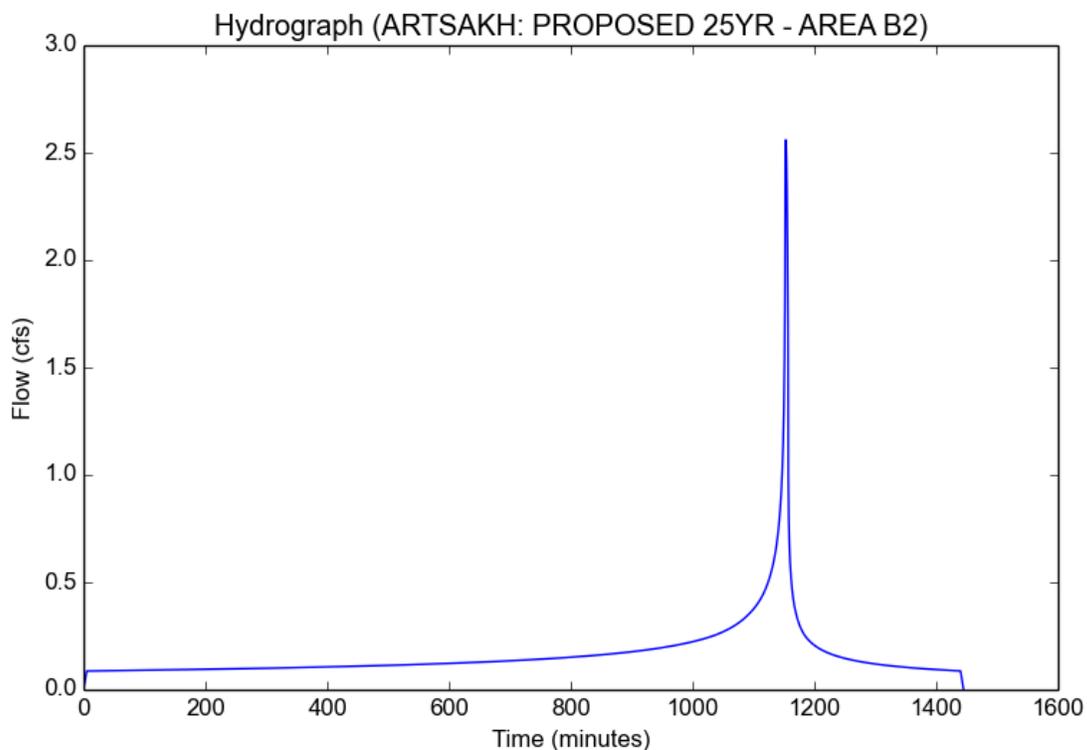
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Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 25YR - AREA B2
Area (ac)	0.84
Flow Path Length (ft)	326.0
Flow Path Slope (vft/hft)	0.013
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	3.405
Undeveloped Runoff Coefficient (Cu)	0.8507
Developed Runoff Coefficient (Cd)	0.8951
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.56
Burned Peak Flow Rate (cfs)	2.56
24-Hr Clear Runoff Volume (ac-ft)	0.3292
24-Hr Clear Runoff Volume (cu-ft)	14341.4728



Peak Flow Hydrologic Analysis

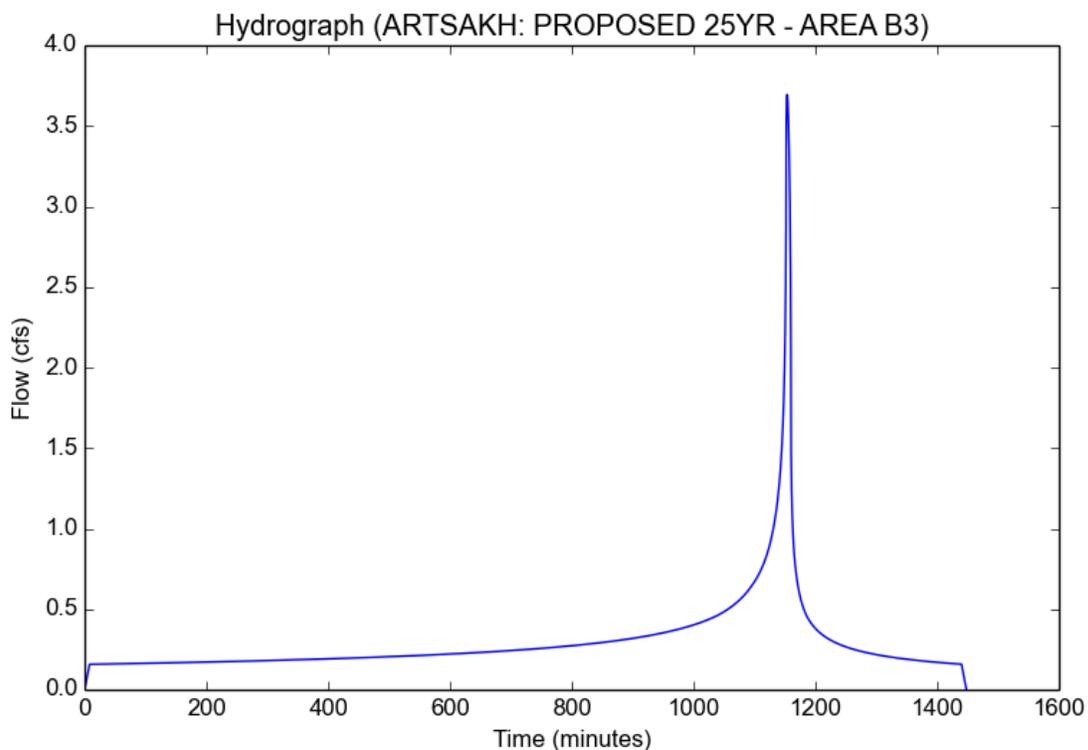
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 25YR - AREA B3
Area (ac)	1.52
Flow Path Length (ft)	677.0
Flow Path Slope (vft/hft)	0.015
50-yr Rainfall Depth (in)	6.5
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.707
Peak Intensity (in/hr)	2.7301
Undeveloped Runoff Coefficient (Cu)	0.8033
Developed Runoff Coefficient (Cd)	0.8903
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	3.6946
Burned Peak Flow Rate (cfs)	3.6946
24-Hr Clear Runoff Volume (ac-ft)	0.5957
24-Hr Clear Runoff Volume (cu-ft)	25948.6289



Peak Flow Hydrologic Analysis

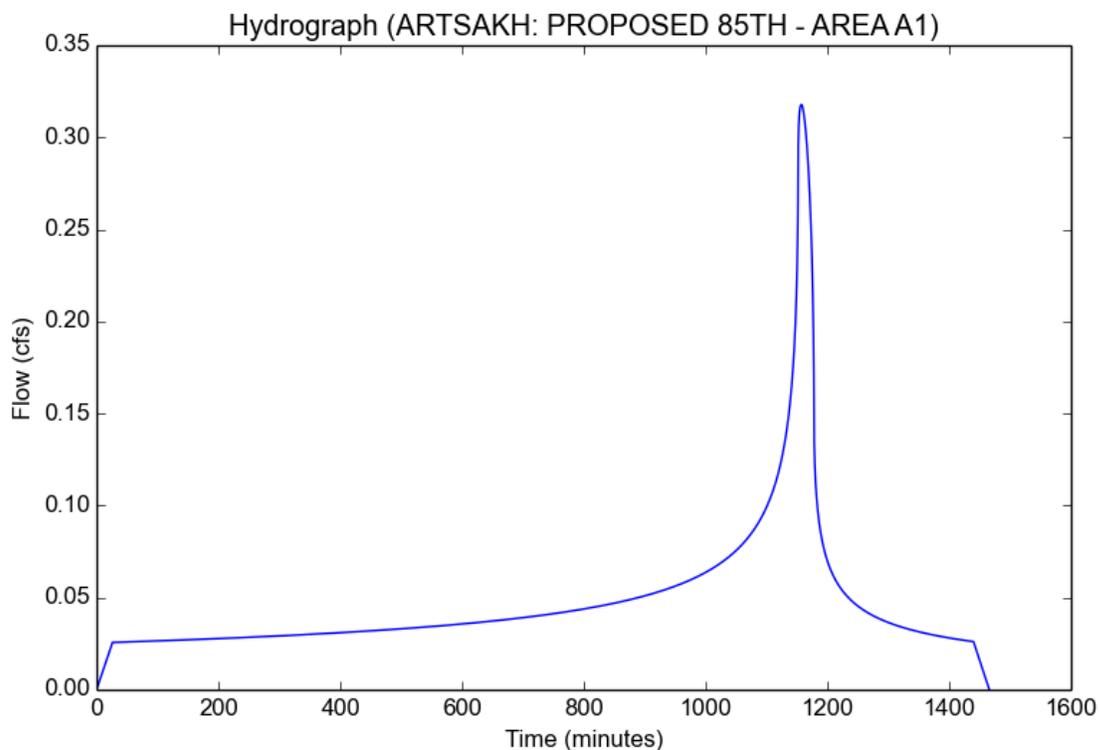
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 85TH - AREA A1
Area (ac)	1.41
Flow Path Length (ft)	610.0
Flow Path Slope (vft/hft)	0.017
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2749
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	0.3178
Burned Peak Flow Rate (cfs)	0.3178
24-Hr Clear Runoff Volume (ac-ft)	0.0956
24-Hr Clear Runoff Volume (cu-ft)	4162.3558



Peak Flow Hydrologic Analysis

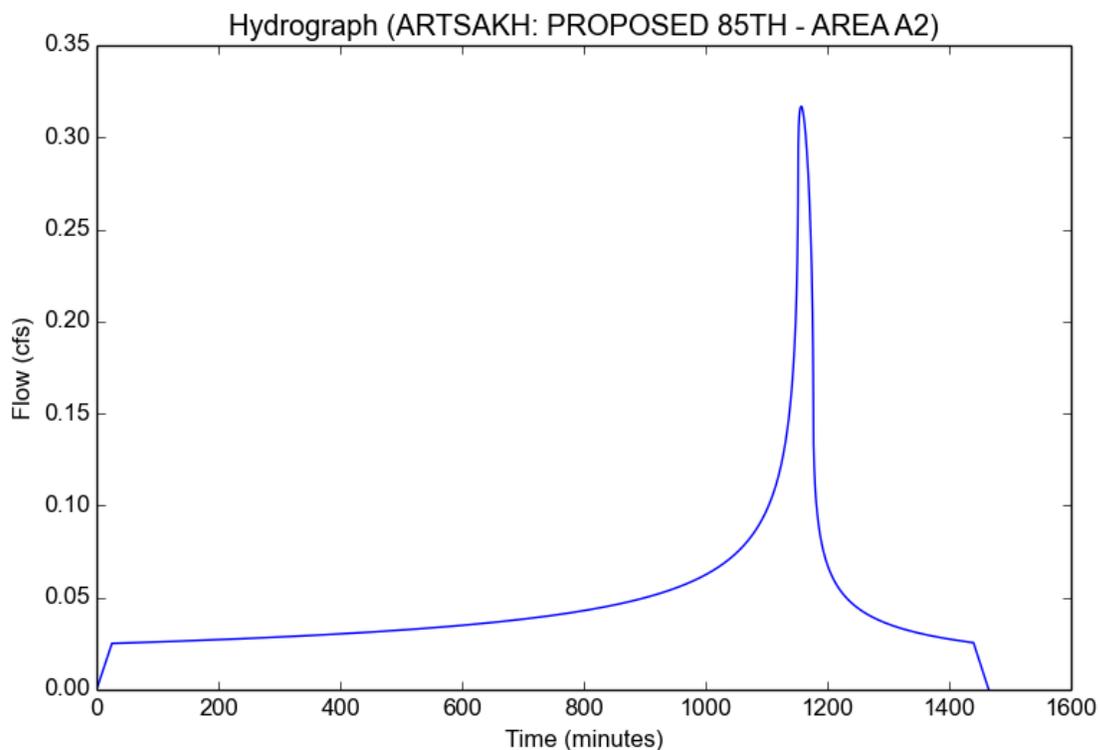
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 85TH - AREA A2
Area (ac)	1.38
Flow Path Length (ft)	582.0
Flow Path Slope (vft/hft)	0.016
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.28
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	25.0
Clear Peak Flow Rate (cfs)	0.3169
Burned Peak Flow Rate (cfs)	0.3169
24-Hr Clear Runoff Volume (ac-ft)	0.0935
24-Hr Clear Runoff Volume (cu-ft)	4073.7924



Peak Flow Hydrologic Analysis

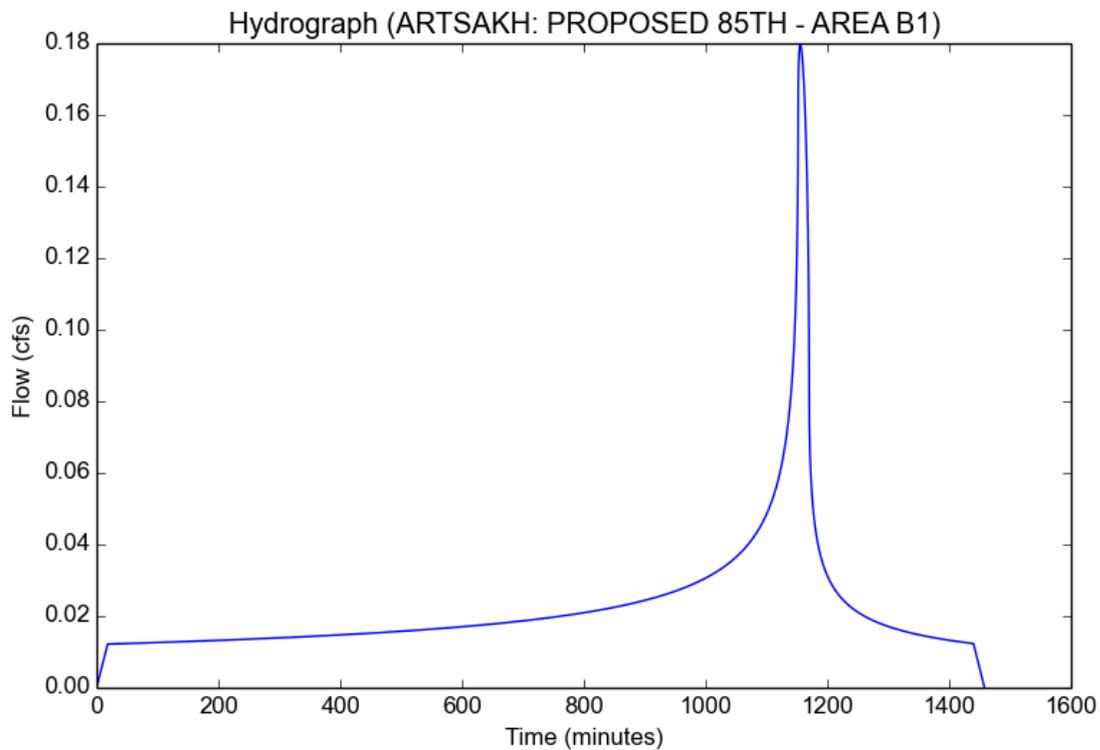
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 85TH - AREA B1
Area (ac)	0.67
Flow Path Length (ft)	337.0
Flow Path Slope (vft/hft)	0.016
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3268
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	18.0
Clear Peak Flow Rate (cfs)	0.1795
Burned Peak Flow Rate (cfs)	0.1795
24-Hr Clear Runoff Volume (ac-ft)	0.0454
24-Hr Clear Runoff Volume (cu-ft)	1977.8481



Peak Flow Hydrologic Analysis

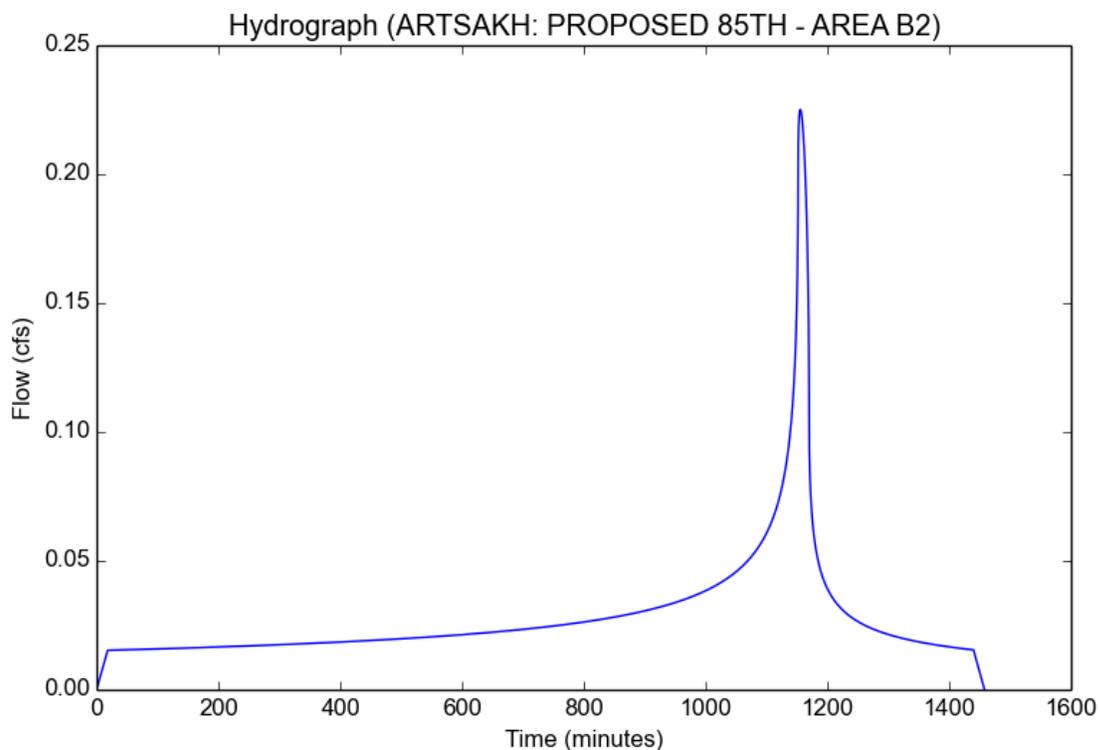
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 85TH - AREA B2
Area (ac)	0.84
Flow Path Length (ft)	326.0
Flow Path Slope (vft/hft)	0.013
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3268
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	18.0
Clear Peak Flow Rate (cfs)	0.2251
Burned Peak Flow Rate (cfs)	0.2251
24-Hr Clear Runoff Volume (ac-ft)	0.0569
24-Hr Clear Runoff Volume (cu-ft)	2479.6902



Peak Flow Hydrologic Analysis

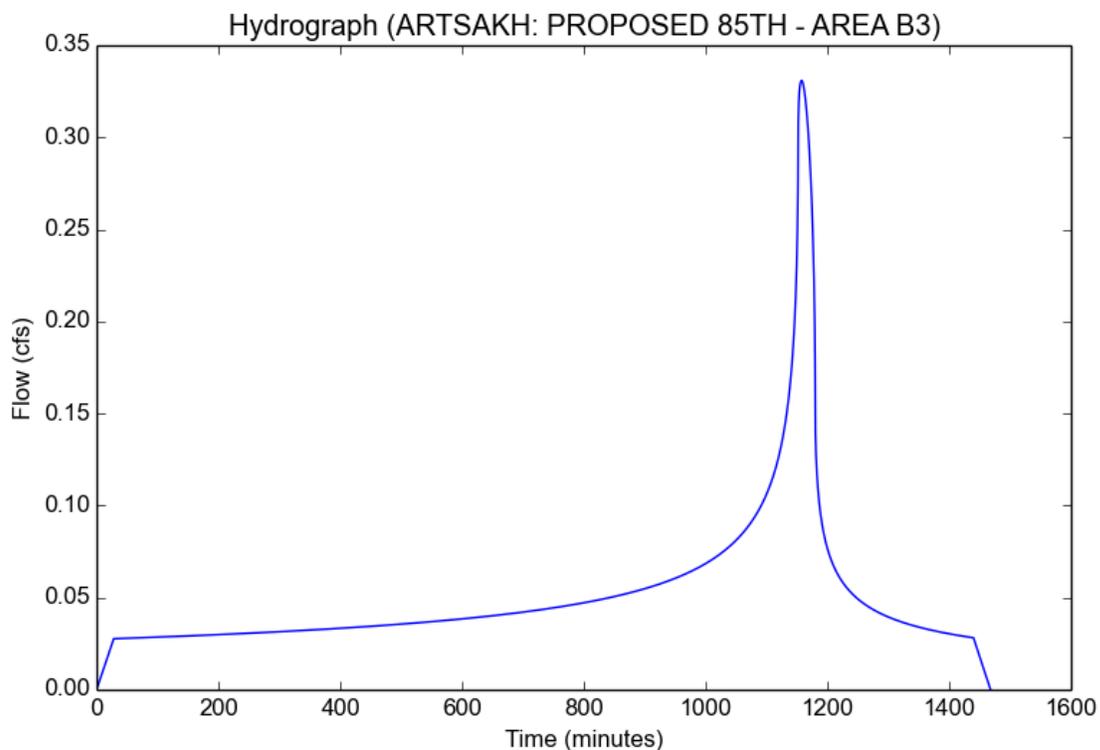
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	ARTSAKH
Subarea ID	PROPOSED 85TH - AREA B3
Area (ac)	1.52
Flow Path Length (ft)	677.0
Flow Path Slope (vft/hft)	0.015
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

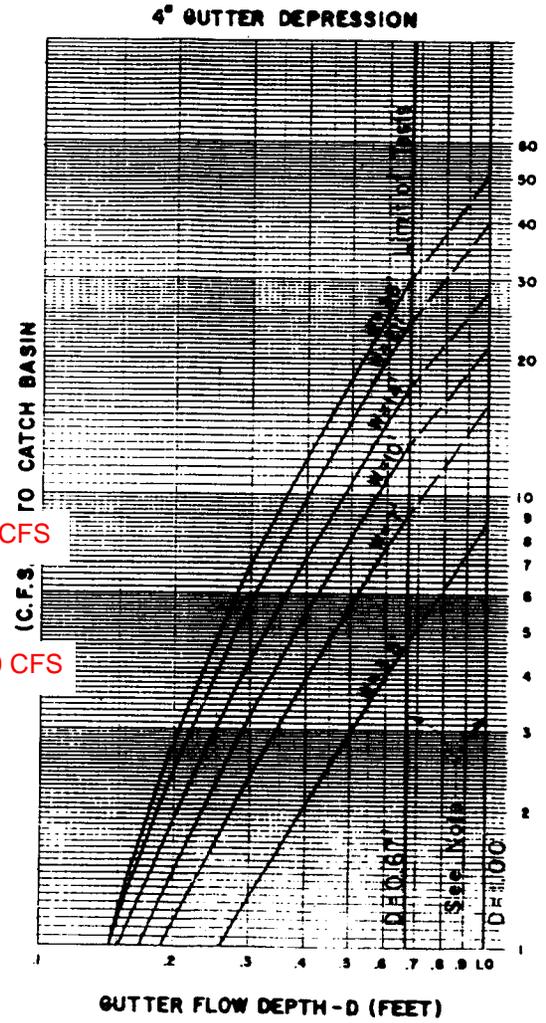
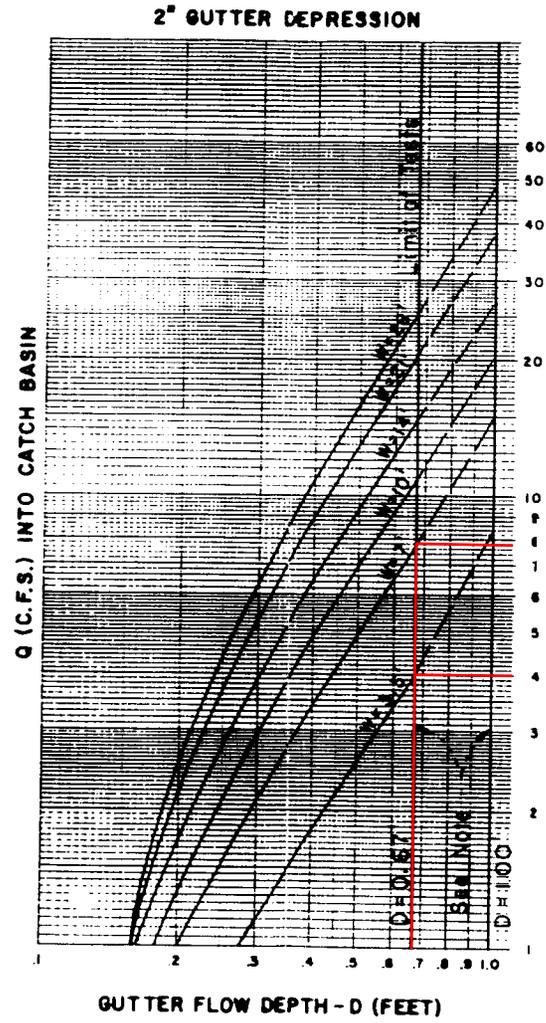
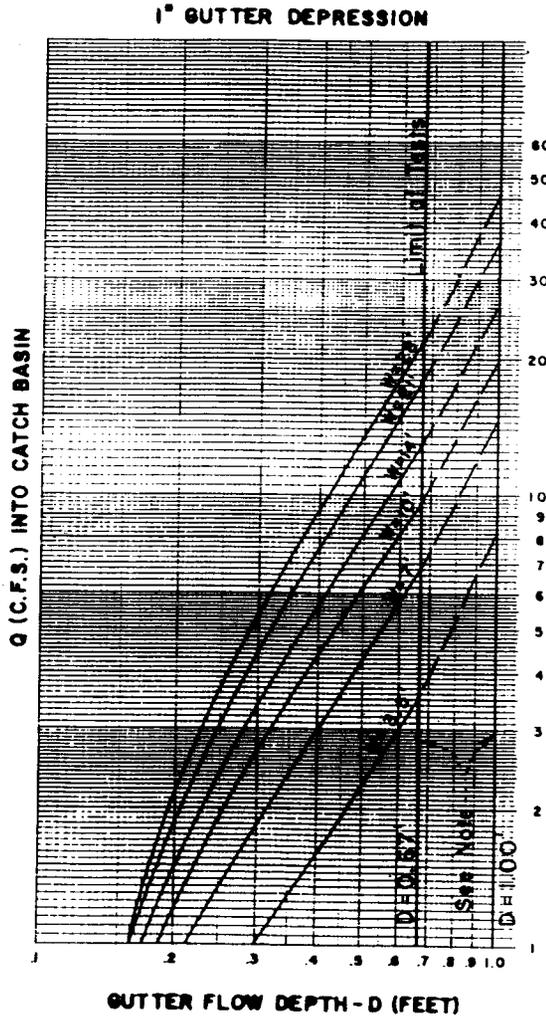
Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2655
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.3309
Burned Peak Flow Rate (cfs)	0.3309
24-Hr Clear Runoff Volume (ac-ft)	0.103
24-Hr Clear Runoff Volume (cu-ft)	4487.0848



APPENDIX E

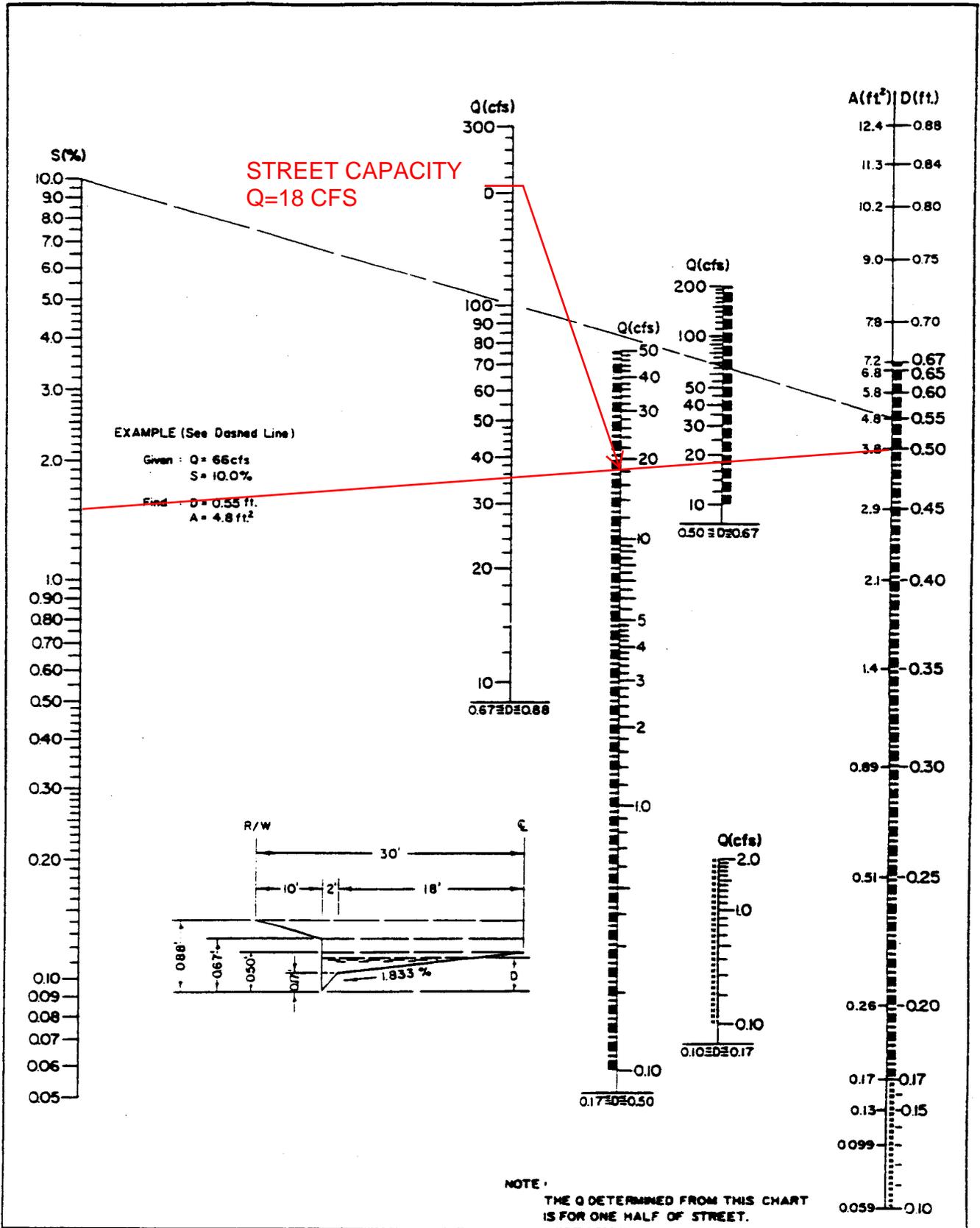
LACFCD Hydraulic Design Manual Catch Basin & Street Capacity Calculations



NOTE: Curves between D=0.67' and 1.0' are not from model test data and will be revised in the future when additional model test data are available.

CURB OPENING CATCH BASIN CAPACITIES

STREET SLOPE = .01



DESIGNED BY GB 6-64
 CHECKED BY JJM 8-64

LOS ANGELES COUNTY ROAD DEPARTMENT

STREET FLOW

LOCAL ST.-Chart 1 of 1

REFERENCE SHEET

APPENDIX F

Street Hydraulic Calculations

PROP 25YR STREET - A1

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.017 ft/ft
Discharge	3.65 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.023 ft/ft
Roughness Coefficient	0.013

Results	
Spread	8.4 ft
Flow Area	0.9 ft ²
Depth	3.4 in
Gutter Depression	1.1 in
Velocity	4.13 ft/s

PROP 25YR STREET - A2

Project Description	
Solve For	Spread
Input Data	
Channel Slope	0.016 ft/ft
Discharge	3.60 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.019 ft/ft
Roughness Coefficient	0.013
Results	
Spread	9.5 ft
Flow Area	0.9 ft ²
Depth	3.3 in
Gutter Depression	1.2 in
Velocity	3.85 ft/s

PROP 25YR STREET - B1

Project Description	
Solve For	Spread
Input Data	
Channel Slope	0.016 ft/ft
Discharge	2.04 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.012 ft/ft
Roughness Coefficient	0.013
Results	
Spread	9.8 ft
Flow Area	0.7 ft ²
Depth	2.7 in
Gutter Depression	1.3 in
Velocity	3.10 ft/s

PROP 25YR STREET - B2

Project Description	
Solve For	Spread
Input Data	
Channel Slope	0.013 ft/ft
Discharge	2.59 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.025 ft/ft
Roughness Coefficient	0.013
Results	
Spread	7.3 ft
Flow Area	0.7 ft ²
Depth	3.2 in
Gutter Depression	1.0 in
Velocity	3.53 ft/s

PROP 25YR STREET - B3

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.015 ft/ft
Discharge	3.67 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.024 ft/ft
Roughness Coefficient	0.013

Results	
Spread	8.4 ft
Flow Area	0.9 ft ²
Depth	3.5 in
Gutter Depression	1.1 in
Velocity	3.98 ft/s

PROP 85TH STREET - A1

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.017 ft/ft
Discharge	0.32 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.023 ft/ft
Roughness Coefficient	0.013

Results	
Spread	1.9 ft
Flow Area	0.1 ft ²
Depth	1.6 in
Gutter Depression	1.1 in
Velocity	2.89 ft/s

PROP 85TH STREET - A2

Project Description	
Solve For	Spread
Input Data	
Channel Slope	0.016 ft/ft
Discharge	0.32 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.019 ft/ft
Roughness Coefficient	0.013
Results	
Spread	2.1 ft
Flow Area	0.1 ft ²
Depth	1.6 in
Gutter Depression	1.2 in
Velocity	2.81 ft/s

PROP 85TH STREET - B1

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.016 ft/ft
Discharge	0.18 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.012 ft/ft
Roughness Coefficient	0.013

Results	
Spread	1.3 ft
Flow Area	0.1 ft ²
Depth	1.3 in
Gutter Depression	1.3 in
Velocity	2.48 ft/s

PROP 85TH STREET - B2

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.013 ft/ft
Discharge	0.23 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.025 ft/ft
Roughness Coefficient	0.013

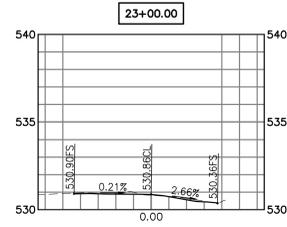
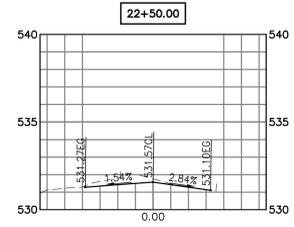
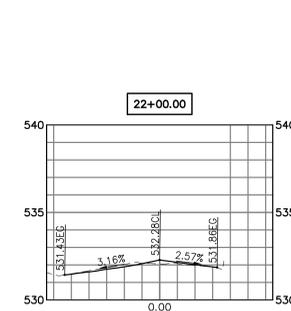
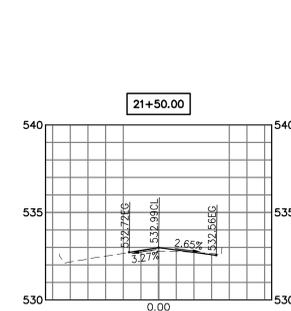
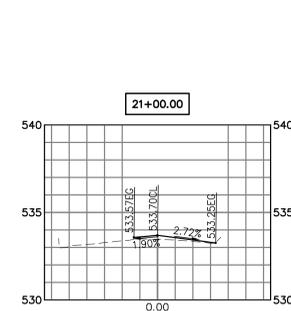
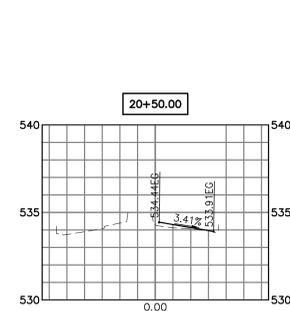
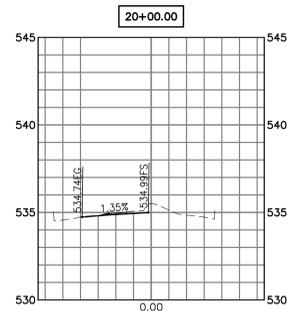
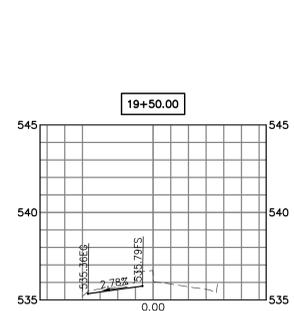
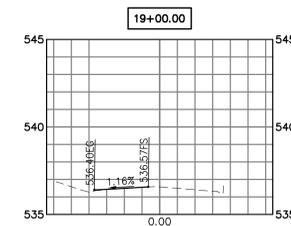
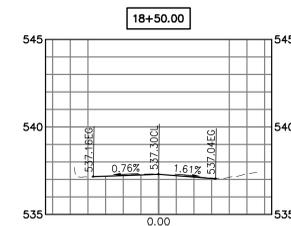
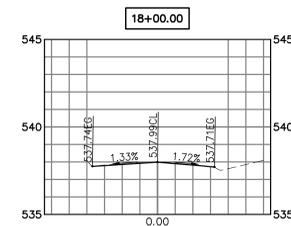
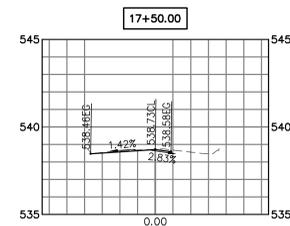
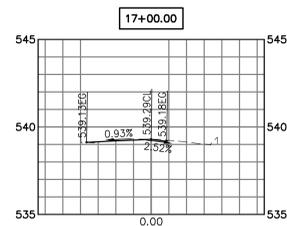
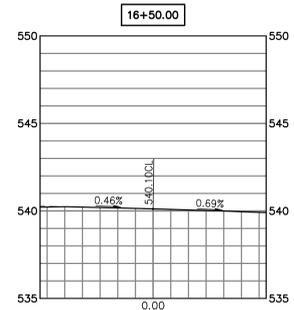
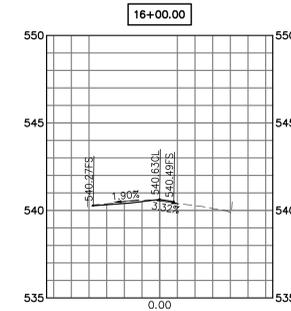
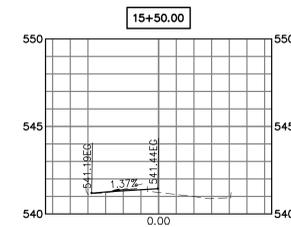
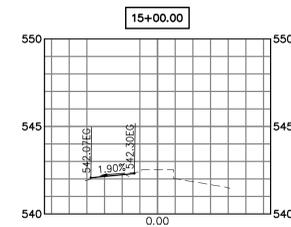
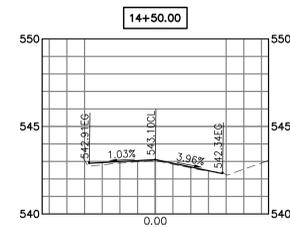
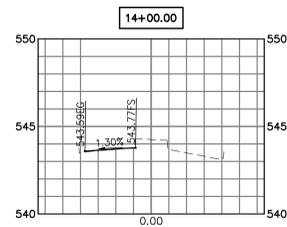
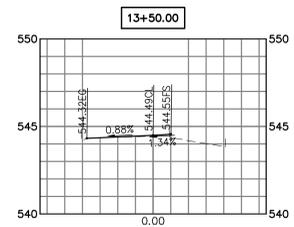
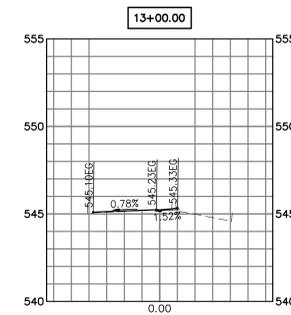
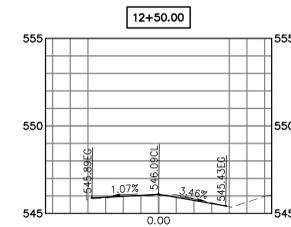
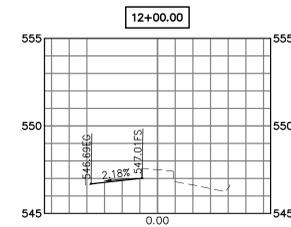
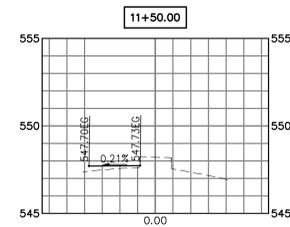
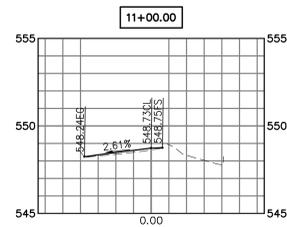
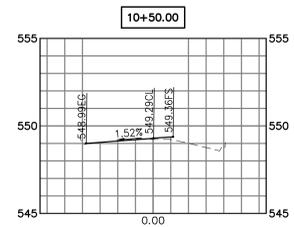
Results	
Spread	1.5 ft
Flow Area	0.1 ft ²
Depth	1.5 in
Gutter Depression	1.0 in
Velocity	2.44 ft/s

PROP 85TH STREET - B3

Project Description	
Solve For	Spread
Input Data	
Channel Slope	0.015 ft/ft
Discharge	0.33 cfs
Gutter Width	1.5 ft
Gutter Cross Slope	0.083 ft/ft
Road Cross Slope	0.024 ft/ft
Roughness Coefficient	0.013
Results	
Spread	2.1 ft
Flow Area	0.1 ft ²
Depth	1.7 in
Gutter Depression	1.1 in
Velocity	2.76 ft/s

LEGEND + ABBREVIATIONS

- EXISTING SURFACE
- PROPOSED SURFACE
- CL CENTERLINE
- EG EDGE OF GUTTER
- FS FINISHED SURFACE



ARTSAKH STREET IMPROVEMENT PLANS SECTIONS
ARTSAKH AVE. FROM EAST WILSON AVE. TO EAST HARVARD ST.

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 4'



F:\Projects\1839\001\Enbsh\1839-001k Street Sections - 50k.dwg (8/17/2022 5:38 PM) Printed by: Jobe Jordan



MEMORANDUM

To:	Shannon Heffernan, AICP Shruti Shankar, AICP, LEED AP ND studioneleven	Date:	November 22, 2019
From:	Clare M. Look-Jaeger, P.E. Alfred C. Ying, P.E., PTP LLG, Engineers	LLG Ref:	1-19-4326-1
Subject:	Glendale Arts & Entertainment District – Marketplace Parking Structure Assessment City of Glendale, California		

Engineers & Planners
Traffic
Transportation
Parking

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Linscott, Law & Greenspan, Engineers (LLG) has prepared this memorandum to summarize our review of the existing Marketplace parking structure within the Glendale Arts & Entertainment (A&E) District. The Glendale A&E District generally extends along Artsakh Avenue between Wilson Avenue to the north and Harvard Street to the south. This review focuses on the Marketplace parking structure vehicular site access and determines whether the Artsakh Avenue One-Way option recently selected by the City would result in any negative effects on the parking structure operations.

This traffic assessment includes a summary of the existing conditions, traffic count data collection effort, parking structure entry/exit records review, a description of the approved one-way access scheme, intersection operation and queuing assessment of the Artsakh Avenue/Harvard Street intersection, and review of the Marketplace parking structure circulation and recommendations.

Existing Conditions

The Glendale A&E District generally extends along Artsakh Avenue between Wilson Avenue to the north and Harvard Street to the south. The Marketplace parking structure is located at the northeast corner of the Artsakh Avenue/Harvard Street intersection. A total of 1,125 parking spaces are provided via three below-grade levels and six above-grade levels. Vehicular access to this parking structure is provided via Artsakh Avenue with two entry lanes and two exit lanes and via Harvard Street with one entry lane and two exit lanes.

Traffic Counts

Existing manual traffic counts were conducted at all vehicular access points serving the Marketplace parking structure. The traffic counts were conducted during a typical weekday in February 2019 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM coinciding with the adjacent street morning and afternoon peak commute periods. The existing inbound and outbound traffic volumes during the weekday AM and PM peak hours are shown in **Appendix A** (refer to **Appendix Figure A-1**). Summary data worksheets of the manual driveway traffic counts are also contained in **Appendix A**.

As shown in *Appendix Figure A-1*, a total of 162 inbound trips and 76 outbound trips were recorded at the Marketplace parking structure during the highest one hour within the typical weekday morning commute period and a total of 338 inbound trips and 268 outbound trips were recorded at the Marketplace parking structure during the highest one hour within the typical weekday afternoon commute period. With three entry lanes and four exit lanes serving the Marketplace parking structure, these traffic volumes are accommodated within the overall gate capacities.

In addition to the manual traffic counts, automatic 24-hour machine traffic counts were also conducted on Artsakh Avenue north of Harvard Street as well as south of Broadway. The automatic 24-hour machine traffic counts were conducted over a typical four-day period (i.e., Thursday through Sunday) in February 2019. Copies of the 24-hour machine traffic counts are also contained in *Appendix A*. Based on LLG's review of this data, it is determined that Artsakh Avenue currently experiences its single highest hour of traffic on Saturday between 2:00 PM and 3:00 PM with 539 vehicles recorded just south of Broadway (comprises 261 vehicles traveling northbound and 278 vehicles traveling southbound).

Review of Marketplace Parking Structure Entry/Exit Records

Detailed Marketplace parking structure entry/exit records were obtained from the City for the recent period of August 1 through August 31, 2019. This time period is considered to be representative and may reflect a slightly higher than typical, recurring conditions due to the summer holidays. The transaction data for this one month period were then carefully reviewed so as to determine the single highest hour of exiting traffic associated with the Marketplace parking structure for both weekday and weekend conditions. Based on LLG's review, it is determined that the single highest hour of exiting traffic during weekdays occurred on Tuesday, August 13, 2019 between 8:00 PM and 9:00 PM when a total of 376 vehicles exited the subject garage. Of the 376 exiting vehicles, 300 vehicles (80%) exited via the two gates on Artsakh Avenue while 76 vehicles (20%) exited via the two gates on Harvard Street.

In addition, it is determined that the single highest hour of exiting traffic during weekends occurred on Saturday, August 17, 2019 between 2:00 PM and 3:00 PM when a total of 368 vehicles exited the subject garage. Of the 368 exiting vehicles, 263 vehicles (71%) exited via the two gates on Artsakh Avenue while 105 vehicles (29%) exited via the two gates on Harvard Street. Independent field observations confirmed that usage of the Artsakh Avenue and Harvard Street exit gates is not balanced in that substantially more motorists are observed to utilize the Artsakh Avenue exiting gates. Copies of the corresponding weekday/weekend Marketplace parking structure entry/exit records are contained in *Appendix A*.

Description of the Approved One-Way Artsakh Avenue Access Scheme

The approved Artsakh Avenue one-way access scheme includes the North Block, which extends between Wilson Avenue and Broadway, and the South Block, which extends between Broadway and Harvard Street. From a vehicular access perspective, under the One-Way Option, Artsakh Avenue would be converted to one-way southbound travel only. The one-way southbound vehicular travel would be implemented along the majority of the two-block section of Artsakh Avenue, with the exception of the short roadway segment between the southerly Marketplace parking structure access point and Harvard Street (in the South Block) where two-way vehicular travel would be maintained. It should be noted that no changes to the Artsakh Avenue/Harvard Street intersection lane configurations are proposed as part of the approved access scheme. However, since the roadway width of Artsakh Avenue is proposed to be narrowed (i.e., by extending the sidewalk on the east side westerly), the corresponding traffic signal equipment located at the northeast corner of the intersection will need to be relocated.

A chicane is planned to be provided on the South Block of Artsakh Avenue. Vehicular access to the Marketplace parking structure would continue to be provided. The northerly Marketplace parking structure access point would provide westbound left-turn egress movements while the southerly Marketplace parking structure access point would provide northbound right-turn and southbound left-turn ingress movements.

Intersection Operation and Queuing Review

The weekday AM and PM peak hour intersection analysis worksheets prepared for the Artsakh Avenue/Harvard Street study intersection are contained in **Appendix B**. The analysis was prepared using the *Synchro Studio 10* software package which implements the Highway Capacity Manual (HCM) operational methods. The Artsakh Avenue/Harvard Street intersection is located immediately adjacent to the Marketplace parking structure. It should be noted that the analysis worksheets contained in **Appendix B** reflect future intersection operating conditions, with incorporation of existing traffic volumes, ambient growth, as well as shift in traffic due to the Artsakh Avenue One-Way access scheme. As shown in the analysis worksheets, the Artsakh Avenue/Harvard Street study intersection is forecast to operate at LOS A and LOS B conditions during the weekday AM and PM peak hours, respectively, under the future with one-way access scheme conditions. Extensive vehicle delays at the subject intersection are not expected.

In addition to the intersection analysis, a review of vehicle queuing was also conducted focusing on the subject intersection's southbound approach to determine whether queues would potentially extend to beyond the Marketplace structure's northerly access point (and thereby would negatively affect the structure's exiting operation in the future). In forecasting vehicle queuing, the *Synchro* software

considers traffic volume data, lane configurations, traffic signal timing/phasing, and available vehicle storage lengths for the respective traffic movements.

The *Synchro* analysis provides a forecast of the 95th percentile queues for the analysis time periods. The 95th percentile queue is the maximum back of vehicle queue with 95th percentile traffic volumes and is typically utilized for design purposes. An average vehicle length of 25 feet (including vehicle separation) is assumed for analysis purposes. As shown in the analysis worksheets, the 95th percentile maximum back of vehicle queue is determined to be 2.4 vehicles (approximately 60 feet) during the weekday AM peak hour and 8.0 vehicles (approximately 200 feet) during the weekday PM peak hour thus representing worst-case queuing conditions. Since a minimum of 300 feet of vehicle storage is available (as measured from the Marketplace structure's northerly access point to the limit line at the Artsakh Avenue/Harvard Street intersection), vehicle queuing extending to beyond the Marketplace structure's northerly access point is not expected under the future with one-way access scheme.

Marketplace Parking Structure Circulation Review/Recommendations

Under current conditions, exiting motorists at the northerly Marketplace parking structure access point have an option to either turn right to head north or turn left to head south on Artsakh Avenue. The exiting right-turning traffic has one potential conflict (i.e., must yield to northbound Artsakh Avenue traffic) while the exiting left-turning traffic has up to three potential conflicts (i.e., must yield to both northbound and southbound Artsakh Avenue traffic plus any pedestrian crossing). Under the future with one-way access scheme, after exiting the structure the two exiting lanes will be merged into one lane and this lane will be restricted to turn left to head south on Artsakh Avenue. Under this condition, the number of potential conflicts for exiting left-turning traffic will be reduced to two conflicts (i.e., must yield to southbound Artsakh Avenue traffic plus any pedestrian crossing).

Based on LLG's review of the existing parking structure driveway turning movement counts conducted during the weekday adjacent street's peak commute hours, the weekday/weekend daily traffic counts conducted on Artsakh Avenue, the entry/exit transaction data, and the future with one-way access scheme's intersection and queuing results, vehicle queuing extending to beyond the Marketplace structure's northerly access point is not expected. However, given that usage of the Artsakh Avenue and Harvard Street exit gates is not balanced (substantially more motorists are observed to utilize the Artsakh Avenue exiting gates) and to encourage more usage of the existing pedestrian bridge crossing Artsakh Avenue, the following recommendations and additional wayfinding are offered for consideration:

- Encourage More Usage of the Marketplace Structure Pedestrian Bridge – Provide additional wayfinding for patrons who park on the upper floors (i.e., third level and above) to use the pedestrian bridge to patronize the second floor businesses on the west side of Artsakh Avenue. Provide better lighting

and elevator button enhancement. This measure would potentially reduce some pedestrians from crossing at grade.

- Implement a Temporary Pilot Project within the Marketplace Structure – To draw more usage of the exiting gates on Harvard Street, consider temporary removal of the cones/chains located on the ground level such that motorists from the No. 1 exiting lane on Artsakh Avenue (parked on the upper levels) would have an option to access the exiting gates at Harvard Street. Refer to **Appendix Figure C-1** in **Appendix C** which illustrates that the corresponding passenger vehicle maneuvering can be accommodated. The drive aisle nearest and parallel to Artsakh Avenue on the ground floor will accommodate two-way traffic. Additional signage including a “Do Not Enter” sign may be required as part of the pilot project. In addition, temporary cones can be placed outside the exiting gates on Artsakh Avenue to temporarily restrict all exiting traffic to turn left and head south on Artsakh Avenue. Pending the results of the temporary pilot project, additional measures may be considered.
- Additional Brand Boulevard Wayfinding – Existing electronic parking availability signs have been installed on Brand Boulevard (i.e., a southbound facing electronic sign is provided north of Broadway and a northbound facing electronic sign is provided south of Broadway). Consider installation of another northbound facing electronic sign south of Harvard Street such that motorists from the south are informed to access the Marketplace parking structure via Harvard Street. It is recognized that a public parking guide sign is currently installed in the northbound direction of Brand Boulevard (at Caruso Avenue mounted on the existing street light/signal pole), however, an electronic sign installed along the raised median would likely draw additional visibility and result in greater access to the structure via Harvard Street.

Please feel free to call us at 626.796.2322 with any questions or comments regarding this Marketplace parking structure assessment.

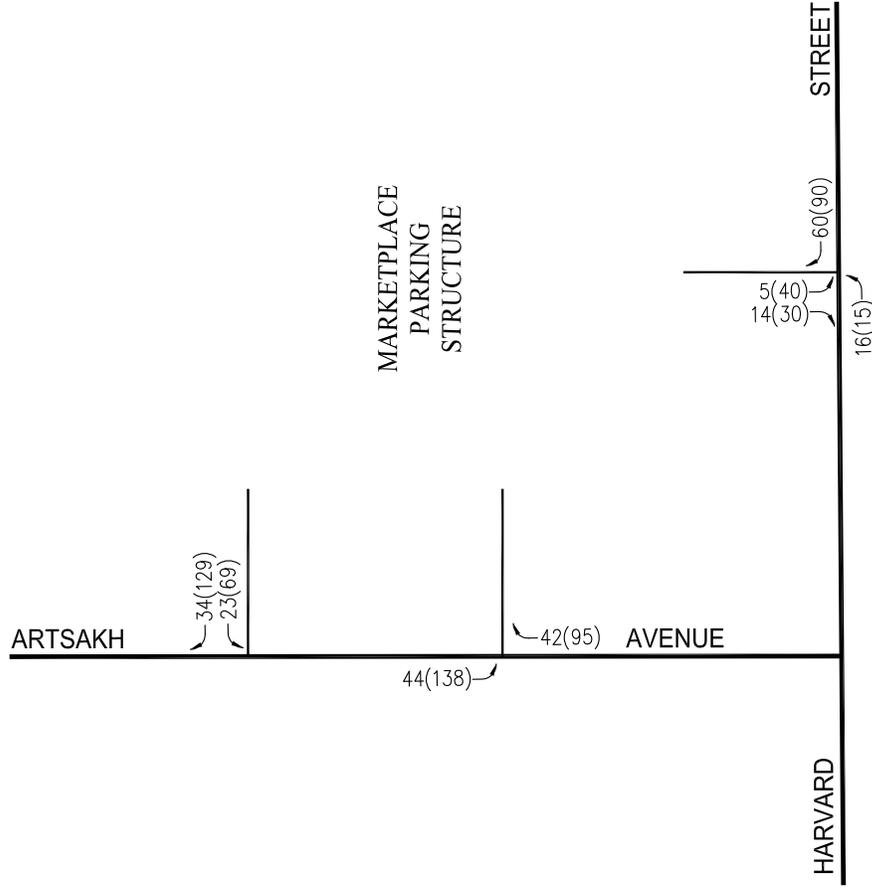
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APPENDIX A

TRAFFIC COUNT DATA WORKSHEETS

- **MANUAL AM AND PM PEAK HOUR DRIVEWAY
TURNING MOVEMENT COUNTS**

- **AUTOMATIC AVERAGE DAILY TRAFFIC COUNTS**
 - **MARKETPLACE PARKING STRUCTURE
ENTRY/EXIT DATA**



NOT TO SCALE

WEEKDAY AM(PM) PEAK HOUR TRAFFIC VOLUMES

APPENDIX FIGURE A-1 EXISTING MARKETPLACE PARKING STRUCTURE TRAFFIC VOLUMES

LINSCOTT, LAW & GREENSPAN, engineers

GLENDALE ARTS & ENTERTAINMENT DISTRICT

City of Glendale
 N/S: Artsakh Avenue
 E/W: Marketplace Parking Structure N DW
 Weather: Clear

File Name : 03_GDE_Artsakh_Marketplace N DW AM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 1

Groups Printed- Total Volume

Start Time	Artsakh Avenue Southbound				Marketplace Parking Structure North DW Westbound			Artsakh Avenue Northbound				Int. Total
	Left	Thru	U-turns	App. Total	Left	Right	App. Total	Thru	Right	U-turns	App. Total	
07:00 AM	0	1	0	1	7	9	16	4	0	0	4	21
07:15 AM	0	0	1	1	3	8	11	5	0	0	5	17
07:30 AM	0	0	0	0	8	10	18	3	0	0	3	21
07:45 AM	0	0	0	0	6	9	15	5	0	0	5	20
Total	0	1	1	2	24	36	60	17	0	0	17	79
08:00 AM	0	0	0	0	2	7	9	8	0	0	8	17
08:15 AM	0	0	0	0	7	6	13	3	0	0	3	16
08:30 AM	0	0	0	0	5	11	16	11	0	0	11	27
08:45 AM	0	0	0	0	9	10	19	6	0	0	6	25
Total	0	0	0	0	23	34	57	28	0	0	28	85
Grand Total	0	1	1	2	47	70	117	45	0	0	45	164
Apprch %	0	50	50		40.2	59.8		100	0	0		
Total %	0	0.6	0.6	1.2	28.7	42.7	71.3	27.4	0	0	27.4	

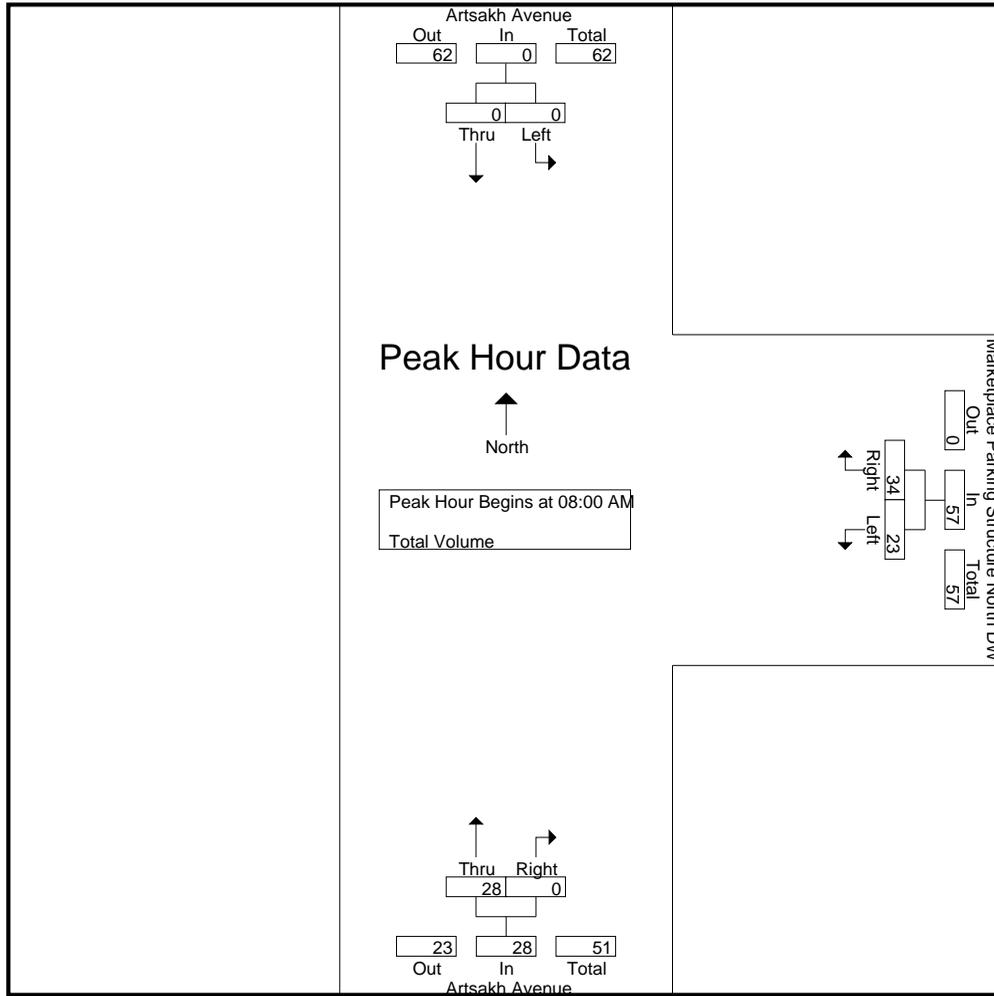
Start Time	Artsakh Avenue Southbound			Marketplace Parking Structure North DW Westbound			Artsakh Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
08:00 AM	0	0	0	2	7	9	8	0	8	17
08:15 AM	0	0	0	7	6	13	3	0	3	16
08:30 AM	0	0	0	5	11	16	11	0	11	27
08:45 AM	0	0	0	9	10	19	6	0	6	25
Total Volume	0	0	0	23	34	57	28	0	28	85
% App. Total	0	0		40.4	59.6		100	0		
PHF	.000	.000	.000	.639	.773	.750	.636	.000	.636	.787

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

City of Glendale
 N/S: Artsakh Avenue
 E/W: Marketplace Parking Structure N DW
 Weather: Clear

File Name : 03_GDE_Artsakh_Marketplace N DW AM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			08:00 AM		
+0 mins.	0	1	1	7	9	16	8	0	8
+15 mins.	0	0	0	3	8	11	3	0	3
+30 mins.	0	0	0	8	10	18	11	0	11
+45 mins.	0	0	0	6	9	15	6	0	6
Total Volume	0	1	1	24	36	60	28	0	28
% App. Total	0	100		40	60		100	0	
PHF	.000	.250	.250	.750	.900	.833	.636	.000	.636

City of Glendale
 N/S: Artsakh Avenue
 E/W: Marketplace Parking Structure N DW
 Weather: Clear

File Name : 03_GDE_Artsakh_Marketplace N DW PM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 1

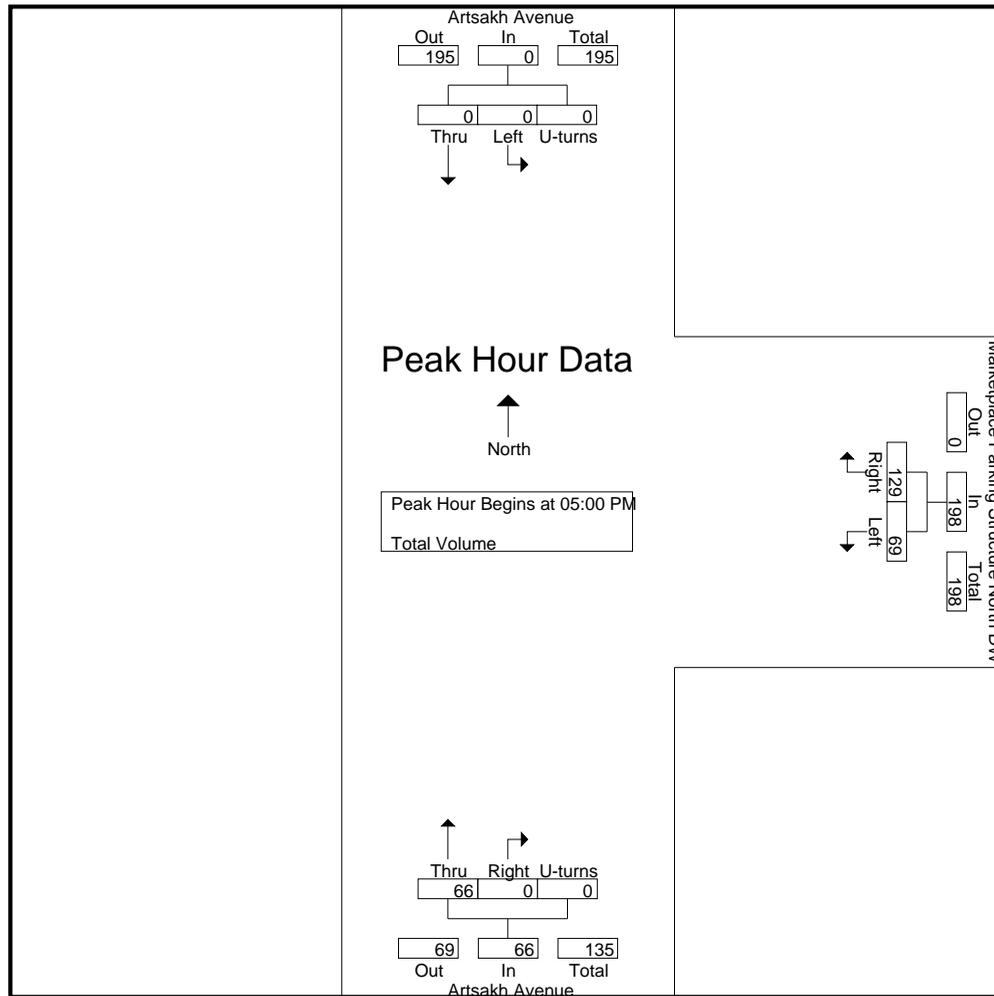
Groups Printed- Total Volume

Start Time	Artsakh Avenue Southbound				Marketplace Parking Structure North DW Westbound			Artsakh Avenue Northbound				Int. Total
	Left	Thru	U-turns	App. Total	Left	Right	App. Total	Thru	Right	U-turns	App. Total	
04:00 PM	0	0	0	0	26	32	58	8	0	0	8	66
04:15 PM	0	0	0	0	19	27	46	13	0	0	13	59
04:30 PM	0	0	0	0	23	32	55	14	0	0	14	69
04:45 PM	0	0	0	0	22	19	41	10	0	0	10	51
Total	0	0	0	0	90	110	200	45	0	0	45	245
05:00 PM	0	0	0	0	12	32	44	13	0	0	13	57
05:15 PM	0	0	0	0	21	31	52	19	0	0	19	71
05:30 PM	0	0	0	0	18	37	55	19	0	0	19	74
05:45 PM	0	0	0	0	18	29	47	15	0	0	15	62
Total	0	0	0	0	69	129	198	66	0	0	66	264
Grand Total	0	0	0	0	159	239	398	111	0	0	111	509
Apprch %	0	0	0	0	39.9	60.1		100	0	0		
Total %	0	0	0	0	31.2	47	78.2	21.8	0	0	21.8	

Start Time	Artsakh Avenue Southbound				Marketplace Parking Structure North DW Westbound			Artsakh Avenue Northbound				Int. Total
	Left	Thru	U-turns	App. Total	Left	Right	App. Total	Thru	Right	U-turns	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1												
Peak Hour for Entire Intersection Begins at 05:00 PM												
05:00 PM	0	0	0	0	12	32	44	13	0	0	13	57
05:15 PM	0	0	0	0	21	31	52	19	0	0	19	71
05:30 PM	0	0	0	0	18	37	55	19	0	0	19	74
05:45 PM	0	0	0	0	18	29	47	15	0	0	15	62
Total Volume	0	0	0	0	69	129	198	66	0	0	66	264
% App. Total	0	0	0	0	34.8	65.2		100	0	0		
PHF	.000	.000	.000	.000	.821	.872	.900	.868	.000	.000	.868	.892

City of Glendale
 N/S: Artsakh Avenue
 E/W: Marketplace Parking Structure N DW
 Weather: Clear

File Name : 03_GDE_Artsakh_Marketplace N DW PM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM			05:00 PM			
+0 mins.	0	0	0	0	26	32	58	13	0	0	13
+15 mins.	0	0	0	0	19	27	46	19	0	0	19
+30 mins.	0	0	0	0	23	32	55	19	0	0	19
+45 mins.	0	0	0	0	22	19	41	15	0	0	15
Total Volume	0	0	0	0	90	110	200	66	0	0	66
% App. Total	0	0	0	0	45	55		100	0	0	
PHF	.000	.000	.000	.000	.865	.859	.862	.868	.000	.000	.868

City of Glendale
 N/S: Artsakh Avenue
 E/W: Marketplace Parking Structure S DW
 Weather: Clear

File Name : 04_GDE_Artsakh_Marketplace S DW AM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 1

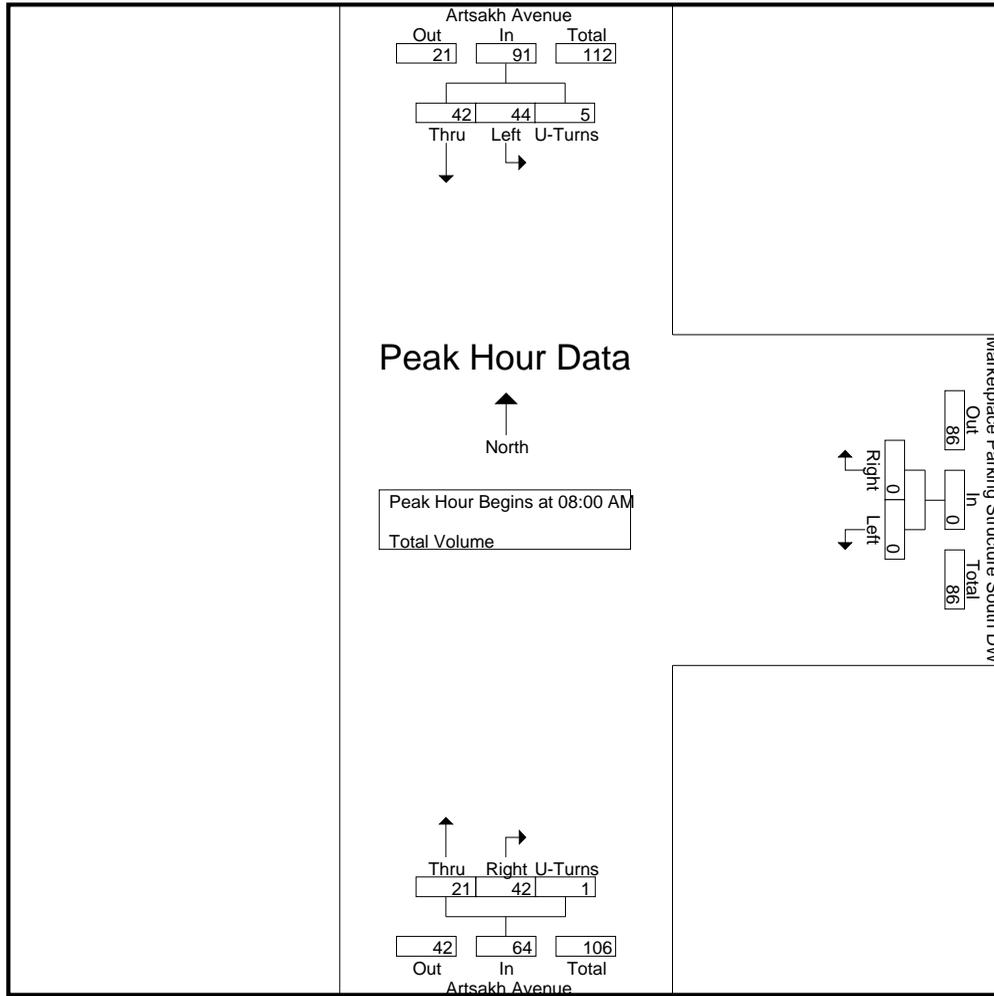
Groups Printed- Total Volume

Start Time	Artsakh Avenue Southbound				Marketplace Parking Structure South DW Westbound			Artsakh Avenue Northbound				Int. Total
	Left	Thru	U-Turns	App. Total	Left	Right	App. Total	Thru	Right	U-Turns	App. Total	
07:00 AM	12	12	0	24	0	0	0	7	18	0	25	49
07:15 AM	13	7	0	20	0	0	0	4	9	0	13	33
07:30 AM	8	11	0	19	0	0	0	2	9	1	12	31
07:45 AM	7	10	0	17	0	0	0	7	7	0	14	31
Total	40	40	0	80	0	0	0	20	43	1	64	144
08:00 AM	7	6	3	16	0	0	0	4	7	0	11	27
08:15 AM	15	12	0	27	0	0	0	2	13	0	15	42
08:30 AM	11	10	0	21	0	0	0	11	8	0	19	40
08:45 AM	11	14	2	27	0	0	0	4	14	1	19	46
Total	44	42	5	91	0	0	0	21	42	1	64	155
Grand Total	84	82	5	171	0	0	0	41	85	2	128	299
Apprch %	49.1	48	2.9		0	0		32	66.4	1.6		
Total %	28.1	27.4	1.7	57.2	0	0	0	13.7	28.4	0.7	42.8	

Start Time	Artsakh Avenue Southbound				Marketplace Parking Structure South DW Westbound			Artsakh Avenue Northbound				Int. Total
	Left	Thru	U-Turns	App. Total	Left	Right	App. Total	Thru	Right	U-Turns	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1												
Peak Hour for Entire Intersection Begins at 08:00 AM												
08:00 AM	7	6	3	16	0	0	0	4	7	0	11	27
08:15 AM	15	12	0	27	0	0	0	2	13	0	15	42
08:30 AM	11	10	0	21	0	0	0	11	8	0	19	40
08:45 AM	11	14	2	27	0	0	0	4	14	1	19	46
Total Volume	44	42	5	91	0	0	0	21	42	1	64	155
% App. Total	48.4	46.2	5.5		0	0		32.8	65.6	1.6		
PHF	.733	.750	.417	.843	.000	.000	.000	.477	.750	.250	.842	.842

City of Glendale
 N/S: Artsakh Avenue
 E/W: Marketplace Parking Structure S DW
 Weather: Clear

File Name : 04_GDE_Artsakh_Marketplace S DW AM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM			07:00 AM			
+0 mins.	7	6	3	16	0	0	0	7	18	0	25
+15 mins.	15	12	0	27	0	0	0	4	9	0	13
+30 mins.	11	10	0	21	0	0	0	2	9	1	12
+45 mins.	11	14	2	27	0	0	0	7	7	0	14
Total Volume	44	42	5	91	0	0	0	20	43	1	64
% App. Total	48.4	46.2	5.5		0	0		31.2	67.2	1.6	
PHF	.733	.750	.417	.843	.000	.000	.000	.714	.597	.250	.640

City of Glendale
 N/S: Artsakh Avenue
 E/W: Marketplace Parking Structure S DW
 Weather: Clear

File Name : 04_GDE_Artsakh_Marketplace S DW PM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 1

Groups Printed- Total Volume

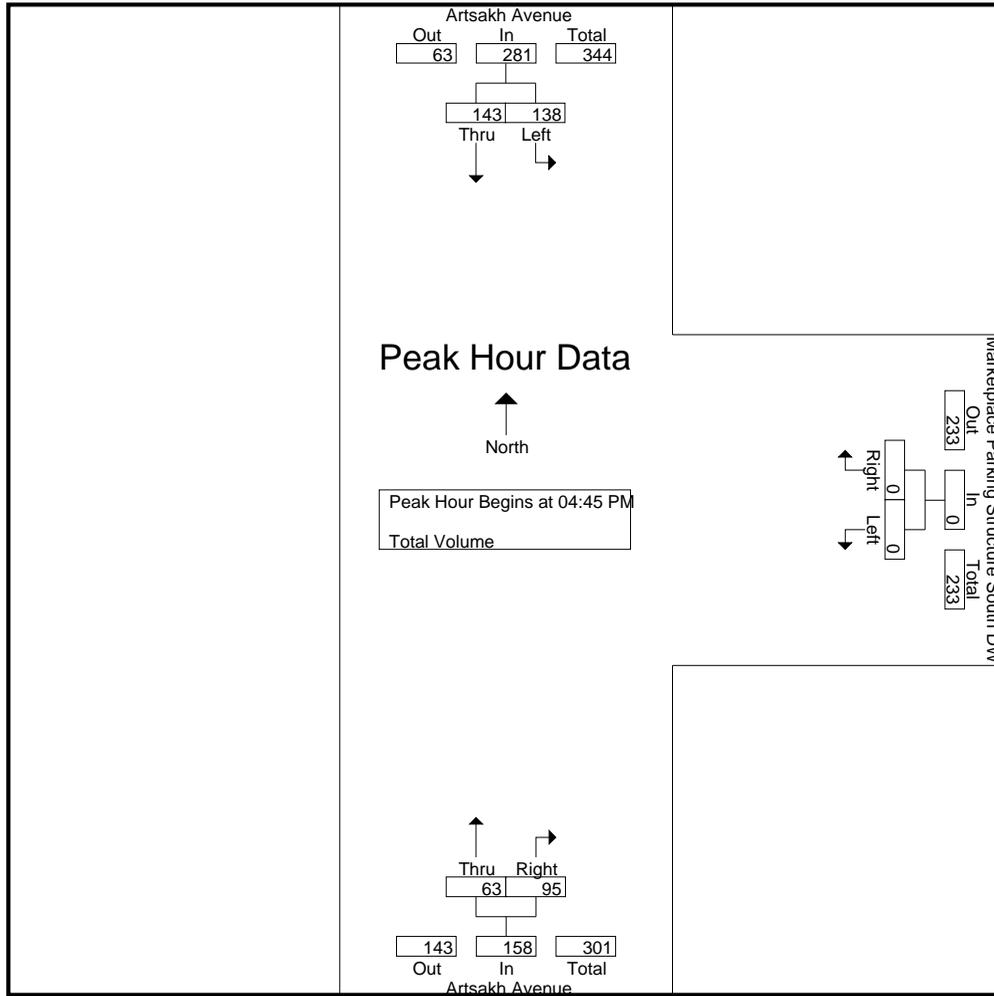
Start Time	Artsakh Avenue Southbound				Marketplace Parking Structure South DW Westbound			Artsakh Avenue Northbound				Int. Total
	Left	Thru	U-Turns	App. Total	Left	Right	App. Total	Thru	Right	U-Turns	App. Total	
04:00 PM	35	37	0	72	0	0	0	8	12	0	20	92
04:15 PM	24	34	1	59	0	0	0	12	17	0	29	88
04:30 PM	38	38	1	77	0	0	0	18	15	1	34	111
04:45 PM	31	42	2	75	0	0	0	8	24	1	33	108
Total	128	151	4	283	0	0	0	46	68	2	116	399
05:00 PM	24	32	0	56	0	0	0	12	26	0	38	94
05:15 PM	45	38	0	83	0	0	0	20	25	1	46	129
05:30 PM	38	31	1	70	0	0	0	23	20	1	44	114
05:45 PM	31	36	1	68	0	0	0	13	19	1	33	101
Total	138	137	2	277	0	0	0	68	90	3	161	438
Grand Total	266	288	6	560	0	0	0	114	158	5	277	837
Apprch %	47.5	51.4	1.1		0	0		41.2	57	1.8		
Total %	31.8	34.4	0.7	66.9	0	0	0	13.6	18.9	0.6	33.1	

Start Time	Artsakh Avenue Southbound			Marketplace Parking Structure South DW Westbound			Artsakh Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
04:45 PM	31	42	73	0	0	0	8	24	32	105
05:00 PM	24	32	56	0	0	0	12	26	38	94
05:15 PM	45	38	83	0	0	0	20	25	45	128
05:30 PM	38	31	69	0	0	0	23	20	43	112
Total Volume	138	143	281	0	0	0	63	95	158	439
% App. Total	49.1	50.9		0	0		39.9	60.1		
PHF	.767	.851	.846	.000	.000	.000	.685	.913	.878	.857

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 04:45 PM

City of Glendale
 N/S: Artsakh Avenue
 E/W: Marketplace Parking Structure S DW
 Weather: Clear

File Name : 04_GDE_Artsakh_Marketplace S DW PM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM			04:00 PM			04:45 PM		
+0 mins.	38	38	76	0	0	0	8	24	32
+15 mins.	31	42	73	0	0	0	12	26	38
+30 mins.	24	32	56	0	0	0	20	25	45
+45 mins.	45	38	83	0	0	0	23	20	43
Total Volume	138	150	288	0	0	0	63	95	158
% App. Total	47.9	52.1		0	0		39.9	60.1	
PHF	.767	.893	.867	.000	.000	.000	.685	.913	.878

City of Glendale
 N/S: Marketplace Parking Structure DW
 E/W: Harvard Street
 Weather: Clear

File Name : 05_GDE_Marketplace DW_Harvard AM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 1

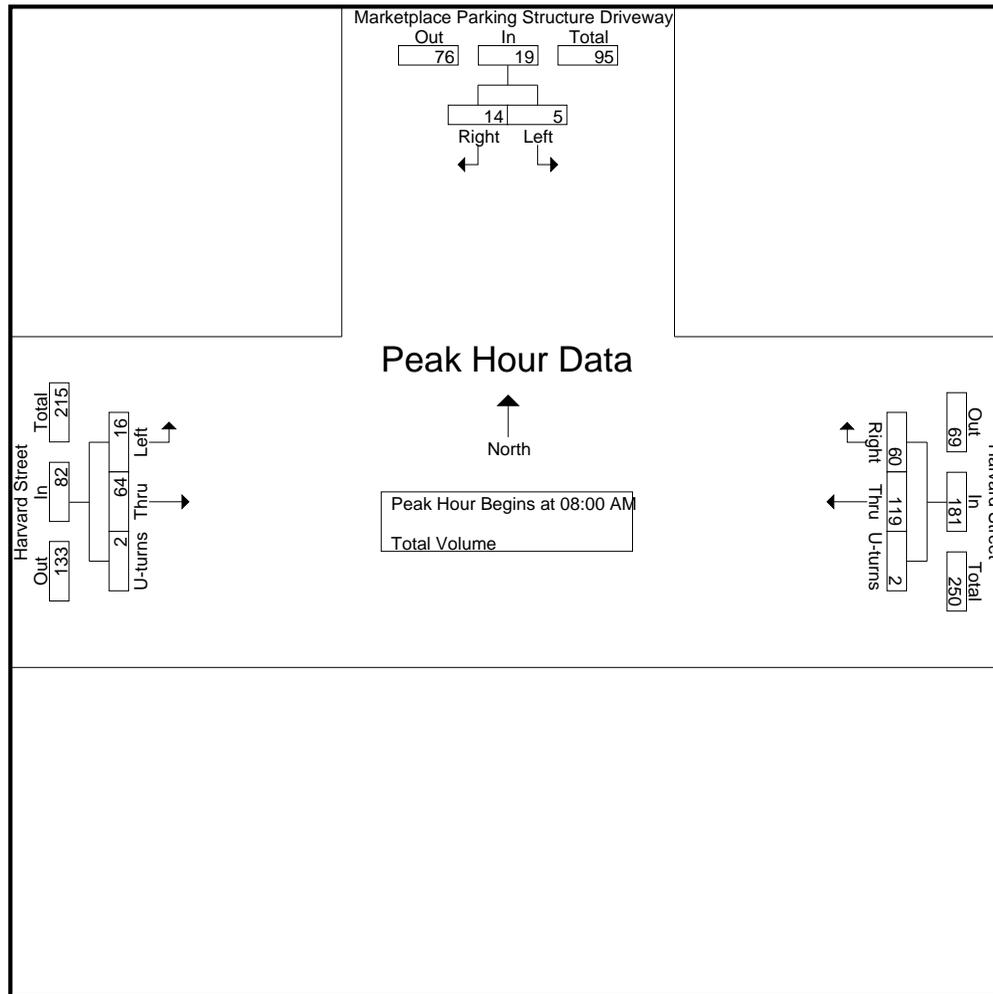
Groups Printed- Total Volume

Start Time	Marketplace Parking Structure Driveway Southbound			Harvard Street Westbound				Harvard Street Eastbound				Int. Total
	Left	Right	App. Total	Thru	Right	U-turns	App. Total	Left	Thru	U-turns	App. Total	
07:00 AM	2	0	2	15	8	0	23	2	12	0	14	39
07:15 AM	1	3	4	12	9	0	21	1	15	0	16	41
07:30 AM	1	5	6	16	6	0	22	1	16	0	17	45
07:45 AM	2	1	3	24	10	0	34	4	14	0	18	55
Total	6	9	15	67	33	0	100	8	57	0	65	180
08:00 AM	0	3	3	31	12	0	43	4	15	0	19	65
08:15 AM	0	4	4	28	16	1	45	4	15	0	19	68
08:30 AM	0	3	3	32	12	0	44	4	24	2	30	77
08:45 AM	5	4	9	28	20	1	49	4	10	0	14	72
Total	5	14	19	119	60	2	181	16	64	2	82	282
Grand Total	11	23	34	186	93	2	281	24	121	2	147	462
Apprch %	32.4	67.6		66.2	33.1	0.7		16.3	82.3	1.4		
Total %	2.4	5	7.4	40.3	20.1	0.4	60.8	5.2	26.2	0.4	31.8	

Start Time	Marketplace Parking Structure Driveway Southbound			Harvard Street Westbound				Harvard Street Eastbound				Int. Total
	Left	Right	App. Total	Thru	Right	U-turns	App. Total	Left	Thru	U-turns	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1												
Peak Hour for Entire Intersection Begins at 08:00 AM												
08:00 AM	0	3	3	31	12	0	43	4	15	0	19	65
08:15 AM	0	4	4	28	16	1	45	4	15	0	19	68
08:30 AM	0	3	3	32	12	0	44	4	24	2	30	77
08:45 AM	5	4	9	28	20	1	49	4	10	0	14	72
Total Volume	5	14	19	119	60	2	181	16	64	2	82	282
% App. Total	26.3	73.7		65.7	33.1	1.1		19.5	78	2.4		
PHF	.250	.875	.528	.930	.750	.500	.923	1.00	.667	.250	.683	.916

City of Glendale
 N/S: Marketplace Parking Structure DW
 E/W: Harvard Street
 Weather: Clear

File Name : 05_GDE_Marketplace DW_Harvard AM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	08:00 AM			08:00 AM				07:45 AM			
+0 mins.	0	3	3	31	12	0	43	4	14	0	18
+15 mins.	0	4	4	28	16	1	45	4	15	0	19
+30 mins.	0	3	3	32	12	0	44	4	15	0	19
+45 mins.	5	4	9	28	20	1	49	4	24	2	30
Total Volume	5	14	19	119	60	2	181	16	68	2	86
% App. Total	26.3	73.7		65.7	33.1	1.1		18.6	79.1	2.3	
PHF	.250	.875	.528	.930	.750	.500	.923	1.000	.708	.250	.717

City of Glendale
 N/S: Marketplace Parking Structure DW
 E/W: Harvard Street
 Weather: Clear

File Name : 05_GDE_Marketplace DW_Harvard PM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 1

Groups Printed- Total Volume

Start Time	Marketplace Parking Structure Driveway Southbound			Harvard Street Westbound				Harvard Street Eastbound				Int. Total
	Left	Right	App. Total	Thru	Right	U-turns	App. Total	Left	Thru	U-turns	App. Total	
04:00 PM	10	11	21	34	10	0	44	3	67	0	70	135
04:15 PM	21	13	34	30	15	0	45	4	63	0	67	146
04:30 PM	11	11	22	36	15	0	51	4	57	1	62	135
04:45 PM	11	9	20	26	21	0	47	2	49	0	51	118
Total	53	44	97	126	61	0	187	13	236	1	250	534
05:00 PM	12	8	20	46	28	0	74	6	51	0	57	151
05:15 PM	10	7	17	58	20	0	78	2	45	0	47	142
05:30 PM	10	8	18	38	20	0	58	6	65	0	71	147
05:45 PM	8	7	15	41	22	0	63	1	59	0	60	138
Total	40	30	70	183	90	0	273	15	220	0	235	578
Grand Total	93	74	167	309	151	0	460	28	456	1	485	1112
Apprch %	55.7	44.3		67.2	32.8	0		5.8	94	0.2		
Total %	8.4	6.7	15	27.8	13.6	0	41.4	2.5	41	0.1	43.6	

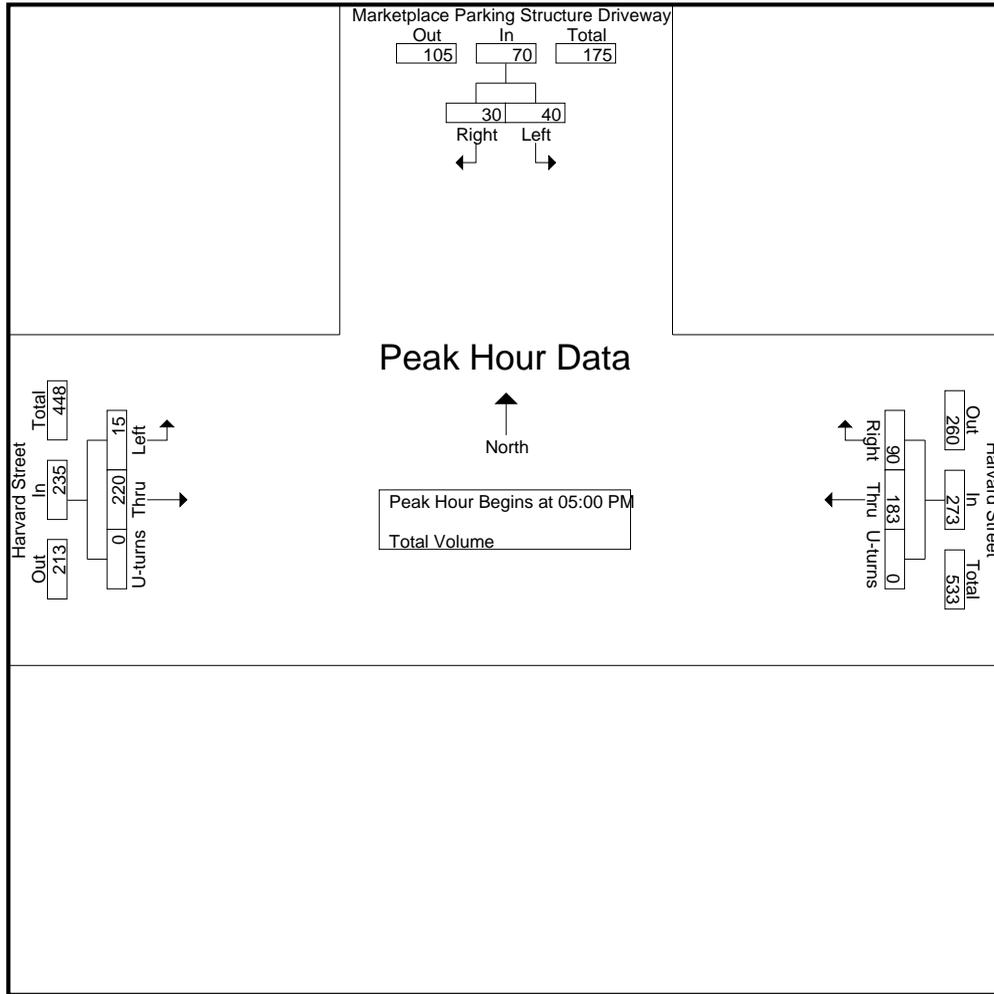
Start Time	Marketplace Parking Structure Driveway Southbound			Harvard Street Westbound				Harvard Street Eastbound				Int. Total
	Left	Right	App. Total	Thru	Right	U-turns	App. Total	Left	Thru	U-turns	App. Total	
05:00 PM	12	8	20	46	28	0	74	6	51	0	57	151
05:15 PM	10	7	17	58	20	0	78	2	45	0	47	142
05:30 PM	10	8	18	38	20	0	58	6	65	0	71	147
05:45 PM	8	7	15	41	22	0	63	1	59	0	60	138
Total Volume	40	30	70	183	90	0	273	15	220	0	235	578
% App. Total	57.1	42.9		67	33	0		6.4	93.6	0		
PHF	.833	.938	.875	.789	.804	.000	.875	.625	.846	.000	.827	.957

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

City of Glendale
 N/S: Marketplace Parking Structure DW
 E/W: Harvard Street
 Weather: Clear

File Name : 05_GDE_Marketplace DW_Harvard PM
 Site Code : 05719085
 Start Date : 2/7/2019
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:00 PM			05:00 PM				04:00 PM			
+0 mins.	10	11	21	46	28	0	74	3	67	0	70
+15 mins.	21	13	34	58	20	0	78	4	63	0	67
+30 mins.	11	11	22	38	20	0	58	4	57	1	62
+45 mins.	11	9	20	41	22	0	63	2	49	0	51
Total Volume	53	44	97	183	90	0	273	13	236	1	250
% App. Total	54.6	45.4		67	33	0		5.2	94.4	0.4	
PHF	.631	.846	.713	.789	.804	.000	.875	.813	.881	.250	.893

Counts Unlimited, Inc

City of Glendale
 Artsakh Avenue
 S/ Broadway
 4 Day Directional Volume Count

PO Box 1178
 Corona, CA 92878
 Phone: 951-268-6268
 email: counts@countsunlimited.com

GLD002
 Site Code: 057-19085

Start Time	2/7/2019 Thu	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		1	51			1	55				
12:15		0	49			0	45				
12:30		2	65			0	54				
12:45		1	56	4	221	1	49	2	203	6	424
01:00		0	58			2	50				
01:15		2	36			0	46				
01:30		0	65			1	34				
01:45		0	51	2	210	0	36	3	166	5	376
02:00		0	57			1	48				
02:15		1	49			0	39				
02:30		2	53			0	38				
02:45		0	69	3	228	1	36	2	161	5	389
03:00		0	89			1	56				
03:15		1	73			1	41				
03:30		2	33			0	37				
03:45		0	43	3	238	2	39	4	173	7	411
04:00		0	59			1	45				
04:15		2	51			3	42				
04:30		0	60			1	54				
04:45		3	47	5	217	9	50	14	191	19	408
05:00		4	57			13	47				
05:15		2	71			9	64				
05:30		3	79			13	49				
05:45		8	54	17	261	22	52	57	212	74	473
06:00		13	56			21	46				
06:15		10	53			21	47				
06:30		15	61			17	47				
06:45		15	51	53	221	24	49	83	189	136	410
07:00		16	38			21	52				
07:15		28	46			14	57				
07:30		15	51			12	47				
07:45		15	49	74	184	11	55	58	211	132	395
08:00		21	49			12	47				
08:15		31	47			7	53				
08:30		26	39			16	36				
08:45		18	32	96	167	17	33	52	169	148	336
09:00		15	47			27	29				
09:15		24	55			38	26				
09:30		18	34			34	16				
09:45		24	32	81	168	31	13	130	84	211	252
10:00		19	31			38	16				
10:15		28	22			37	7				
10:30		28	33			37	15				
10:45		30	23	105	109	26	9	138	47	243	156
11:00		32	14			43	2				
11:15		52	7			44	9				
11:30		32	5			42	1				
11:45		67	6	183	32	47	4	176	16	359	48
Total		626	2256	626	2256	719	1822	719	1822	1345	4078
Combined Total		2882		2882		2541		2541		5423	
AM Peak	-	11:00	-	-	-	11:00	-	-	-	-	-
Vol.	-	183	-	-	-	176	-	-	-	-	-
P.H.F.	-	0.683	-	-	-	0.936	-	-	-	-	-
PM Peak	-	-	02:30	-	-	-	04:30	-	-	-	-
Vol.	-	-	284	-	-	-	215	-	-	-	-
P.H.F.	-	-	0.798	-	-	-	0.840	-	-	-	-
Percentage		21.7%	78.3%			28.3%	71.7%				

Counts Unlimited, Inc

City of Glendale
 Artsakh Avenue
 S/ Broadway
 4 Day Directional Volume Count

PO Box 1178
 Corona, CA 92878
 Phone: 951-268-6268
 email: counts@countsunlimited.com

GLD002
 Site Code: 057-19085

Start Time	2/8/2019 Fri	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		5	51			5	43				
12:15		6	43			2	45				
12:30		1	28			2	43				
12:45		0	56	12	178	0	44	9	175	21	353
01:00		3	49			1	50				
01:15		0	57			0	59				
01:30		3	62			1	46				
01:45		0	44	6	212	0	48	2	203	8	415
02:00		1	38			1	44				
02:15		0	49			1	48				
02:30		0	45			0	42				
02:45		0	41	1	173	0	35	2	169	3	342
03:00		1	51			0	52				
03:15		1	87			1	38				
03:30		0	50			1	49				
03:45		0	57	2	245	0	50	2	189	4	434
04:00		0	41			2	44				
04:15		0	59			1	54				
04:30		1	49			1	58				
04:45		3	37	4	186	14	60	18	216	22	402
05:00		2	45			10	36				
05:15		0	57			6	59				
05:30		2	48			6	56				
05:45		6	54	10	204	7	64	29	215	39	419
06:00		5	64			11	66				
06:15		6	51			13	64				
06:30		6	56			10	60				
06:45		10	50	27	221	14	51	48	241	75	462
07:00		16	48			15	62				
07:15		8	58			8	53				
07:30		19	47			9	78				
07:45		14	57	57	210	9	63	41	256	98	466
08:00		21	52			19	56				
08:15		27	62			27	59				
08:30		17	42			20	45				
08:45		24	48	89	204	31	44	97	204	186	408
09:00		19	47			26	29				
09:15		19	35			29	32				
09:30		25	53			32	25				
09:45		36	51	99	186	35	16	122	102	221	288
10:00		23	40			28	21				
10:15		25	31			32	18				
10:30		28	29			51	16				
10:45		33	31	109	131	41	17	152	72	261	203
11:00		44	15			46	12				
11:15		46	12			54	6				
11:30		38	7			44	12				
11:45		38	9	166	43	60	5	204	35	370	78
Total		582	2193	582	2193	726	2077	726	2077	1308	4270
Combined Total		2775		2775		2803		2803		5578	
AM Peak	-	11:00	-	-	-	11:00	-	-	-	-	-
Vol.	-	166	-	-	-	204	-	-	-	-	-
P.H.F.	-	0.902	-	-	-	0.850	-	-	-	-	-
PM Peak	-	-	03:00	-	-	-	07:00	-	-	-	-
Vol.	-	-	245	-	-	-	256	-	-	-	-
P.H.F.	-	-	0.704	-	-	-	0.821	-	-	-	-
Percentage		21.0%	79.0%			25.9%	74.1%				

Counts Unlimited, Inc

City of Glendale
 Artsakh Avenue
 S/ Broadway
 4 Day Directional Volume Count

PO Box 1178
 Corona, CA 92878
 Phone: 951-268-6268
 email: counts@countsunlimited.com

GLD002
 Site Code: 057-19085

Start Time	2/9/2019 Sat	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	52			4	55				
12:15		7	61			6	44				
12:30		4	49			4	58				
12:45		6	51	23	213	5	65	19	222	42	435
01:00		5	48			6	57				
01:15		2	55			5	63				
01:30		12	49			7	59				
01:45		7	55	26	207	2	59	20	238	46	445
02:00		2	71			2	73				
02:15		1	59			2	73				
02:30		0	69			0	65				
02:45		3	62	6	261	0	67	4	278	10	539
03:00		0	53			1	78				
03:15		3	52			3	64				
03:30		3	75			1	67				
03:45		0	67	6	247	0	73	5	282	11	529
04:00		1	54			1	61				
04:15		2	70			1	54				
04:30		1	50			1	69				
04:45		0	64	4	238	0	69	3	253	7	491
05:00		2	58			2	77				
05:15		2	69			1	51				
05:30		1	65			1	63				
05:45		1	47	6	239	2	66	6	257	12	496
06:00		2	58			1	73				
06:15		8	63			9	72				
06:30		1	47			5	72				
06:45		3	58	14	226	4	65	19	282	33	508
07:00		2	56			4	70				
07:15		2	40			8	75				
07:30		5	52			11	64				
07:45		1	78	10	226	19	62	42	271	52	497
08:00		5	65			24	55				
08:15		5	43			14	35				
08:30		5	37			19	40				
08:45		10	38	25	183	28	27	85	157	110	340
09:00		19	33			43	32				
09:15		17	45			18	28				
09:30		21	27			38	23				
09:45		27	29	84	134	42	16	141	99	225	233
10:00		29	29			33	23				
10:15		25	22			31	17				
10:30		26	30			40	16				
10:45		42	19	122	100	62	13	166	69	288	169
11:00		39	17			45	10				
11:15		35	8			40	9				
11:30		31	15			49	14				
11:45		56	11	161	51	78	7	212	40	373	91
Total		487	2325	487	2325	722	2448	722	2448	1209	4773
Combined Total			2812		2812		3170		3170		5982
AM Peak	-	11:00	-	-	-	11:00	-	-	-	-	-
Vol.	-	161	-	-	-	212	-	-	-	-	-
P.H.F.	-	0.719	-	-	-	0.679	-	-	-	-	-
PM Peak	-	-	03:30	-	-	-	02:15	-	-	-	-
Vol.	-	-	266	-	-	-	283	-	-	-	-
P.H.F.	-	-	0.887	-	-	-	0.907	-	-	-	-
Percentage		17.3%	82.7%			22.8%	77.2%				

Counts Unlimited, Inc

City of Glendale
 Artsakh Avenue
 N/ Harvard Street
 4 Day Directional Volume Count

PO Box 1178
 Corona, CA 92878
 Phone: 951-268-6268
 email: counts@countsunlimited.com

GLD003
 Site Code: 057-19085

Start Time	2/7/2019 Thu	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		1	30			0	40				
12:15		0	29			0	32				
12:30		0	23			0	27				
12:45		1	23	2	105	1	41	1	140	3	245
01:00		0	34			2	41				
01:15		0	31			0	30				
01:30		0	27			2	33				
01:45		0	39	0	131	0	28	4	132	4	263
02:00		0	34			0	48				
02:15		1	24			0	46				
02:30		1	23			0	37				
02:45		0	29	2	110	0	48	0	179	2	289
03:00		0	29			1	47				
03:15		0	34			0	35				
03:30		1	24			1	37				
03:45		1	31	2	118	0	34	2	153	4	271
04:00		0	21			0	37				
04:15		0	30			1	34				
04:30		2	34			1	39				
04:45		13	38	15	123	2	41	4	151	19	274
05:00		9	43			1	30				
05:15		2	50			1	40				
05:30		9	48			1	37				
05:45		21	33	41	174	4	40	7	147	48	321
06:00		26	36			14	44				
06:15		16	42			2	40				
06:30		18	33			6	37				
06:45		16	29	76	140	7	39	29	160	105	300
07:00		28	39			13	35				
07:15		13	35			7	47				
07:30		12	30			10	32				
07:45		14	35	67	139	9	47	39	161	106	300
08:00		11	34			5	47				
08:15		15	27			12	43				
08:30		19	25			9	32				
08:45		19	21	64	107	16	24	42	146	106	253
09:00		16	29			13	33				
09:15		25	23			18	33				
09:30		21	18			6	32				
09:45		25	15	87	85	26	24	63	122	150	207
10:00		19	7			16	44				
10:15		27	7			22	33				
10:30		29	13			14	19				
10:45		35	12	110	39	15	25	67	121	177	160
11:00		29	5			41	19				
11:15		30	1			35	10				
11:30		17	1			26	1				
11:45		19	3	95	10	34	1	136	31	231	41
Total		561	1281	561	1281	394	1643	394	1643	955	2924
Combined Total		1842		1842		2037		2037		3879	
AM Peak	-	10:30	-	-	-	11:00	-	-	-	-	-
Vol.	-	123	-	-	-	136	-	-	-	-	-
P.H.F.	-	0.879	-	-	-	0.829	-	-	-	-	-
PM Peak	-	-	04:45	-	-	-	02:00	-	-	-	-
Vol.	-	-	179	-	-	-	179	-	-	-	-
P.H.F.	-	-	0.895	-	-	-	0.932	-	-	-	-
Percentage		30.5%	69.5%			19.3%	80.7%				

Counts Unlimited, Inc

City of Glendale
 Artsakh Avenue
 N/ Harvard Street
 4 Day Directional Volume Count

PO Box 1178
 Corona, CA 92878
 Phone: 951-268-6268
 email: counts@countsunlimited.com

GLD003
 Site Code: 057-19085

Start Time	2/8/2019 Fri	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		1	42			2	32				
12:15		1	31			2	28				
12:30		1	27			1	32				
12:45		0	48	3	148	0	43	5	135	8	283
01:00		1	33			0	49				
01:15		0	34			2	48				
01:30		0	35			0	49				
01:45		0	26	1	128	0	40	2	186	3	314
02:00		2	26			1	35				
02:15		0	27			1	24				
02:30		0	28			0	26				
02:45		0	33	2	114	0	21	2	106	4	220
03:00		0	37			0	37				
03:15		2	26			0	32				
03:30		0	38			0	33				
03:45		1	39	3	140	0	28	0	130	3	270
04:00		0	32			0	35				
04:15		0	22			0	46				
04:30		2	30			0	49				
04:45		5	39	7	123	1	38	1	168	8	291
05:00		6	34			1	39				
05:15		4	34			0	31				
05:30		8	33			1	35				
05:45		1	36	19	137	0	46	2	151	21	288
06:00		4	55			8	38				
06:15		13	34			1	36				
06:30		2	49			9	42				
06:45		6	51	25	189	6	37	24	153	49	342
07:00		13	38			14	52				
07:15		3	36			7	53				
07:30		7	42			13	52				
07:45		18	58	41	174	6	51	40	208	81	382
08:00		13	49			11	52				
08:15		15	48			17	55				
08:30		12	33			14	43				
08:45		16	42	56	172	20	38	62	188	118	360
09:00		17	22			11	41				
09:15		17	21			9	38				
09:30		24	24			20	39				
09:45		22	20	80	87	24	34	64	152	144	239
10:00		25	14			20	37				
10:15		23	17			29	29				
10:30		22	11			25	27				
10:45		30	13	100	55	39	37	113	130	213	185
11:00		20	7			35	25				
11:15		32	5			16	10				
11:30		38	4			25	11				
11:45		37	5	127	21	39	9	115	55	242	76
Total		464	1488	464	1488	430	1762	430	1762	894	3250
Combined Total			1952		1952		2192		2192		4144
AM Peak	-	11:00	-	-	-	10:15	-	-	-	-	-
Vol.	-	127	-	-	-	128	-	-	-	-	-
P.H.F.	-	0.836	-	-	-	0.821	-	-	-	-	-
PM Peak	-	-	07:30	-	-	-	07:30	-	-	-	-
Vol.	-	-	197	-	-	-	210	-	-	-	-
P.H.F.	-	-	0.849	-	-	-	0.955	-	-	-	-
Percentage		23.8%	76.2%			19.6%	80.4%				

Counts Unlimited, Inc

City of Glendale
 Artsakh Avenue
 N/ Harvard Street
 4 Day Directional Volume Count

PO Box 1178
 Corona, CA 92878
 Phone: 951-268-6268
 email: counts@countsunlimited.com

GLD003
 Site Code: 057-19085

Start Time	2/9/2019 Sat	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		2	49			2	41				
12:15		5	43			11	41				
12:30		0	37			5	39				
12:45		3	43	10	172	5	42	23	163	33	335
01:00		3	40			5	47				
01:15		2	42			7	40				
01:30		2	45			2	38				
01:45		3	47	10	174	3	52	17	177	27	351
02:00		2	53			3	51				
02:15		0	47			3	57				
02:30		0	56			0	36				
02:45		2	51	4	207	0	61	6	205	10	412
03:00		0	47			0	39				
03:15		3	23			2	49				
03:30		4	35			1	65				
03:45		1	47	8	152	0	62	3	215	11	367
04:00		0	40			0	58				
04:15		4	48			2	43				
04:30		2	50			0	60				
04:45		1	51	7	189	0	42	2	203	9	392
05:00		1	41			2	45				
05:15		1	65			0	59				
05:30		1	51			0	46				
05:45		1	33	4	190	2	44	4	194	8	384
06:00		4	48			0	53				
06:15		1	48			3	48				
06:30		0	55			1	47				
06:45		5	43	10	194	2	42	6	190	16	384
07:00		3	48			3	55				
07:15		4	35			1	54				
07:30		5	47			2	60				
07:45		10	57	22	187	2	62	8	231	30	418
08:00		11	35			4	71				
08:15		11	30			4	45				
08:30		12	26			2	27				
08:45		14	21	48	112	10	44	20	187	68	299
09:00		24	17			13	46				
09:15		16	19			10	54				
09:30		27	11			10	46				
09:45		21	12	88	59	23	21	56	167	144	226
10:00		21	11			22	28				
10:15		26	9			21	25				
10:30		26	9			23	30				
10:45		41	6	114	35	30	18	96	101	210	136
11:00		21	8			40	11				
11:15		24	6			25	9				
11:30		37	5			29	15				
11:45		48	6	130	25	39	12	133	47	263	72
Total		455	1696	455	1696	374	2080	374	2080	829	3776
Combined Total		2151		2151		2454		2454		4605	
AM Peak	-	11:00	-	-	-	11:00	-	-	-	-	-
Vol.	-	130	-	-	-	133	-	-	-	-	-
P.H.F.	-	0.677	-	-	-	0.831	-	-	-	-	-
PM Peak	-	-	04:45	-	-	-	07:15	-	-	-	-
Vol.	-	-	208	-	-	-	247	-	-	-	-
P.H.F.	-	-	0.800	-	-	-	0.870	-	-	-	-
Percentage		21.2%	78.8%			15.2%	84.8%				

Marketplace Garage

Reporting period

FROM 8/1/2019 to 8/31/2019

			ENTRY			EXIT			
			Harvard	Artsakh	Artsakh	Harvard	Harvard	Artsakh	Artsakh
			Entry 1	Entry 2	Entry 3	Exit 1	Exit 2	Exit 3	Exit 4
08/13/2019	7:00:00 AM	8:00:00 AM	34	25	30	6	3	28	33
TUES	8:00:00 AM	9:00:00 AM	48	44	36	9	1	35	36
	9:00:00 AM	10:00:00 AM	65	57	59	16	5	30	39
	10:00:00 AM	11:00:00 AM	72	70	72	16	9	38	62
	11:00:00 AM	12:00:00 PM	80	90	66	23	11	61	78
	12:00:00 PM	1:00:00 PM	75	105	91	29	15	82	101
	1:00:00 PM	2:00:00 PM	74	109	88	47	28	91	94
	2:00:00 PM	3:00:00 PM	60	74	71	40	26	102	82
	3:00:00 PM	4:00:00 PM	55	78	78	38	27	81	90
	4:00:00 PM	5:00:00 PM	66	90	82	35	23	53	105
	5:00:00 PM	6:00:00 PM	98	103	95	46	18	81	104
	6:00:00 PM	7:00:00 PM	103	141	122	64	27	97	114
	7:00:00 PM	8:00:00 PM	73	135	131	51	20	108	128
	8:00:00 PM	9:00:00 PM	38	78	86	51	25	152	148
	9:00:00 PM	10:00:00 PM	31	50	47	43	20	105	134
	10:00:00 PM	11:00:00 PM	7	13	13	22	14	50	66
	11:00:00 PM	12:00:00 AM	2	2	1	12	11	23	48

376 total exits

Marketplace Garage

Reporting period

FROM 8/1/2019 to 8/31/2019

			ENTRY			EXIT			
			Harvard	Artsakh	Artsakh	Harvard	Harvard	Artsakh	Artsakh
			Entry 1	Entry 2	Entry 3	Exit 1	Exit 2	Exit 3	Exit 4
08/17/2019	7:00:00 AM	8:00:00 AM	15	7	20	3	0	1	4
SAT	8:00:00 AM	9:00:00 AM	61	53	59	5	2	6	11
	9:00:00 AM	10:00:00 AM	85	83	81	14	9	34	35
	10:00:00 AM	11:00:00 AM	93	106	98	13	5	63	86
	11:00:00 AM	12:00:00 PM	112	155	115	32	23	91	111
	12:00:00 PM	1:00:00 PM	95	123	97	52	27	94	119
	1:00:00 PM	2:00:00 PM	95	126	114	38	33	98	119
	2:00:00 PM	3:00:00 PM	85	138	97	60	45	105	158
	3:00:00 PM	4:00:00 PM	68	130	92	65	43	110	141
	4:00:00 PM	5:00:00 PM	55	101	72	60	26	90	127
	5:00:00 PM	6:00:00 PM	65	107	78	49	42	91	94
	6:00:00 PM	7:00:00 PM	79	114	94	61	31	84	81
	7:00:00 PM	8:00:00 PM	116	109	90	49	28	82	105
	8:00:00 PM	9:00:00 PM	98	103	67	41	23	67	94
	9:00:00 PM	10:00:00 PM	24	47	20	29	29	53	89
	10:00:00 PM	11:00:00 PM	10	10	13	38	23	53	81
	11:00:00 PM	12:00:00 AM	2	13	2	35	15	23	34

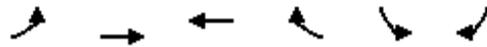
*368 Total
exits*

APPENDIX B

LEVEL OF SERVICE AND QUEUING ANALYSIS WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS

HCM 6th Signalized Intersection Summary
6: Harvard St & Artsakh Ave

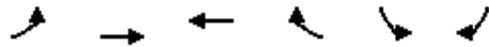
Year 2022 Future with One-Way Option
Weekday AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	85	127	12	29	37
Future Volume (veh/h)	9	85	127	12	29	37
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99			0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	97	144	14	33	42
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1101	1516	1358	132	85	75
Arrive On Green	0.81	0.81	1.00	1.00	0.05	0.05
Sat Flow, veh/h	1210	1870	1675	163	1781	1585
Grp Volume(v), veh/h	10	97	0	158	33	42
Grp Sat Flow(s),veh/h/ln	1210	1870	0	1837	1781	1585
Q Serve(g_s), s	0.1	0.6	0.0	0.0	1.1	1.6
Cycle Q Clear(g_c), s	0.1	0.6	0.0	0.0	1.1	1.6
Prop In Lane	1.00			0.09	1.00	1.00
Lane Grp Cap(c), veh/h	1101	1516	0	1490	85	75
V/C Ratio(X)	0.01	0.06	0.00	0.11	0.39	0.56
Avail Cap(c_a), veh/h	1101	1516	0	1490	653	581
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.99	1.00	1.00
Uniform Delay (d), s/veh	1.1	1.1	0.0	0.0	27.7	28.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.1	4.1	8.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.1	0.0	0.1	1.0	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	1.1	1.2	0.0	0.1	31.8	36.8
LnGrp LOS	A	A	A	A	C	D
Approach Vol, veh/h		107	158		75	
Approach Delay, s/veh		1.2	0.1		34.6	
Approach LOS		A	A		C	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		53.1		6.9		53.1
Change Period (Y+Rc), s		4.5		4.0		4.5
Max Green Setting (Gmax), s		29.5		22.0		29.5
Max Q Clear Time (g_c+I1), s		2.6		3.6		2.0
Green Ext Time (p_c), s		0.8		0.2		1.3
Intersection Summary						
HCM 6th Ctrl Delay			8.1			
HCM 6th LOS			A			

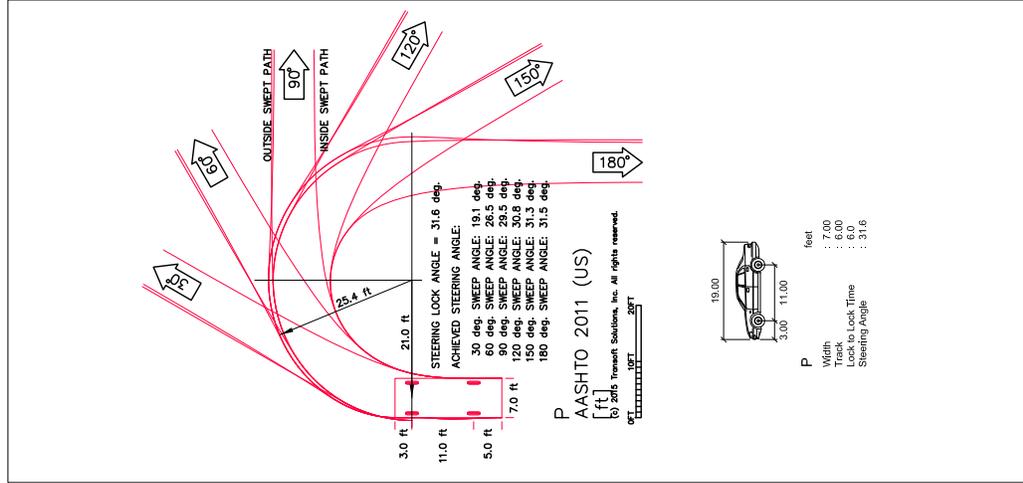
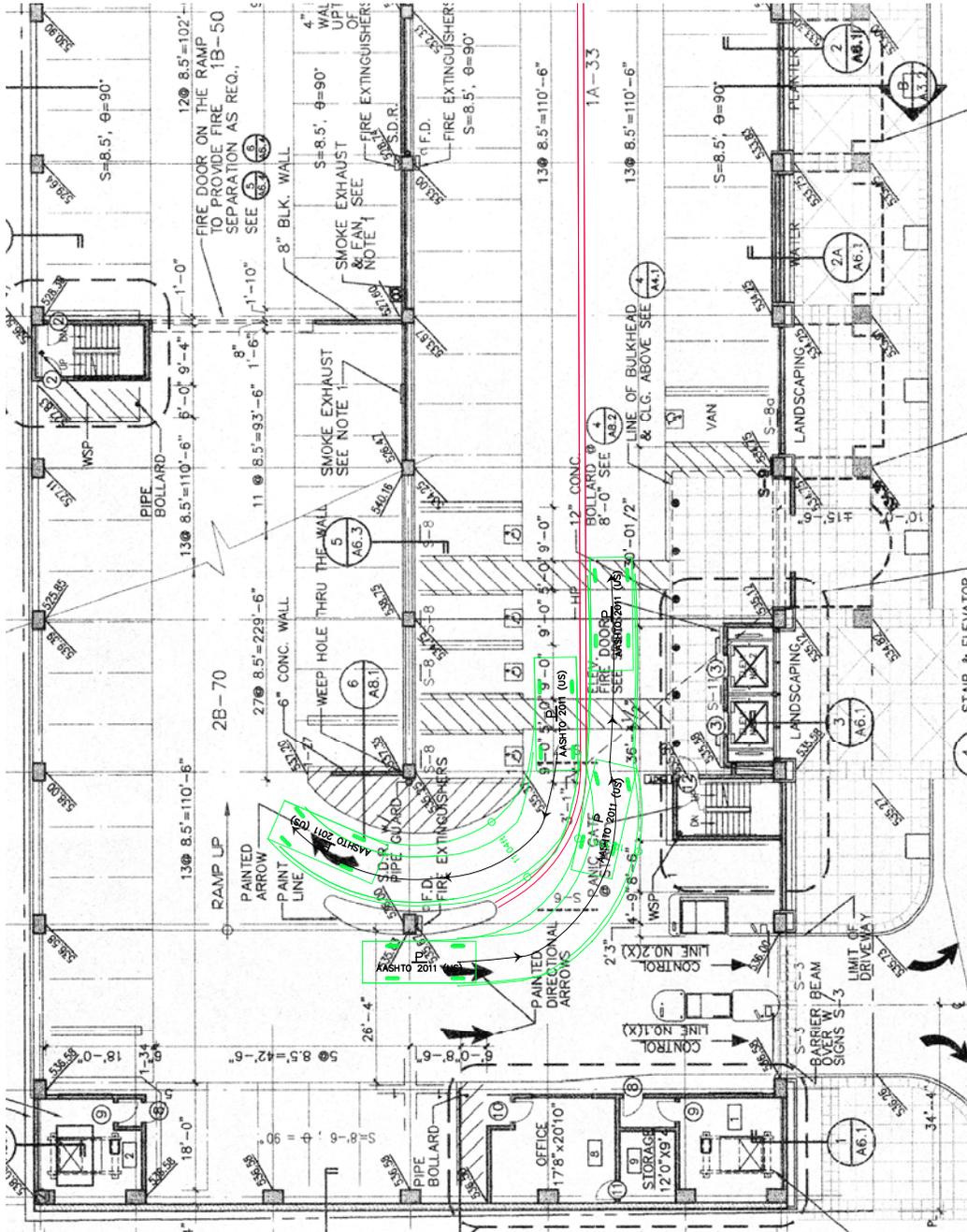
HCM 6th Signalized Intersection Summary
6: Harvard St & Artsakh Ave

Year 2022 Future with One-Way Option
Weekday PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	176	195	43	138	169
Future Volume (veh/h)	37	176	195	43	138	169
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98			0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	181	201	44	142	174
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	902	1309	1036	227	282	251
Arrive On Green	0.70	0.70	1.00	1.00	0.16	0.16
Sat Flow, veh/h	1118	1870	1480	324	1781	1585
Grp Volume(v), veh/h	38	181	0	245	142	174
Grp Sat Flow(s),veh/h/ln	1118	1870	0	1804	1781	1585
Q Serve(g_s), s	0.6	1.9	0.0	0.0	4.4	6.2
Cycle Q Clear(g_c), s	0.6	1.9	0.0	0.0	4.4	6.2
Prop In Lane	1.00			0.18	1.00	1.00
Lane Grp Cap(c), veh/h	902	1309	0	1262	282	251
V/C Ratio(X)	0.04	0.14	0.00	0.19	0.50	0.69
Avail Cap(c_a), veh/h	902	1309	0	1262	653	581
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.00	0.98	1.00	1.00
Uniform Delay (d), s/veh	2.8	3.0	0.0	0.0	23.1	23.9
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.3	2.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	1.0	0.0	0.2	3.4	4.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	2.9	3.2	0.0	0.3	25.1	28.7
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		219	245		316	
Approach Delay, s/veh		3.1	0.3		27.0	
Approach LOS		A	A		C	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		46.5		13.5		46.5
Change Period (Y+Rc), s		4.5		4.0		4.5
Max Green Setting (Gmax), s		29.5		22.0		29.5
Max Q Clear Time (g_c+I1), s		3.9		8.2		2.0
Green Ext Time (p_c), s		1.7		1.3		2.2
Intersection Summary						
HCM 6th Ctrl Delay			11.9			
HCM 6th LOS			B			

APPENDIX C
AUTOTURN MANEUVERING ANALYSIS



SCALE 1"=30'

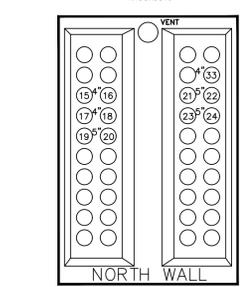
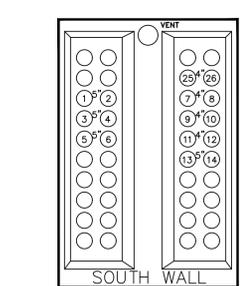
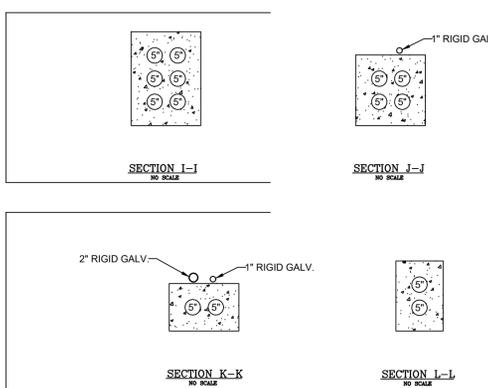
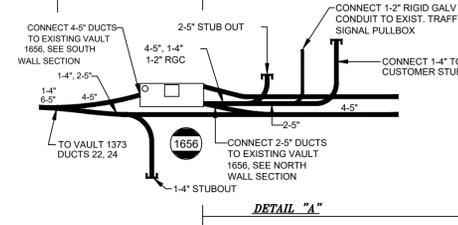
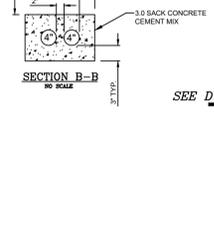
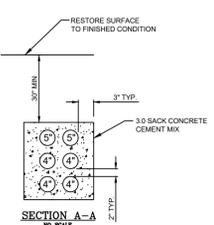
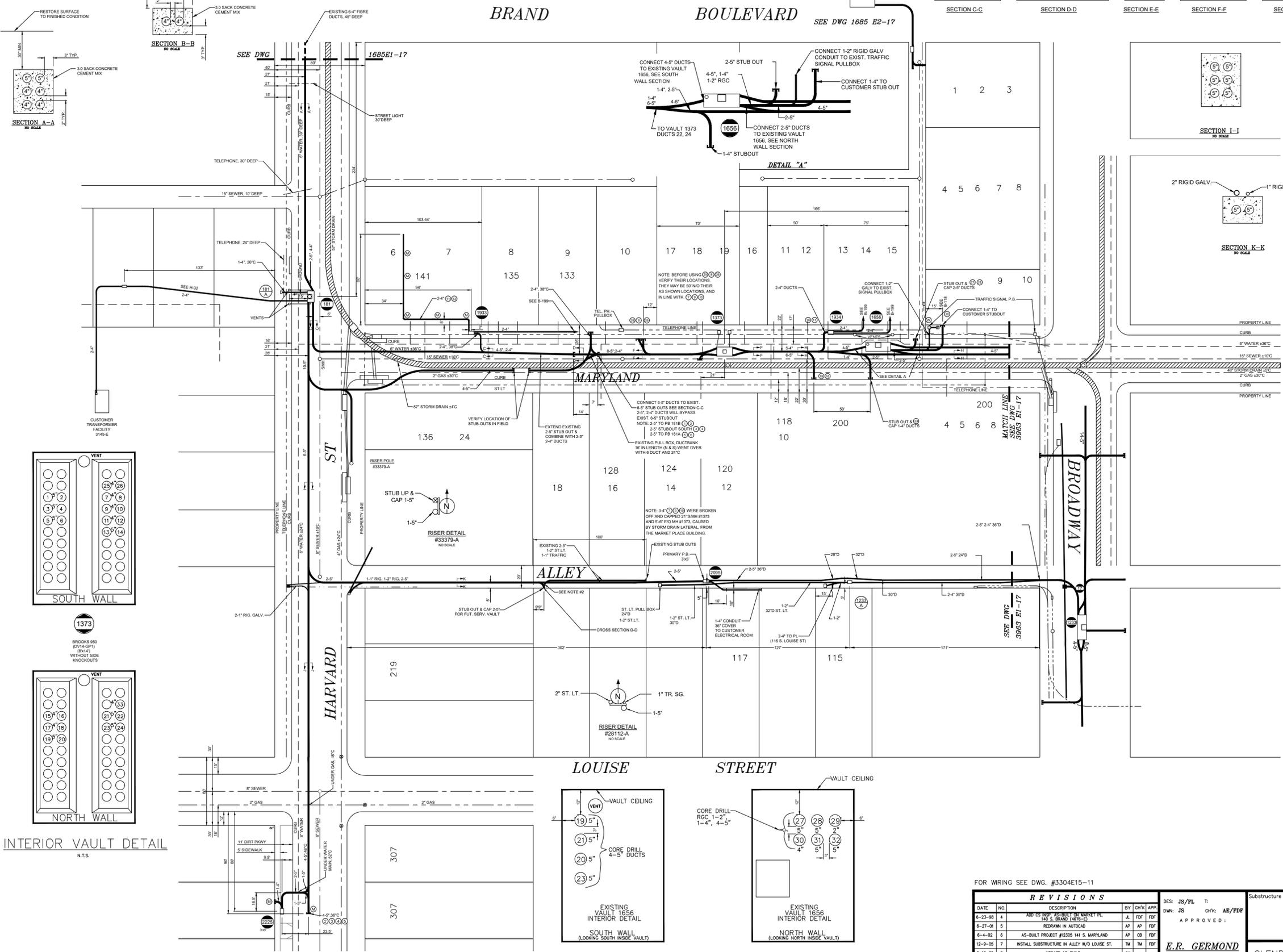
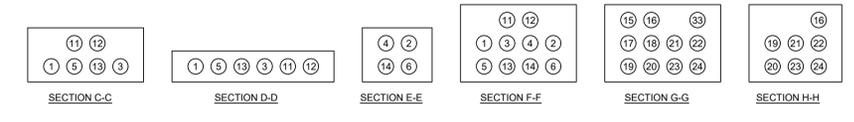
APPENDIX FIGURE C-1 AUTOTURN MANEUVERING ANALYSIS

AASHTO (US) PASSENGER VEHICLE
GLENDALE ARTS & ENTERTAINMENT DISTRICT

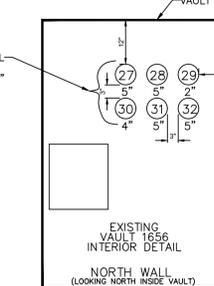
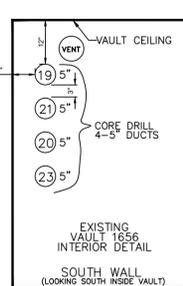
JOB ORDER REFERENCE
45280
52836
53467
65246-01



SCALE: 1"=40'



INTERIOR VAULT DETAIL
N.T.S.



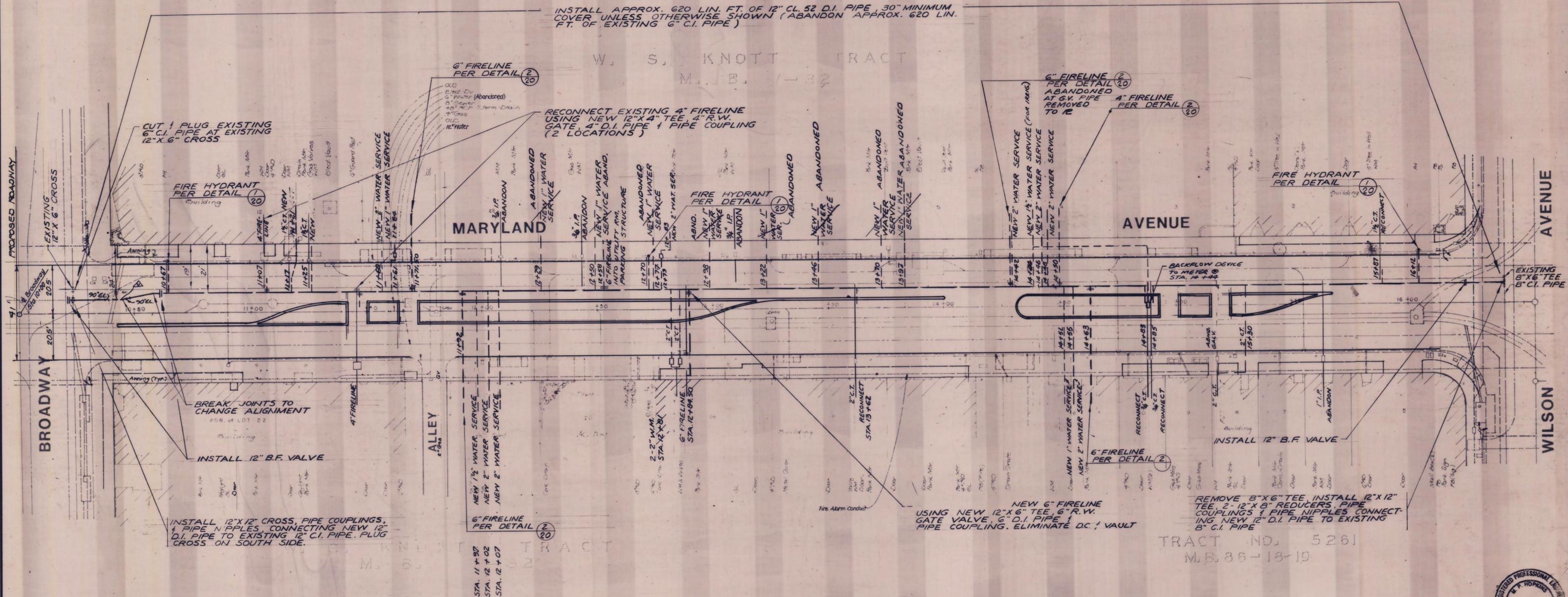
FOR WIRING SEE DWG. #3304E15-11

REVISIONS			
DATE	NO.	DESCRIPTION	BY/CHK/APP
8-23-88	4	ADD 'S' TO 'SHERIDAN' IN MARKET PL.	JL/PDF
8-27-88	5	REDRAWN IN AUTOCAD	AP/AF
8-4-92	6	AS-BUILT PROJECT #12305 141 S. MARYLAND	AP/CS
12-9-95	7	INSTALL SUBSTRUCTURE IN ALLEY W/O LOUISE ST.	TM/TFP
3-10-99	8	UPDATE AS-BUILT	AV/-
8-16-03	9	AS-BUILT PROJECT #3048-B-03	RM/CMB
8-11-12	10	INSTALL SUBSTRUCTURE PER PROJECT #4594	CR/VA
10-17-12	11	AS-BUILT PER PROJECT #4594	CR/VA

DES: JS/PL T:
DWN: JS CHK: AB/PDF
APPROVED:
E.R. GERMOND
PRINCIPAL ELECTRICAL ENGINEER

Substructure (AutoCAD)
MARYLAND AVE. B/T BROADWAY AND HARVARD ST.
APPROVED:
GLENDALE WATER AND POWER CITY OF GLENDALE CALIFORNIA
SHEET NO. **E-1**
4236

SCALE: 1" = 40'-0"
DATE: September 22, 1988



INSTALL APPROX. 620 LIN. FT. OF 12" CL. 52 D.I. PIPE, 30" MINIMUM COVER UNLESS OTHERWISE SHOWN (ABANDON APPROX. 620 LIN. FT. OF EXISTING 6" C.I. PIPE)

W. S. KNOTT TRACT
M.B. 1-32

MARYLAND AVENUE

AVENUE

WILSON AVENUE

BROADWAY

ALLEY

W. S. KNOTT TRACT
M.B. 1-32

TRACT NO. 5261
M.B. 85-18-19

CUT & PLUG EXISTING 6" C.I. PIPE AT EXISTING 12" X 6" CROSS

RECONNECT EXISTING 4" FIRELINE USING NEW 12" X 4" TEE, 4" R.W. GATE, 4" D.I. PIPE & PIPE COUPLING (2 LOCATIONS)

6" FIRELINE PER DETAIL (20)
ABANDONED AT G.V. PIPE REMOVED TO 12"
4" FIRELINE PER DETAIL (20)

INSTALL 12" X 12" CROSS, PIPE COUPLINGS, & PIPE NIPPLES, CONNECTING NEW 12" D.I. PIPE TO EXISTING 12" C.I. PIPE. PLUG CROSS ON SOUTH SIDE.

6" FIRELINE PER DETAIL (20)

NEW 6" FIRELINE USING NEW 12" X 6" TEE, 6" R.W. GATE VALVE, 6" D.I. PIPE & PIPE COUPLING. ELIMINATE D.C. & VAULT

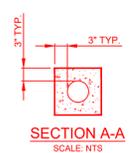
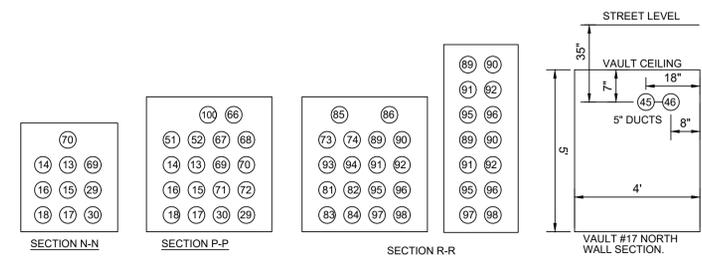
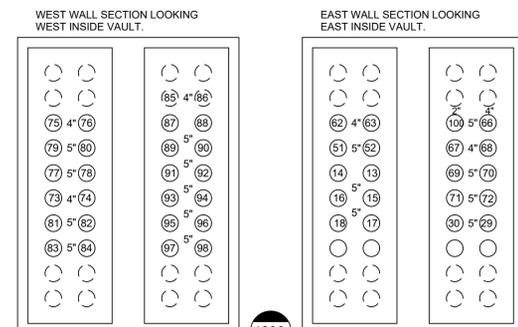
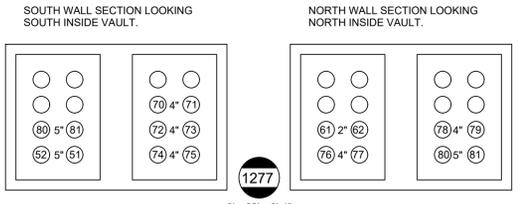
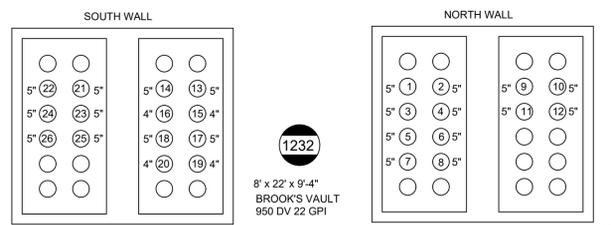
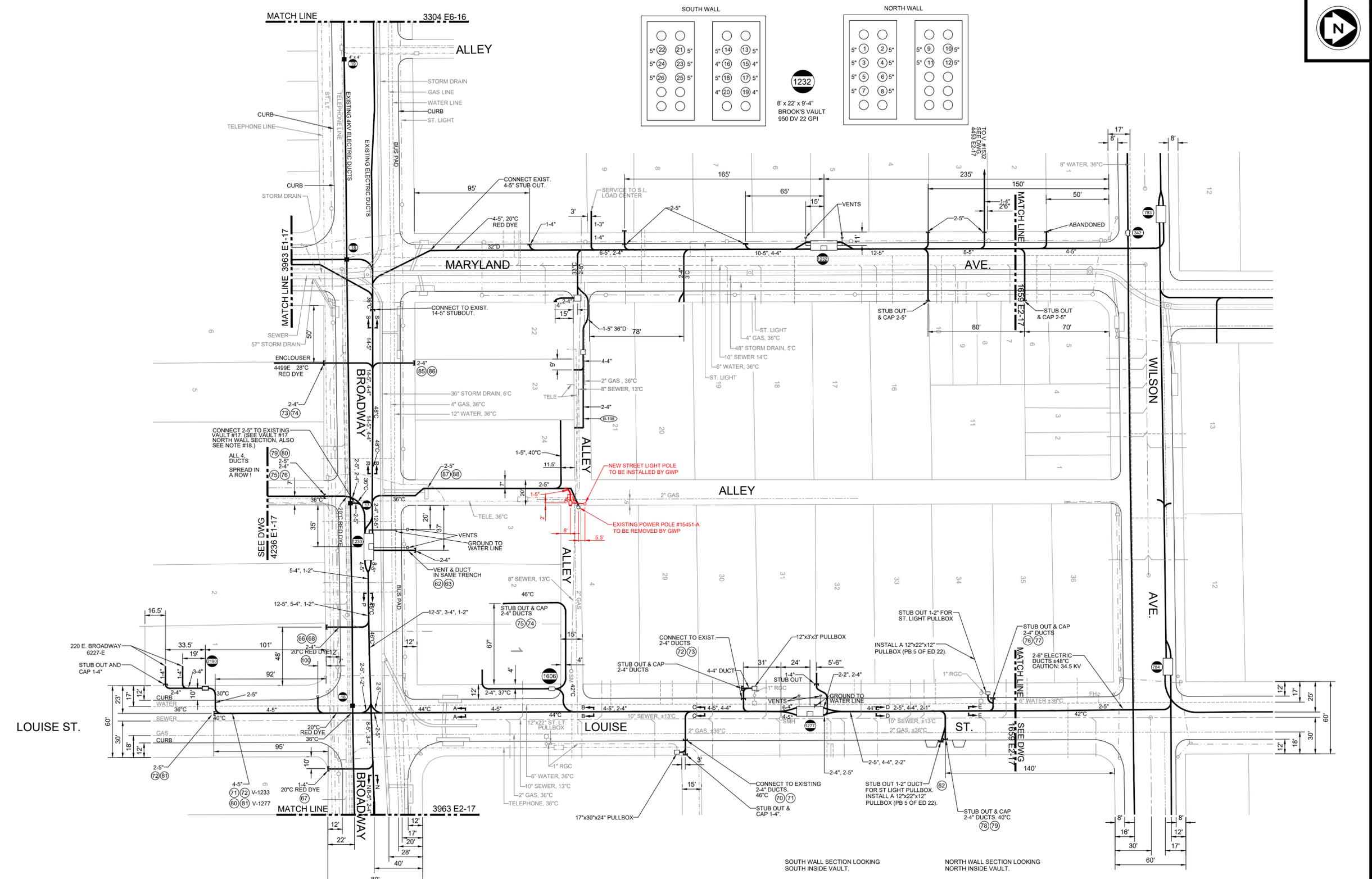
REMOVE 8" X 6" TEE. INSTALL 12" X 12" TEE, 2" 12" X 8" REDUCERS, PIPE COUPLINGS & PIPE NIPPLES CONNECTING NEW 12" D.I. PIPE TO EXISTING 8" C.I. PIPE



PUBLIC WORKS DIVISION		ENGINEERING SECTION	
CITY OF GLENDALE CALIFORNIA			
MARYLAND AVE. & WILSON AVE. - WATER FACILITY IMPROVEMENTS			
SUBMITTED	<i>Michael P. Hopkins</i> WATER SERVICES DIRECTOR	APPROVED	<i>M. P. Hopkins</i> CITY ENGINEER
APPROVED	<i>Michael P. Hopkins</i> DIRECTOR OF PUBLIC WORKS	APPROVED	<i>Michael P. Hopkins</i> DIRECTOR OF PUBLIC SERVICE

DESIGN BY E.C.K.	SCALE	PLAN NO.
DRAWN BY E.C.K.	J.O.	4218-E
DATE 6-30-88	SURVEY NOTES	
CHECKED BY <i>EC</i>		

"AS BUILT"



REVISIONS			
DATE	NO.	DESCRIPTION	BY
03-01-90	4	INSTALL ST. LT., STD.	VMP
04-04-91	5	INSTALL UG SUBSTRUCTURE	EN
07-13-92	6	VAULT NO. 1606	EN
12-11-97	7	MARYLAND-LOUISE AS LOCATED ANI BROADWAY	MF
06-20-01	8	REDRAWN IN AUTOCAD	AP
09-21-10	9	INSTALL PROJECT #14278-01	ES
10-03-11	10	REVISED PER AS-BUILT PROJECT #14278-01	ES
02-01-15	11	INSTALL SUBSTRUCTURES, 111 N. LOUISE ST. PROJECT #4007	GR

DES: AE
DWN: FDF CH'K: AE/FDF

APPROVED:
E.R. GERMOND
CHIEF ENG. & GEN. MGR

SCALE: 1" = 40' - 0"

DATE: APRIL 17, 1996

SECTION A-A
SCALE: NTS

SEC. 17

BROADWAY, WILSON AVE. B/T
MARYALND AVE. & LOUISE ST.

GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA

SHEET: E1
3963

**GENERAL CONDITIONS
APPENDIX**

GENERAL CONDITION APPENDICES

Appendix 1	Performance Bond
Appendix 2	Payment Bond
Appendix 3	Notice to Proceed
Appendix 4	Change Order Form
Appendix 5	Substitution Request Form
Appendix 6	Statutory Forms of Waiver and Release Upon Payment
Appendix 7	DAS Form 140
Appendix 8	DAS Form 142
Appendix 9	DLSE Form PW26
Appendix 10	Contractor Submittal Log
Appendix 11	List of Submittals Required From Contractor
Appendix 12	Notice of Completion
Appendix 13	GWP Street Light Clearance Request
Appendix 14	Requirements for Work Affecting Transit Stops and Routes

APPENDIX 1
PERFORMANCE BOND

Bond No.: _____
Premium Amount: \$ _____
Bond's Effective Date: _____

RECITALS:

1. The City of Glendale, California ("City"), has awarded to

(Name, address, and telephone of Contractor)

("Principal"),

a Construction Contract (the "Contract") for the Work described as follows:

Specification No. 3893R: Glendale Arts and Entertainment District – Improvements on Artsakh Avenue in Glendale, CA.

2. Principal is required under the terms of the Contract— and all contract documents referenced in it ("Contract Documents")— to furnish a bond guaranteeing Principal's faithful performance of the Work.
3. The Contract and Contract Documents, including all their amendments and supplements, are incorporated into this Bond and made a part of it by this reference.

OBLIGATION:

THEREFORE, for value received, We, Principal and

(Name, address, and telephone of Surety)

("Surety"),

a duly admitted surety insurer under California's laws, agree as follows:

By this Bond, We jointly and severally obligate and bind ourselves, and our respective heirs, executors, administrators, successors, and assigns to pay City the penal sum of _____ Dollars (\$ _____) ("the Bonded Sum"), this amount comprising not less than the total Contract Sum, in lawful money of the United States of America.

The California Licensed Resident Agent for Surety is:

(Name, address, and telephone)

_____. Registered Agent's California Department of Insurance License No. _____.

THE CONDITION OF THIS BOND'S OBLIGATION IS THAT, if Principal promptly and faithfully performs the undertakings, terms, covenants, conditions, and agreements in the Contract and Contract Documents (including all their amendments and supplements), all within the time and in the manner that those documents specify, then this obligation becomes null and void. Otherwise, this Bond remains in full force and effect, and the following terms and conditions apply to this Bond:

1. This Bond specifically guarantees Principal's performance of each obligation and all obligations under the Contract and Contract Documents, as they may be amended and supplemented— including, but not limited to, Principal's liability for liquidated damages, Warranties, Guarantees, Correction, and Maintenance obligations as specified in the Contract and Contract Documents— except that Surety's total obligation, as described here, will not exceed the Bonded Sum.
2. For those obligations of Principal that survive Final Completion of the Work described in the Contract and Contract Documents, the guarantees in this Bond also survive Final Completion of the Work.
3. When City declares that Principal is in default under the Contract, or Contract Documents, or both, Surety shall promptly: (a) remedy the default; (b) complete the Project according to the Contract Documents' terms and conditions then in effect; or (c) using a procurement methodology approved by City, select a contractor or contractors— acceptable to City— to complete all of the Work, and arrange for a contract between the contractor(s) and City. Surety shall make available, as the Work progresses, sufficient funds to pay the cost of completion less the balance of the Contract Sum, and to pay and perform all obligations of Principal under the Contract and Contract Documents— including other costs and damages for which Surety is liable under this Bond— except that Surety's total obligation, as described here, will not exceed the Bonded Sum.

4. An alteration, modification, change, addition, deletion, omission, agreement, or supplement to the Contract, Contract Documents, or the nature of the Work performed under the Contract or Contract Documents— including, without limitation, an extension of time for performance— does not, in any way, affect Surety's obligations under this Bond. Surety waives any notice of alteration, modification, change, addition, deletion, omission, agreement, supplement, or extension of time.
5. Surety's obligations under this Bond are separate, independent from, and not contingent upon any other surety's guaranteeing Principal's faithful performance of the Work.
6. No right of action accrues on this Bond to any entity other than City or its successors and assigns.
7. If an action at law or in equity is necessary to enforce or interpret this Bond's terms, Surety must pay— in addition to the Bonded Sum— City's reasonable attorneys' fees and litigation costs, in an amount the court fixes. Principal and Surety agree that this Bond is not a part of the Contract, this Bond is a separate obligation of the Principal and its Surety, and any attorneys' fee provision contained in this Bond does not apply to the Contract. If any litigation occurs between the parties arising from the breach of the Contract, each party will bear its own attorneys' fees in the litigation.
8. Surety shall mail City written notice at least 30 days before: (a) the effective date on which the Surety will cancel, terminate, or withdraw from this Bond; or (b) this Bond becomes void or unenforceable for any reason.

On the date set forth below, Principal and Surety duly executed this Bond, with the name of each party appearing below and signed by its representative(s) under the authority of its governing body.

Date: _____

PRINCIPAL:

SURETY:

(Company Name)

(Company Name)

(Signature)

(Signature)

By: _____

By: _____

(Name)

(Name)

Its: _____

Its: _____

(Title)

(Title)

Address for Serving Notices or Other Documents:

Address for Serving Notices or Other Documents:

CORPORATE SEAL

CORPORATE SEAL

- **THIS BOND MUST BE EXECUTED IN TRIPPLICATE.**
- **EVIDENCE MUST BE ATTACHED OF THE AUTHORITY OF ANY PERSON SIGNING AS ATTORNEY-IN-FACT.**
- **THE PRINCIPAL'S AND ATTORNEY-IN-FACT'S SIGNATURE MUST BE NOTARIZED.**
- **A CORPORATE SEAL MUST BE IMPRESSED ON THIS FORM WHEN THE PRINCIPAL, OR THE SURETY, OR BOTH, ARE A CORPORATION.**

APPROVED AS TO SURETY AND
AMOUNT OF BONDED SUM:

APPROVED AS TO FORM:

By _____

By _____

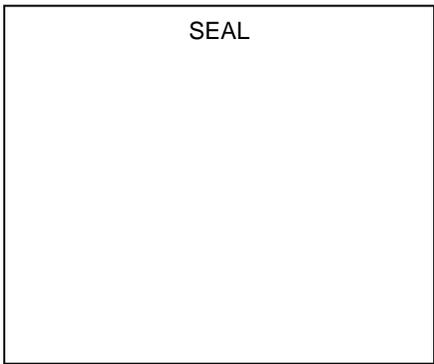
BOND ACKNOWLEDGMENT
FOR
SURETY'S ATTORNEY-IN-FACT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

On this _____ day of _____, 20____,
before me, _____(name), a Notary Public for said County, personally
appeared _____(name), who proved to me on the basis of satisfactory
evidence to be the person whose name is subscribed to this instrument as the attorney in fact of
_____, and acknowledged to me that he/she subscribed the name of
thereto as principal, and his/her own name as attorney in fact.

Notary Public



APPENDIX 2
PAYMENT BOND
(LABOR AND MATERIALS)

Bond No.: _____
Premium Amount: \$ _____
Bond's Effective Date: _____

RECITALS:

1. The City of Glendale, California ("City"), has awarded to

(Name, address, and telephone of Contractor)

("Principal"),
a Construction Contract (the "Contract") for the Work described as follows:

Specification No. 3893R: Glendale Arts and Entertainment District – Improvements on Artsakh Avenue in Glendale, CA.

2. Principal is required under California Civil Code Sections 9550 and 9554, and the terms of the Contract— and all contract documents referenced in it ("Contract Documents")— to furnish a bond guaranteeing Principal's paying claims, demands, liens, or suits for any work, labor, services, materials, or equipment furnished or used in the Work.
3. The Contract and Contract Documents, including all their amendments and supplements, are incorporated into this Bond and made a part of it by this reference.

OBLIGATION:

THEREFORE, for value received, We, Principal and

(Name, address, and telephone of Surety)

("Surety"),

a duly admitted surety insurer under California's laws, agree as follows:

By this Bond, We jointly and severally obligate and bind ourselves, and our respective heirs, executors, administrators, successors, and assigns to pay City the penal sum of _____ Dollars (\$ _____) ("the Bonded Sum"), this amount comprising not less than the total Contract Sum, in lawful money of the United States of America.

The California Licensed Resident Agent for Surety is:

(Name, address, and telephone)
_____. Registered Agent's California Department of Insurance License No. _____.

THE CONDITION OF THIS BOND'S OBLIGATION IS THAT, if Principal or a subcontractor fails to pay (a) any person named in California Civil Code Section 9100, or any successor legislation; (b) any amount due under California's Unemployment Insurance Code, or any successor legislation, for work or labor performed under the Contract or Contract Documents; or (c) any amount under Unemployment Insurance Code Section 13020, or any successor legislation, that Principal or a subcontractor must deduct, withhold, and pay over to the Employment Development Department from the wages of its employees, for work or labor performed under the Contract or Contract Documents, then Surety shall pay for the same in an amount not-to-exceed the Bonded Sum. Otherwise, this obligation becomes null and void. While this Bond remains in full force and effect, the following terms and conditions apply to this Bond:

1. This Bond inures to the benefit of any of the persons named in California Civil Code Section 9100, or any successor legislation, giving those persons or their assigns a right of action in any suit brought upon this Bond, unless California Civil Code Section 9566, or any successor legislation, applies.
2. An alteration, modification, change, addition, deletion, omission, agreement, or supplement to the Contract, Contract Documents, or the nature of the Work performed under the Contract or Contract Documents— including, without limitation, an extension of time for performance— does not, in any way, affect Surety's obligations under this Bond. Surety waives any notice of alteration, modification, change, addition, deletion, omission, agreement, supplement, or extension of time.

3. Surety's obligations under this Bond are separate, independent from, and not contingent upon any other surety's paying claims, demands, liens, or suits for any work, labor, services, materials, or equipment furnished or used in the Work.
4. If an action at law or in equity is necessary to enforce or interpret this Bond's terms, Surety must pay— in addition to the Bonded Sum— City's reasonable attorneys' fees and litigation costs, in an amount the court fixes. Principal and Surety agree that this Bond is not a part of the Contract, this Bond is a separate obligation of the Principal and its Surety, and any attorneys' fee provision contained in this Bond does not apply to the Contract. If any litigation occurs between the parties arising from the breach of the Contract, each party will bear its own attorneys' fees in the litigation.
5. Surety shall mail City written notice at least 30 days before: (a) the effective date on which the Surety will cancel, terminate, or withdraw from this Bond; or (b) this Bond becomes void or unenforceable for any reason.

On the date set forth below, Principal and Surety duly executed this Bond, with the name of each party appearing below and signed by its representative(s) under the authority of its governing body.

Date: _____

PRINCIPAL:

SURETY:

(Company Name)

(Company Name)

(Signature)

(Signature)

By: _____
(Name)

By: _____
(Name)

Its: _____
(Title)

Its: _____
(Title)

Address for Serving Notices or Other Documents:

Address for Serving Notices or Other Documents:



-
- **THIS BOND MUST BE EXECUTED IN TRIPLICATE.**
 - **EVIDENCE MUST BE ATTACHED OF THE AUTHORITY OF ANY PERSON SIGNING AS ATTORNEY-IN-FACT.**
 - **THE PRINCIPAL'S AND ATTORNEY-IN-FACT'S SIGNATURE MUST BE NOTARIZED.**
 - **A CORPORATE SEAL MUST BE IMPRESSED ON THIS FORM WHEN THE PRINCIPAL, OR THE SURETY, OR BOTH, ARE A CORPORATION.**
-

APPROVED AS TO SURETY AND
AMOUNT OF BONDED SUM:

APPROVED AS TO FORM:

By _____
Interim Director of Public Works

By _____
City Attorney

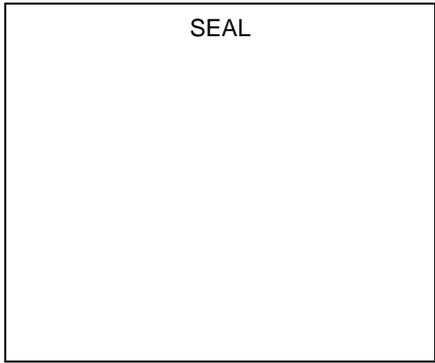
BOND ACKNOWLEDGMENT
FOR
SURETY'S ATTORNEY-IN-FACT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

On this _____ day of _____, 20____,
before me, _____(name), a Notary Public for said County, personally
appeared _____(name), who proved to me on the basis of satisfactory
evidence to be the person whose name is subscribed to this instrument as the attorney in fact of
_____, and acknowledged to me that he/she subscribed the name of
thereto as principal, and his/her own name as attorney in fact.

Notary Public



APPENDIX 3
NOTICE TO PROCEED

Issuance Date:

_____, 20__

Subject Project: Glendale Arts and Entertainment District – Improvements on Artsakh Avenue
Specification No. 3893R Contract No. _____

Upon receipt of this letter, you are hereby authorized to proceed with the Work for the Subject Project.

You shall begin the Work on: _____, 20__ (“Date of Commencement”). You shall complete the Work within _____ calendar days from the Date of Commencement, in accordance with the provisions of Article 3 of the Contract.

Please note that you will not be allowed to start any construction activity: (1) without the prior approval of the required submittals, and (2) before the Date of Commencement.

Please reference the City contract number on all correspondence and on all monthly payment requests.

Please complete the information below and return this document to:

Public Works Engineering Department
633 E. Broadway, Room 205
Glendale, CA 91206
ATTN: Project Manager: Huang Zheng

The City of Glendale’s Public Works Engineering Department is excited to provide a quality upgrade to one of our facilities in the City. We are pleased to have you as a partner in this effort.

Sincerely,

Sarkis Oganesyanyan, P.E., PTOE
Deputy Director of Public Works/City Engineer

Contractor: Please complete the information below.

Contractor received this Notice to Proceed on: _____, 20__

_____, 20__
Contractor’s Signature Date Signed

Contractor’s Name

Contractor’s Address City State Zip Code

APPENDIX 4



CITY OF GLENDALE CALIFORNIA

Public Works Engineering Department 633 East Broadway, Room 205, Glendale, California 91206 Tel (818) 548-3945 FAX (818) 242-7087

CONSTRUCTION CONTRACT CHANGE ORDER

Date: _____ Contract Number: _____
 Project: _____ Change Order Number: _____
 Subject: _____ Contractor Telephone: _____
 To: _____ Contractor Fax: _____
 Reference: _____

Attention:

From: _____

Description of Change (additional sheets attached)

Reason for Change (additional sheets attached)

Distribution

Contractor *Consultant* Division Project Manger Project Administrator Other _____

C-410 Revised 03/22/11

CITY OF GLENDALE
CONTRACT CHANGE ORDER

The change results in the following adjustment of Contract Price and/or Time:

Approved Contract Amount.....
Net Change by Previously Authorized Change Orders (.....%)
This Change Order (increase/decrease) (.....%)
Total Change Order including this Change Order (.....%)
Contract Price after Change Order

Account/Program Numbers

Contract Time prior to Change Order

Net Increase (Decrease) in Days Authorized by this Change Order

Current Contract Time including this Change Order

Contractor is hereby directed to make the herein-described changes and/or perform said herein-described work in connection with above reference project. All new work shall conform to the applicable provisions of the plans and specifications, except as specifically modified by the Contract Change Order.

This Change Order No. _____ to Specification No. _____ constitutes full and complete compensation for all costs associated with the above changes inclusive of insurance, contractors profit, direct and indirect overhead, extended office overhead, bonds, supervision, labor, materials and equipment. All other costs are noncompensable.

All other provisions, requirements, terms and conditions contained in the above referenced Construction Contract remain in full force and effect. This Change Order is not valid until signed by both City and Contractor.

Attachments: (List attached documents that support Change Order)

City of Glendale Contractor
Prepared By Accepted By

Project Manager/Construction Manager Date Name of Contractor

Approved By

Division Director [when required] Date Contractor Representative Date

Additional City Approvals

Date Title

Date

Date

APPENDIX 5

SUBSTITUTION REQUEST FORM

Project: _____

Location: _____

TO: City of Glendale, Public Works Engineering Department, _____, Project Manager

FROM: _____

1. Section, Paragraph and Page Number of Specification or Drawing to which this request applies:

2. Item specified for which substitution is requested:
Name or Brand: _____
Manufacturer: _____
Catalog No.: _____

3. The proposed substitution is:
Name or Brand: _____
Manufacturer: _____
Catalog No.: _____

4. No requests for substitution of any material, device, product, equipment, fixture, form, or type of construction shall be considered by City prior to award of the Contract. Bidders shall submit all requests for substitution and substantiating data, on "Substitution Form" (Appendix 5), within **ten (10) days** calendar days from the date of the Notice to Proceed. Bidder shall refer to the appropriate provisions of the General Conditions for additional information regarding substitutions. Authorization of a substitution is solely within the discretion of the City. No substitution request will be considered by the City without a completed Substitution Request Form and substantiating data. Contractor shall attach hereto complete technical data, including technical information, complete manufacturer's catalogs, brochures and drawings, certified laboratory test reports and samples as applicable for the proposed substitution, installation and operating instructions, manufacturing warranties and other descriptive material. No other substitution request submitted after the Notice to Proceed will be considered by the City except as provided in the General Conditions or as otherwise requested in writing by the City.

5. Reasons for substitution request:

6. Detailed comparison of significant qualities and properties (size, weight, durability, performance and similar characteristics) including the visual effect where applicable, for the proposed substitution in comparison with

original requirements includes (list detailed comparison with supporting data, use separate sheets if required):

7. Installation changes and changes to Drawings and Specifications required by the proposed substitution are (list all required changes, use separate sheets if required):

8. Does this substitution affect dimensions shown on Drawings?

Yes _____ No _____

If yes, clearly indicate changes on each Drawing by Sheet No.:

9. List the effects of the proposed substitution on other parts of the Work or on separate contracts, including required changes in Drawings, dimensions, engineering and detailing costs and effect on other trades.

10. What effect does substitution have on applicable code requirements?

11. Identify differences between the proposed substitution and the specified item.

12. Attach a copy of manufacturer's warranty, manufacturer's guarantees and warranties of proposed and specified items are:

Same _____

Different _____

(Explain on attachment.)

Manufacturer shall provide a letter stating the fitness for intended use, and performance equivalence with the specified item.

13. List the name and address of three similar projects (not necessarily installed by Contractor) on which the proposed product was used and date of installation:

(i) Name of Project: _____

Address: _____

Date of Installation: _____

(ii) Name of Project: _____

Address: _____

Date of Installation: _____

(iii) Name of Project: _____

Address: _____

Date of Installation: _____

14. Use of the substitution will cause the Contract Time to be:

Same _____

Different _____

(Explain on attachment.)

15. Use of the substitution will affect the critical path of the Construction Schedule as follows (identify any proposed adjustment to the Contract Time):

16. Reduction in the Contract Sum of \$ _____ will result from use of the substituted item.

17. Estimated cost of any engineering, design or agency fees required for work of all trades directly or indirectly affected by the substitution is: \$ _____.

18. The date by which City must accept this Request in order for the time and cost estimates in Paragraphs 14 and 16 to remain valid is:

_____.

19. Contractor Affidavit. The undersigned, having thoroughly investigated the proposed substitution represents, certifies and declares, under penalty of perjury under the laws of the State of California that:

(1) Contractor has personally investigated the proposed substitution and determined that it is equal or superior in all respects to the material, product, thing or service specified except as specifically noted:
_____;

(2) Contractor will provide the same warranty and correction responsibility for the proposed substitution that the Contractor would have provided for that specified;

- (3) The cost data presented is complete and includes all related costs under this Contract except any redesign costs and agency fees;
- (4) Contractor will pay redesign, engineering, detailing, special inspection costs and agency fees caused by the use of this substitution;
- (5) Contractor will coordinate the installation of the accepted substitution, making such changes as may be required for the Work to be complete in all respects.
- (6) Contractor waives all claims for additional costs relating to the substitution which may subsequently become apparent; and
- (7) Contractor assumes all responsibility for direct or indirect costs and/or time impacts as a result of the use of the substitution.

Executed this _____ day of _____ 20____, at _____, California.

Signature

Type or print Name

Submitted by:

(Firm)

(Address)

For use by City:

Accepted Accepted as noted

Not Accepted Rejected as late

(By)

APPENDIX 6

STATUTORY FORMS OF WAIVER AND RELEASE UPON PAYMENT

CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT
[California Civil Code § 8132]

EFFECTIVE JULY 1, 2012

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: \$ _____

Check Payable to: _____

Exceptions

This document does not affect any of the following:

- (1) Retentions.
- (2) Extras for which the claimant has not received payment.
- (3) The following progress payments for which the claimant has previously given a conditional waiver and release but has not received payment:
Date(s) of waiver and release: _____
Amount(s) of unpaid progress payment(s): _____
- (4) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Signature

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

UNCONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT
[California Civil Code § 8134]

EFFECTIVE JULY 1, 2012

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN< STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Identifying Information

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant are waived and released by this document, unless listed as an Exception below. The claimant has received the following progress payment:

\$ _____

Exceptions

This document does not affect any of the following:

- (1) Retentions.
- (2) Extras for which the claimant has not received payment.
- (3) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Signature

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT
[California Civil Code § 8136]

EFFECTIVE JULY 1, 2012

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: \$ _____

Check Payable to: _____

Exceptions

This document does not affect any of the following:

Disputed claims for extras in the amount of: \$ _____

Signature

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

UNCONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT
[California Civil Code § 8138]

EFFECTIVE JULY 1, 2012

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Identifying Information

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant are waived and released by this document, unless listed as an Exception below. The claimant has been paid in full.

Exceptions

This document does not affect any of the following:

Disputed claims for extras in the amount of: \$ _____

Signature

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

APPENDIX 7

PUBLIC WORKS CONTRACT AWARD INFORMATION

Contract award information must be sent to your Apprenticeship Committee if you are approved to train. If you are not approved to train, you must send the information (which may be this form) to ALL applicable Apprenticeship Committees in your craft or trade in the area of the site of the public work. Go to: <http://www.dir.ca.gov/das/PublicWorksForms.htm> for information about programs in your area and trade. You may also consult your local Division of Apprenticeship Standards (DAS) office whose telephone number may be found in your local directory under California, State of, Industrial Relations, Division of Apprenticeship Standards.

Do not send this form to the Division of Apprenticeship Standards.

NAME OF YOUR COMPANY	CONTRACTOR'S STATE LICENSE NO
MAILING ADDRESS- NUMBER & STREET, CITY, ZIP CODE	AREA CODE & TELEPHONE NO.
NAME & ADDRESS OF PUBLIC WORKS PROJECT	DATE YOUR CONTRACT EXECUTED
	DATE OF EXPECTED OR ACTUAL START OF PROJECT
NAME & ADDRESS OF PUBLIC AGENCY AWARDING CONTRACT	ESTIMATED NUMBER OF JOURNEYMEN HOURS
	OCCUPATION OF APPRENTICE
THIS FORM IS BEING SENT TO: (NAME & ADDRESS OF APPRENTICESHIP PROGRAM(S))	ESTIMATED NUMBER OF APPRENTICE HOURS
	APPROXIMATE DATES TO BE EMPLOYED

This is not a request for dispatch of apprentices.

Contractors must make a separate request for actual dispatch, in accordance with Section 230.1(a) California Code of Regulations

Check One Of The Boxes Below

1. We are already approved to train apprentices by the _____ Apprenticeship Committee. We will employ and train under their Standards. Enter name of the Committee
2. We will comply with the standards of _____ Apprenticeship Committee for the duration of this job only. Enter name of the Committee
3. We will employ and train apprentices in accordance with the California Apprenticeship Council regulations, including § 230.1 (c) which requires that apprentices employed on public projects can only be assigned to perform work of the craft or trade to which the apprentice is registered and that the apprentices must at all times work with or under the direct supervision of journeyman/men.

Signature _____

Date _____

Typed Name _____

Title _____

**State of California - Department of Industrial Relations DIVISION
OF APPRENTICESHIP STANDARDS**

APPENDIX 8



REQUEST FOR DISPATCH OF AN APPRENTICE – DAS 142 FORM

DO NOT SEND THIS FORM TO DAS

You may use this form to request dispatch of an apprentice from the Apprenticeship Committee in the craft or trade in the area of the public work. Go to: <http://www.dir.ca.gov/databases/das/pwaddrstart.asp> for information about programs in your area and trade. You may also consult your local Division Apprenticeship Standards (DAS) office whose telephone number may be found in your local directory under California, State of, Industrial Relations, Division of Apprenticeship Standards. **Except for projects with less than 40 hours of journeyman work, you must request and employ apprentices in no less than 8 hour increments.**

<p>Date: _____</p>	<p>Contractor Requesting Dispatch:</p>
<p>To Applicable Apprenticeship Committee:</p> <p>Name: _____</p> <p>Address: _____</p> <p>_____</p> <p>Tel. No. _____ Fax No. _____</p>	<p>Name: _____</p> <p>Address: _____</p> <p>_____</p> <p>License No. _____</p> <p>Tel. No. _____ Fax No. _____</p>

Project Information:

Contract No. _____

Name of the Project: _____

Address: _____

Dispatch Request Information:

Number of Apprentice(s) Needed: _____ Craft or Trade: _____

Date Apprentice(s) to Report: _____ (72 hrs. notice required) Time to Report: _____

Name of Person to Report to: _____

Address to Report to: _____

*You may use this form to make your written request for the dispatch of an apprentice. Requests for dispatch must be in writing and submitted at least 72 hours in advance (excluding weekends and holidays) via first class mail, fax or email. **Proof of submission may be required.** Please take note of California Code of Regulations, Title 8, § 230.1 (a) for all applicable requirements regarding apprenticeship requests and/or visit <http://www.dir.ca.gov/DAS/DASApprenticesOnPublicWorksSummaryOfRequirements.htm>*

DAS 142 (Revised 04/14)

APPENDIX 9
Statement of Employer Payments



Date:		In Reply, Refer to Case No:	
Prime:			
Subcontractor:			
PROJECT NAME:			
PROJECT CONTRACT NO.:		County/location:	

HEALTH AND WELFARE

NAME OF PLAN	Address, City and Zip
ADMINISTRATOR	Address, City and Zip
CLASSIFICATION(S) USED	CONTRIBUTION PER CLASSIFICATION PER HOUR
CONTRIBUTIONS:	WEEKLY _____ MONTHLY _____ QUARTERLY _____ ANNUALLY _____

PENSION

NAME OF PLAN	Address, City and Zip
ADMINISTRATOR	Address, City and Zip
CLASSIFICATION(S) USED	CONTRIBUTION PER CLASSIFICATION PER HOUR
CONTRIBUTIONS:	WEEKLY _____ MONTHLY _____ QUARTERLY _____ ANNUALLY _____

VACATION/HOLIDAY

NAME OF PLAN	Address, City and Zip
ADMINISTRATOR	Address, City and Zip
CLASSIFICATION(S) USED	CONTRIBUTION PER CLASSIFICATION PER HOUR
CONTRIBUTIONS:	WEEKLY _____ MONTHLY _____ QUARTERLY _____ ANNUALLY _____

TRAINING

NAME OF PLAN	Address, City and Zip
ADMINISTRATOR	Address, City and Zip
CLASSIFICATION(S) USED	CONTRIBUTION PER CLASSIFICATION PER HOUR
CONTRIBUTIONS:	WEEKLY _____ MONTHLY _____ QUARTERLY _____ ANNUALLY _____

IF YOU USE OTHER PLANS NOT LISTED ABOVE, YOU MAY USE THE BACK OF THIS FORM TO PROVIDE THIS ADDITIONAL INFORMATION

APPENDIX 11 – LIST OF SUBMITTALS REQUIRED FROM CONTRACTOR

Required Submittals for Monthly Progress Payments:		Type of Work				
No	Description of Submittals (1)	Streets	Sewers	Storm Drains	Electrical	Earthwork
1.	Invoice-Schedule of Values	Z	Z	Z	Z	Z
2.	Project Schedule Update	Z	Z	Z	Z	Z
3.	Certified Payroll (CPR; Both Contractor & all Sub-contractors)	Z	Z	Z	Z	Z
4.	CPR Statement of Compliance (Both Contractor & all Sub-contractors)	Z	Z	Z	Z	Z
5.	Certification of Fringe Benefits Paid (Both Contractor & all Sub-contractors)	Z	Z	Z	Z	Z
6.	Progress Payment Certification (Located in Specifications)	Z	Z	Z	Z	Z
7.	Affidavit for Final Progress Payment (Located in Specifications)	B	B	B	B	B
8.	Marked-up redlined As-Built plans showing all field changes	Z	Z	Z	Z	Z
NOTES:						
(1)	Contractor is also responsible for supplying all required submittals for work to be done by their subcontractors.					
(2)	There may be other submittals that are required for this project that are not listed in the table.					
(3)	Some of the Submittal items that are listed might be project specific and may or may not be required for this project.					
LEGEND:						
X	Required Before Any Construction Activities May Commence					
Y	Required Before the Specific Construction Activity may be Performed					
Z	Required Monthly or recurring Submittal					
A	Required Daily Submittal					
B	Required at the end of the Project for Project Close-out					
DEFINITIONS FOR "Type Of Work":						
Streets - Street Resurfacings, Reconstruction, Slurry Seal, Sidewalk, Curb & Gutter, etc.						
Sewers - Sewer Pipe Construction, MH Construction, Lining, Laterals, Excavation, Permanent Trench Resurfacing						
Storm Drains - Storm Drain Construction, MH Construction, Catch Basins, Excavation, Permanent Trench Resurfacing						
Electrical - Conduit Installation, Vaults, Pull boxes, Street Lights, Traffic Signals, Excavation, Permanent Trench Resurfacing						
Earthwork - Debris Basins, Slope Repair, Grading, Retaining Walls, Excavation						

APPENDIX 11 – LIST OF SUBMITTALS REQUIRED FROM CONTRACTOR

LIST OF SUBMITTALS REQUIRED FROM CONTRACTOR						
No	Description of Submittals (1)	Type of Work				
		Streets	Sewers	Storm Drains	Electrical	Earthwork
1.	Contractor's Schedule of Operations (Work Flowchart)	X	X	X	X	X
2.	Designated Contractor's Representative and Emergency Phone List	X	X	X	X	X
3.	Subcontractor Listing (Contact Information and License Numbers)	X	X	X	X	X
4.	Contractor's Notification - Letter to Residents/Businesses	X	X	X	X	X
5.	Contractor's Notification - Door Hanger Notice to Residents & Businesses	X	X	X	X	X
6.	Project Signs	X	X	X	X	X
7.	Traffic Control Plan & Channelization Plan	X	X	X	X	X
8.	Local Storm Water Pollution Prevention Plan (SWPPP)	X	X	X	X	X
9.	Waste Discharge Identification Number (WDID), GC Page 12	X	X	X	X	X
10.	Shoring Plan		Y	Y	Y	Y
11.	OSHA Trench & Excavation Permit		Y	Y	Y	Y
12.	Confined Space Entry Program		Y	Y		
13.	OSHA Confined Space Entry Permit		Y	Y		
14.	Specifications for Pipe & Couplings from Manufacturer		Y	Y	Y	
15.	Leave Blank					
16.	Sewage Spill Prevention & Response Plan		X			
17.	Leave Blank					
18.	Leave Blank					
19.	Specifications for Irrigation Systems	Y				Y
20.	Specifications for Luminaires, Light Poles, Pedestals, Traffic Signals, Street Name Signs				Y	
21.	Specifications for Traffic Striping, Pavement Marking and Signing	Y	Y	Y	Y	Y
22.	Asphalt Concrete (A.C.) Mix Design	Y	Y	Y	Y	Y
23.	Asphalt Rubber Hot Mix (ARHM) Mix Design	Y	Y	Y	Y	Y
24.	Emulsion-Aggregate Slurry Mix Design/Crack Seal Material	Y	Y	Y	Y	Y
25.	Asphalt Rubber Aggregate Membrane (A.R.A.M.) Mix Design	Y	Y	Y	Y	Y
26.	Portland Cement Concrete (P.C.C.) Mix Design	Y	Y	Y	Y	Y
27.	Crushed Miscellaneous Base (CMB) Mix Design	Y	Y	Y	Y	Y
28.	Spec's for Pre-Fab Products (Manufacturer's Info and Certification of Compliance)	Y	Y	Y	Y	Y
29.	Notification to City of any Construction Staging Areas or Storage	Y	Y	Y	Y	Y
30.	Leave Blank					
30.	Leave Blank					
31.	Leave Blank					
32.	Final Approved As-Built/Marked-up redlined plans showing all field changes	B	B	B	B	B
33.	Submission of "Summary of Solid Waste Disposal and Diversion" form (located in the Specifications)	Z	Z	Z	Z	Z
34.	Subcontractor's and Vendor's Waiver Releases	B	B	B	B	B
35.	Equipment Operator's Listing	X	X	X	X	X

APPENDIX 12
NOTICE OF COMPLETION

RECORDING REQUESTED BY:

City of Glendale
Public Works Department – Engineering Division
633 East Broadway Avenue, Room 205
Glendale, CA 91206

WHEN RECORDED MAIL TO:

City of Glendale
City Clerk
613 East Broadway, Room 110
Glendale, CA 91206 - 4393

-----SPACE ABOVE THIS LINE FOR RECORDERS USE-----

NOTICE OF COMPLETION

NOTICE IS HEREBY GIVEN:

1. The interest or estate stated in paragraph 2 herein in the real property and public work of improvement herein described is owned by the City of Glendale. The City's address is: 613 East Broadway Avenue, Room 120, Glendale, California 91206.
2. The nature of the title of the City of Glendale is: **a Public Street Easement.**
3. Notice is given that work was completed on the said public improvement on _____. This notice does not alter the Contractor's responsibility for failure of the work to comply with the requirements of the Contract Documents. This notice does not constitute a waiver or acceptance of any non-conforming or defective work, disputed claims, the assessment of liquidated damages, subcontractor licensing penalties, state licensing violations, or any other violations of state, federal, local laws and regulations, or contract provisions.
4. That certain real property and public work of improvement known as _____ Glendale, CA , County of Los Angeles, as improved in accordance with Specification No. _____, Contract No. _____.
5. The Contractor on said job was _____.
6. Kindly refer to Mr. Sarkis Oganessian, P.E., City Engineer, on all matters relating to said Contract.

VERIFICATION

I, the undersigned, declare: I am the City Engineer of the City of Glendale, the owner of the aforesaid interest or estate in the property described in the foregoing notice; I have read the same and know and understand the contents thereof, and that the facts stated therein are true and correct.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.
Executed on _____, 20____ at Glendale, California.

CITY OF GLENDALE, a chartered municipal corporation

By _____
SARKIS OGANESYAN,
ASSISTANT DIRECTOR OF PUBLIC WORKS/CITY ENGINEER
Public Works Department – Engineering Division

APPENDIX 13



Street Light Clearance Request

A. **DATE:** _____

TO: GWP Corporate Yard, Street Light Supervisor

FROM: _____

SUBJECT: O.K. to Work Near/Street Light Clearance.

We are requesting an "O.K. to Work Near" for the following date(s) and Location(s):

Requested by: _____

1. **Sent by:** _____

Date needed

Location

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

REQUIREMENTS FOR WORK AFFECTING TRANSIT STOPS & ROUTES

**City of Glendale
Public Works Department - Transit Division**

INSTRUCTIONS

1. Glendale is served by Metro regional buses and Glendale Beeline city buses. *Signs at stops will tell you which agency serves the stop.*
2. A **72 hour** notice is required for activities at bus stops or work requiring detours. *Agencies have to post stop closures 24-48 hours in advance to redirect passengers.*
3. Contractor is required to create a temporary bus stop when conditions allow – post no parking signs as appropriate and locate a Type 2 barricade as the “pole” for temporary stop signage. *Typical bus zone is 80’-90’.* *Transit field staff (see page 2) will assist you with an alternate location if needed.*
4. **Email the 72 hour notice** (see page 2) that contains the following (electronic file available, examples below):
 - Project name/Contractor name
 - On-site foreman name/Cell phone
 - Location of stop or street boundaries
 - Start date and time/End date and time
 - Temporary stop location
5. For long term projects, please be sure to update changes to the appropriate agency on a regular basis.

Example of 72 hour notice for stop closure

Project Name	Safe Routes Phase 2
Contractor Name	Sully Miller
On-site foreman name/Cell phone	Tom 562-555-1212
Location of stop or street boundaries	Stop: WB Glenoaks & Justin
Start date and time	6-6-13 7:00a.m.
End date and time	6-14-13 3:30 p.m.
Temporary stop location	WB Glenoaks 40’ east of Justin. (Before existing stop zone.)

Example of 72 hour notice for paving

Project Name	Central Avenue
Contractor Name	Kalban
On-site foreman name/Cell phone	Jim 562-555-1212
Location of stop or street boundaries	Street: NB lanes Central Ave from Broadway to Doran

APPENDIX 14

Start date and time	8-1-13 7:00a.m.
End date and time	8-15-13 3:30 p.m.
Temporary stop location	All NB stops closed, no temp stops.

TRANSIT CONTACTS (*Suggestion: create an email group to blast out notices*)

Metro Stops and Zones (Posting of Metro temporary stop closures, posting temporary stop relocations, sign/pole removals)

James Falcon– Metro SFV Stops and Zones
213-922-5076
Falconj@metro.net

David Daniels– Metro Stops and Zones Supervisor
213-922-5190
Danielsd@metro.net

Metro Operations (Metro bus stop closures/relocations and/or detours)

Emil Guglielmo – Operations Supervisor
213-922-4632
GUGLIELMOE@metro.net

MV Transportation (Beeline Operations) (Beeline bus stop closures/relocations and/or detours)

Frances Palma – Dispatcher
818-409-3387 (dispatch)
frances.palma@mvtransit.com

Fred Hartdige – Operations Manager
818-409-3383 (office)
fhartdige@mvtransit.com

City of Glendale – Transit (Customer Service Center) (Beeline temporary stop closures, sign/pole removals, Beeline detours and any bus stop furniture remove and replace)

Martha D’Andrea – Transit Manager
818-937-8330 (office)
mdandrea@glendaleca.gov

Silva Baghdanian – Transit Assistant Manager
818-937-8321 (office)
sbaghdanian@glendaleca.gov

SPECIAL CONDITIONS

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SECTION 1 - TERMS, DEFINITIONS, ABBREVIATIONS AND SYMBOLS

(NOT USED)

SECTION 2 - SCOPE AND CONTROL OF WORK

2.01 SPECIFICATIONS AND STANDARD PLANS

The work to be done under this contract shall be performed in accordance with the following Specifications and Standard Plans:

1. Specification No. 3893R.
2. Standard Specifications for Public Works Construction "Greenbook" 2021 Edition, including all supplements thereto issued prior to bid opening date, exclusive of Part I.
3. State of California, Department of Transportation Standard Specifications for Traffic Signal Modifications and Lane Markings, Painting and Signing, 2010 Edition.
4. Standard Plans for Public Works Construction (2021 Edition).

2.02 LOCATIONS OF WORK

<u>NO.</u>	<u>STREET NAME</u>	<u>LIMITS</u>
1.	Artsakh Avenue	Harvard Street to Wilson Avenue

2.03 WORKING HOURS

This section modifies Article 14.01 "Working Hours" of the General Conditions. The Contractor shall coordinate the work with the resident/business to accommodate any special needs and keep them informed of construction activities. All road work operation shall be performed during evening hours as described in Section 6 of this special conditions.

2.04 PERMITS

The Contractor shall comply with all the requirements in the City of Glendale Excavation Permit Policy attached in Appendix B, and Building and Safety requirements attached in Appendix E, the Contractor shall not be required to pull a physical Excavation Permit but Building and Safety Permit application is required.

It is the Contractor's responsibility to obtain a separate permit from the Los Angeles County Department of Public Works for the inspection of the work related to the County of Los Angeles Flood Control District Facilities if they are disturbed or damaged. In that case, all costs involved in complying with the permits and obtaining the Los Angeles County inspection permit, including the payment of insurance and all other fees, shall be considered as paid for in the various related items of work and no additional compensation shall be made therefore.

All permit fees associated with the City of Glendale Building and Safety required permits will be reimbursed under payment item 185 for the actual fees paid with no markup.

2.05 MOBILIZATION

Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of the personnel, equipment, supplies and incidentals to the Project site and for all other work and

operations which must be performed or costs incurred prior to beginning work on the various contract items on the Project site.

Payment for mobilization and demobilization shall be included in the unit price bid for "Mobilization and Demobilization" in the Payment Item Section of these Specifications and no additional compensation will be made therefore.

2.06 TRAFFIC CONTROL

The Contractor shall order their operations, such that a minimum of one 10' lane of traffic is open during non-working hours in each direction. When possible, the Contractor shall provide for two 10' lanes during non-working hours.

During construction operations, the Contractor shall modify their operations, such that emergency vehicles shall have immediate access to the eastern portion of Artsakh Road (north block) and the west and eastern portions of Artsakh Road (south block) per attached fire Modification FMOD2110967, reference document 8.

Changeable Message Signs will be required on arterial streets and at the discretion of the Engineer.

Non-emergency vehicles may be delayed up to 60 minutes, if necessary.

The Contractor shall provide all necessary signage and flaggers, as determined in the field.

It is the City's intention that Artsakh Avenue remain open to vehicular traffic during construction of this project. A minimum of one traffic lane shall be made available to vehicular traffic with access to the Exchange and Market parking garage during construction. One entrance to the Exchange and Market Parking garage shall remain accessible at all times. Traffic shall be controlled by flag men (two flag men minimum) at all times during construction activities. The flag men shall be in communication with each other and with the excavation crew at all times by the use of radios, cell phones, or other suitable communication means. Vehicular traffic shall not be delayed for more than 20 minutes. A safe environment for vehicular traffic shall be maintained at all times during the construction work. This may be implemented through the installation of walls / barriers or other suitable means of protection that separate the excavation work area from the vehicular traffic. During the course of construction, the Contractor will assess the adequacy of these barriers and increase the protection as necessary.

Payment for traffic control shall be included in the unit price bid for "Traffic Control" in the Payment Item Section of these Specifications and no additional compensation will be made therefore.

2.07 DAMAGE AND REPAIR TO EXISTING IMPROVEMENTS AND FACILITIES

The repair or replacement of facilities damaged or removed by the Contractor located inside or outside the construction limits that are to remain as caused by the Contractor's operations, shall be at his/her own expense to the satisfaction of the Engineer.

The repair or replacement of the damaged work with new materials as necessary to restore the damaged areas or surfaces to a condition equal to and matching such conditions existing prior to the damage or start of this Contract shall be to the full satisfaction of the Engineer.

During construction of the proposed improvements extreme care shall be exercised to protect existing public and private improvements such as existing curbs, sidewalks, driveways, walls, fences, planters, valves, lights, drainage structures, posts, signs, mailboxes, landscaping, plant life and vegetation, unless otherwise noted in the plans.

When working in private property, the Contractor shall take due care that no existing improvement is damaged. Any markings left on the existing concrete walk, brick, carport, or any other surface improvements shall be removed to the satisfaction of the Engineer and property owner.

All costs involved in restoration of existing improvements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

A. Manhole and Vault Frame and Cover Adjustment to Grade

The Contractor, within 48 hours from completion of paving, shall dig out manhole frames and covers. In addition, no more than 48 hours shall elapse between the time a manhole or vault frame and cover is dug out from the newly laid asphalt and the time the finished surface of asphalt is placed around the frame that has been adjusted to fit the new finished surface grade.

The use of cast iron raising rings to adjust manhole frames will not be permitted.

The Contractor shall notify other utility owners at least 96 hours prior to any work in the vicinity of said facilities. They will raise their own manhole or vault covers to grade after final paving.

Before paving over the covers, the Contractor shall cover them with either tarpaper or construction paper to facilitate separation of Asphalt concrete from the covers.

In those sections where final street grades are not changed, the contractor shall be responsible for paving up to and matching existing manhole and/or vault grades. This is not considered "manhole adjustment" and no additional compensation will be made therefore.

All costs involved in complying with these requirements shall be included in the unit price bid for "Salvage Existing Manhole Cover and Adjust New Cover to Grade" of these Specifications, and no additional compensation will be made therefore.

2.08 CLEANUP AND DUST CONTROL

Throughout all phases of construction, including suspension of work, and until the final acceptance, the Contractor shall keep the site clean and free from rubbish and debris. The Contractor shall also abate dust nuisance by cleaning, sweeping and sprinkling with water, or other means necessary. The use of water resulting in mud on public street shall not be permitted as a substitute for sweeping or other methods.

At the discretion of the Engineer, the Contractor shall furnish and operate a self-loading motor sweeper with spray nozzles, to maintain streets affected by the Contractor's operation in a condition of cleanliness acceptable to the City at all locations affected by the Contractor's operations. These affected areas include all haul routes to and from the project and all areas of construction or restoration that have not been completed. The Contractor shall not proceed with any further work until the affected areas are cleaned to the satisfaction of the Engineer.

Materials and equipment shall be removed from the site as soon as they are no longer necessary. Before the final inspection, the site shall be cleared of equipment, unused materials, and rubbish, so as to present a satisfactory clean and neat appearance.

Care shall be taken to prevent spillage on haul routes. Any suck spillage shall be removed immediately and the area cleaned.

Failure of the Contractor to comply with the Engineer's cleanup orders may result in an order to suspend work until the condition is corrected. No additional compensation will be allowed as a result of such suspension.

All costs for cleanup and dust control shall be included in the unit price bid for the various related items of work and no additional compensation will be made therefore.

2.09 EARTHWORK

Earthwork shall conform to Section 300 "Earthwork" of the Greenbook, as modified herein:

A. Unclassified Excavation

Unclassified excavation shall include all native excavation within the roadway, and significant excavation in driveways and private property conforms, as shown on the project cross sections. The Contractor shall excavate and remove the earth to subgrade elevations shown on the plans. The work shall include excavation, storage of the material for use as roadway embankment where fill is needed, and/or off-haul of unsuitable or excess material.

The quantity listed in the bid forms is a final pay quantity. No adjustment will be made in the quantity unless there is a change in the scope of work.

B. Unclassified Fill

Unclassified fill shall include the placement and recompaction of native material excavated as Unclassified Excavation, as shown on the project cross sections. The Contractor shall place and compact the earth to subgrade elevations shown on the plans. The work shall include hauling, grading and recompaction of the soil as roadway embankment where fill is needed.

If the Contractor elects to off-haul the Unclassified Excavation and use Crushed Aggregate Base for fill, the equivalent tonnage of Crushed Aggregate Base will be deducted from the certified weight tags delivered to the project, and payment will be made at the unit price for Unclassified Fill.

The quantity listed in the bid forms is a final pay quantity. No adjustment will be made in the quantity unless there is a change in the scope of work.

C. Over-Excavation of Subgrade

If needed, the Contractor shall remove wet or unsuitable subgrade material and replace it with crushed aggregate base, where designated by the Engineer.

Payment for removing wet or unsuitable subgrade material shall be based upon the actual volume of earth removed and disposed of, and paid for at the unit price bid for "Over-Excavation of Subgrade" and no additional compensation will be made therefore.

Payment for the Crushed Aggregate Base used as backfill will be paid for at the unit price bid for "Crushed Aggregate Base", and no additional compensation will be made therefore.

D. Sub-Grade Preparation

Sub-grade preparation shall conform to Section 301-1 of the Greenbook. The roadbed material shall be compacted to a relative compaction of 95% to a depth of 6-inches below the surface of the roadbed, as determined by ASTM D-1557-91.

During the excavation and compaction procedures, the Contractor shall take all necessary steps to insure the protection of all improvements, whether public or private, including utilities and their services, from any damage that could occur due to his/her operations.

Payment for additional excavation and regrading shall be included in the unit price bid for "Excavation (Removal, Off-haul, & Disposal)" in the Payment Item Section of these Specifications and no additional compensation will be made therefor.

See Payment Items Section of these Specifications for payment of these items.

2.10 PAVEMENT REMOVAL

A. Header Cut & Surface Plane

Header Cut shall consist of the removal of existing Asphalt concrete pavement to a length and depth as shown on the plans. Measurement for payment of Pavement Removal (Header Cut) shall be linear feet of tapered X-foot wide header cut.

The permanent resurfacing shall be installed within 72 hours of the header cutting. No street shall be left unpaved over the weekend.

Surface Plane shall consist of the removal of the existing Asphalt Concrete and/or Concrete Pavement to a length and depth as indicated on the construction plans.

The permanent resurfacing shall be installed within 72 hours of the grinding. No street shall be left unpaved over the weekend.

Payment for various Pavement Removals shall be included in the unit price bid for "Pavement Removal, Surface Plane, Thickness as Noted" in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

B. Pavement Removal (Reconstruction)

Pavement Removal (Reconstruction) shall consist of the complete removal of existing Asphalt and/or Concrete pavement for reconstruction. A list of pavement depths based on coring is included on the plans. Measurement for payment of Pavement Removal (Reconstruction) shall be cubic yard, based on the area of removal per the plans and the actual depth of pavement encountered.

Where complete pavement removal is required, the Contractor shall:

1. Provide adequate staging to maintain traffic flow on a paved surface;
2. Provide traffic control plans for approval prior to beginning work clearly showing construction staging and temporary detours, as required;
3. Maintain streets such that no street is left unpaved over the weekend; and,
4. Provide permanent resurfacing within 72 hours of pavement removal, where traffic must travel on an unpaved surface.

The permanent resurfacing shall be installed within 72 hours of the header cutting. No street shall be left unpaved over the weekend.

Payment for pavement removal shall be included in the unit price bid for "Pavement Removal (Reconstruction)" in the Payment Item Section of these Specifications and no additional compensation will be made therefore.

C. Additional Or Reduced Pavement Removal

The various existing pavement thickness shown in the plans are based on available information on file in the office of the City Engineer.

Quantities shown in the bidding form tabulations are based upon the available pavement thickness information. Actual pavement thickness encountered in the project may vary as much as one inch (1") from the thickness stated. If unusually thick pavements are encountered resulting in the average thickness varying more than one inch (1"), an adjustment in the volume of removals shall be made for extra compensation. The Contractor shall be paid for the additional pavement removal at the unit price bid for "Pavement Removal and Grading", and no additional compensation will be made therefore.

Where the existing pavement thickness is less than that shown on the plans resulting in reduced quantities for pavement removal, but additional excavation is required to make sub-grade, then the Contractor shall be paid for the additional excavation of sub-grade at the unit price bid for "Over Excavation of Sub-Grade", and a corresponding reduction will be made to the quantity for pavement removal and credit will be given to the City calculated at the unit price bid for "Pavement Removal and Grading", and no additional compensation will be made therefore.

2.11 CRUSHED MISCELLANEOUS BASE

Crushed Miscellaneous Base shall conform to Section 200 "Rock Materials" of the Greenbook. Crushed Miscellaneous Base shall be used for leveling and making grade in the roadway area as necessary, and for backfill of over-excavated areas.

At locations where Asphalt concrete pavements, curbs, gutters, cross-gutters, driveway aprons, and sidewalks are to be reconstructed, there may be instances where the proposed finish grades are higher than the existing. In these cases and as directed by the Engineer, the Contractor shall use crushed aggregate base to make grade.

Crushed Miscellaneous Base will be measured based on the tonnage shown on vehicle certified weight tags. Weight tags from a certified scale shall be provided to the inspector on a daily basis.

Payment for making grade in the roadway using crushed miscellaneous base shall be based on the quantity placed at the unit price bid per Ton for "Crushed Miscellaneous Base" in the Payment Items Section of these Specifications and no additional compensation will be made therefore.

2.12 ROADWAY PAVEMENT

Asphalt Concrete shall be in accordance with Section 203 "Bitumous Materials" and Section 302 "Roadway Surfacing" of the Greenbook.

Recycled Asphalt Concrete Hot Mix (RAC) or Reclaimed Asphalt Pavement (RAP) as defined in section 203-7 of the Greenbook shall not be allowed for use in Asphalt Rubber Hot Mix (ARHM), but is acceptable in non-rubberized asphalt concrete mixes.

The Contractor's attention is directed to Sections 302-5.5 "Distribution and Spreading" and 302-5.6.2 "Density and Smoothness" of the Standard Specifications. The provisions of said Section shall be strictly adhered to.

Fully automatic screeds will be required on this project. A fully automatic screed shall have a sled, 30-feet in length, on the side of the machine that will receive the next lift of asphalt concrete material. A joint maker, ski, etc., placed on the side of the machine to ride on the existing or previously constructed surface or lift of asphalt concrete material may be required as directed by the Engineer.

Asphalt concrete shall be of the type shown on the plans unless modified by the Engineer in the field.

Asphalt concrete patching needed and installed due to form work or other construction operations are not included in this quantity and the cost of such work should be included in the various related items of work requiring the patch.

All costs involved in meeting the above requirements shall be included in the unit prices bid for, Asphalt Concrete Pavement (Base Course, Thickness as Noted), Asphalt Concrete Pavement Surface Course (Thickness as Noted), and Asphalt Concrete Pavement (Leveling Course, Thickness As Noted)" in the Payment Items Section (Items 37-39) of these Specifications and no additional compensation will be made therefore.

2.13 ASPHALT RUBBER HOT MIX (ARHM) PAVEMENT

Asphalt Rubber Hot Mix shall be in accordance with Section 302-9 "Asphalt Rubber Hot Mix (ARHM) of the Greenbook.

The Contractor shall submit to the Engineer for approval, the type of Asphalt Rubber and the corresponding design mix to be used for this project. The Contractor shall only use the "Wet Process" in the manufacture of rubberized asphalt in accordance with Section 203-11 of the GREENBOOK.

The completed asphalt rubber resurfacing shall be thoroughly compacted to be free from humps, depressions or irregularities. Any ridges, indentations or other objectionable marks left on the surface of the asphalt rubber shall be eliminated by roller or other means.

The longitudinal and transverse joints shall be constructed to have a uniform finished surface throughout. The joints shall be constructed straight, neat, smooth, tight and seamless, irregular joints will not be accepted. Any finished surface with rugged appearance will be rejected.

The Contractor shall provide the equipment for a hand held viscometer test per Section 203-11.4.1 for use by an independent testing company hired by the City.

A certificate of compliance for Asphalt Rubber binder shall be required from the materials supplier.

2.13.1 ROCK DUST BLOTTER

Where traffic will have access to rubberized asphalt concrete prior to complete cooling, a rock dust blotter shall be placed as directed by the Engineer to avoid tracking per Section 302-9.6 of the Greenbook. Rock dust blotter shall be uniformly applied using a mechanical spreader at a rate of two pounds minimum and four pounds maximum per square yard.

The cost of Rock Dust Blotter shall be included in the unit price bid for "Asphalt Rubber Hot Mix Pavement" (ARHM) of these Specifications, and no additional compensation will be made therefore.

2.14 TEMPORARY ASPHALT CONCRETE PAVEMENT

The Engineer shall determine the exact locations where temporary resurfacing will be needed. Immediately prior to permanent resurfacing, the Contractor shall remove, haul away and properly dispose of the temporary Asphalt concrete pavement separately to an approved dumping site accepting temporary asphalt concrete pavement. The Contractor shall not mix temporary asphalt concrete with permanent asphalt concrete, Portland cement concrete, earth or other materials that are to be removed from the site.

At the end of each day's paving, all vertical transverse construction joints shall be filled with cold mix asphalt concrete for a minimum horizontal distance, in direction of traffic, of 5 feet to provide a smooth transition for vehicular traffic. This transition shall be properly and continuously maintained until the final asphalt concrete course is placed.

All costs involved in complying with the above requirements shall be included in the unit price bid for various related items of work no additional compensation will be made therefore.

2.15 PORTLAND CEMENT CONCRETE FLATWORK

This section shall cover all curbs, curb and gutters, sidewalks, curb ramps, driveways, driveway aprons, apronwalks, cross-gutters and other surface concrete flatwork, and shall conform to Section 303 "Concrete and Masonry Construction" of the Greenbook.

A. Curb Size

The Contractor shall construct the new curb to match the adjoining existing curb, which may vary in size and shape on the various streets throughout the project.

B. P.C.C. Pavement Joints

All new P.C.C. pavement (sidewalks, driveways, cross gutters, bus pads, etc.) shall have weakened plane joints or score lines that match existing adjacent patterns. At locations where there are no existing sidewalks, the weakened plane joints or score lines shall be constructed at regular intervals of 5 feet. For sidewalk repair installations less than 25-feet length, the longitudinal and transverse score lines shall match the adjacent walk scoring pattern.

In Historic Districts on Royal Boulevard, Ard Eevin Avenue and Cottage Grove, the scoring pattern and finish shall match the existing pavement scoring and finishes in all cases. Typically, the existing scoring is a 2.5' x 2.5' grid.

C. Epoxy

As directed by the Engineer in the field and at all locations where new Portland Cement Concrete pavement will be abutting directly against existing concrete structures, an epoxy (Sikadur 32, Hi-Mod or equal) shall be applied to the existing concrete mating surface prior to pouring of concrete. Product instructions on applying epoxy shall be followed strictly for effective application.

D. Rotary Finish

In addition to concrete specified in the Greenbook and SPPWC, a rotary finish is required for all driveway aprons, alley aprons, and alley pavement; and gutters, cross gutters and sidewalks with over 5% grade. The gutters and cross gutters shall receive a "shiner" along the flow line.

E. Concrete Grinding and/or Shaving and Horizontal Sawcutting

Where the existing sidewalk is uplifted by tree roots 0.5-inch and more and 1.5-inch and less, if determined to be feasible by the Engineer the edge of the sidewalk shall be grinded, shaved, or saw cut to eliminate tripping hazards.

Grinding, shaving, or sawcutting shall be Maximum of 8.33%, and have a smooth transition from edge to edge.

All costs for complying with the above requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

Payment for construction of the P.C.C. flatwork shall be based on the quantity placed at the related unit price bid for the specific bid items listed in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

2.16 DETECTABLE WARNING SURFACES FOR CURB RAMPS

Detectable Warning Surfaces (raised truncated domes) shall be installed at new and existing ramps as shown on the plans. Detectable Warning Surfaces (DWS) shall comply with the Standard Plans for Public Works Construction, Caltrans Standard Plans, and Federal Americans with Disabilities Act requirements. DWS shall be black for residential streets (Federal Color No. 17038) and yellow for collector and arterial streets (Federal Color No. 33538).

Manufacturers shall have a minimum of two years of experience in the manufacture and supply of DWS, and shall provide a written 5 year warranty for the product. The warranty shall include a certification of the contractor completing the installation. The contractor shall provide a written 2 year warranty for the DWS installation.

The contractor shall submit manufacturer's product data, product samples, material test reports, installation instructions, and maintenance instructions. All materials shall be provided from the same manufacturer, or be approved in writing by the manufacturer.

The City of Glendale has approved the following DWS for use within the City. The contractor may submit other manufacturers for review and possible approval.

1. Armor-Tile (Embedded, Embedded-Replaceable and Surface-Mounted)
2. Armorcast (Embedded and Surface-Mounted)
3. Traffic Works
4. Access Tile

A. Existing Curb Ramps

DWS for existing curb ramp installations shall be a flexible polyurethane mat with a maximum surface thickness of 0.12-inches (exclusive of the truncated domes). Installation shall be per manufacturer's recommendations with a combination of adhesive and concrete screws. Existing concrete shall be thoroughly cleaned prior to installation. After installation, the perimeter shall be sealed or caulked per manufacturer recommendation. All adhesive shall be cleaned and trimmed, such that no adhesive is visible more than 1/4" from the DWS. The DWS shall be covered with plywood until the adhesive has fully cured.

B. New Curb Ramps (installed as part of project)

DWS for new curb ramp installations shall be an epoxy polymer composition with flanges or ribs that embed into the concrete ramp a minimum of 2 inches. After installation, the DWS shall be free of any concrete splatter or other construction markings.

C. General Requirements

The DWS shall have the following qualities:

Water Absorption	ASTM – D570	< 0.35%
Impact Resistant	ASTM – 5420	
Slip Resistant		
Stain & Chemical Resistant		
Protected Against UV Deterioration		

All costs involved in meeting the above requirements shall be included in the unit prices bid for “Construct Detectable Warning Surface (New Curb Ramp)” and “Construct Detectable Warning Surface (Existing Curb Ramp)” in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

2.17 TEMPORARY ADA ACCESS RAMPS

Where directed by the Engineer, the Contractor shall install temporary curb ramps constructed of temporary Asphalt concrete to provide continuous sidewalk/parkway ADA access. The temporary ramps shall be constructed with a maximum slope of 8.33% on the main ramp and on the “X”s. After construction is completed in the area where the ramps have been installed, or when directed by the Engineer, the Contractor shall remove the temporary curb ramp, haul away and dispose of the temporary Asphalt concrete in a manner acceptable to the Engineer.

The costs involved in the construction, maintenance and removal of the temporary curb ramps and for the haul away and disposal of the temporary Asphalt concrete to a dump site accepting such materials shall be included in the **various related items of work** and no additional compensation will be made therefore.

2.18 TRENCHING

A. Trench Resurfacing – Permanent Asphalt and Portland Cement Concrete

Permanent trench resurfacing shall be placed upon completing two (2) blocks of pipe laying, unless otherwise approved by the Engineer.

All permanent trench resurfacing shall be in accordance with City of Glendale Standard Plan No. 25-153, “Trench Resurfacing.” The permanent pavement thickness shall be the same thickness as the existing pavement, but not less than 4”.

Where a section(s) of concrete pavement is removed to accommodate construction, restoration shall be to match existing conditions and shall start from a joint or score line and shall end in a joint or score line with a minimum replacement of 5-feet. All score lines shall be saw-cut prior to removal.

The completed asphalt concrete resurfacing shall be thoroughly compacted to be free from humps, depressions or irregularities. Any ridges, indentations or other objectionable marks left on the surface of the asphalt concrete shall be eliminated by roller or other means.

The longitudinal and transverse joints shall be constructed to have a uniform finished surface throughout. The joints shall be constructed straight, tight and seamless. Irregular joints will not be accepted. Any finished surface with a rugged appearance will be rejected.

All traffic striping and pavement markings obscured, damaged, or removed during construction shall be permanently replaced in kind within 48 hours after final paving.

All costs for Trench Resurfacing shall be included in the unit price bid for the various related conduits and trenching activities, and no additional compensation will be made therefore.

B. Trench Backfill

Trench backfill shall comply with Section 306 "Underground Conduit Construction" of the Greenbook, except as modified herein.

Trenches in arterial streets shall be backfilled with a 1-sack cement slurry mixture. Trenches on residential streets may be backfilled with native material or crushed miscellaneous base to the relative compaction specified.

All costs for trench backfill shall be included in the unit price bid for the various related items of work and no additional compensation will be made therefore.

C. Protective Fencing for Open Trench Excavation

The Contractor shall install temporary protective fencing for open trench excavation where necessary for pedestrian and vehicular safety.

All costs for temporary protective fencing shall be included in the unit price bid for the various related items of work and no additional compensation will be made therefore.

D. Bracing of Excavations

The manner of bracing excavations shall conform to the Construction Safety Order of the Division of Industrial Safety. The Contractor is required to obtain a permit from the Office of the Division of Industrial Safety:

417 N. Azusa Avenue
West Covina, CA 91791
Telephone: (626) 966-1166

The Contractor shall submit to the Engineer, for approval, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of trenches. If such plan varies from the shoring system standards established by the Construction Safety Orders, the plan shall be prepared by a registered Civil or Structural Engineer.

The Contractor shall submit such plans prior to the beginning of excavation requiring shoring, and the Engineer shall have one (1) week to review said plans.

No excavation requiring shoring shall begin prior to the review and acceptance of said plans by the Engineer.

Trench shoring design should comply with the latest State of California Construction Safety Orders. Shoring up to 15 feet in depth should be designed for a K_w value of 35 pcf and shoring over 15 feet and up to 25 feet in

depth should utilize 43 pcf. Solid shoring or other type of shoring capable of retaining loose material will be required, if necessary.

All costs involved in meeting the above requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

E. Removal of Temporary Striping and Restoration Of Permanent Striping From Trenching

The Contractor shall remove all the temporary traffic striping within 48 hours of the placement of permanent trench resurfacing. The striping shall be removed by sandblasting, grinding or other methods approved by the Engineer.

All costs for removal of temporary traffic striping shall be included in the unit price bid for the various related items of work and no additional compensation will be made therefore.

F. Reconstruction of Concrete Curb and Pavements

Where sections of curb, gutter, sidewalk or driveway are removed during the reconstruction of sewer mains or house connection laterals, restoration shall start from a joint or score line with a minimum replacement of five (5) feet. Score lines shall be sawcut prior to removal.

All costs for restoration of existing concrete improvements shall be included in the unit price bid for the construction of sewer mains requiring such removals, and no additional compensation will be made therefore.

2.19 CONCRETE STRUCTURES

Construction of storm drain catch basins, manholes, junction structures, concrete collars, headwalls, storm water separator, and utility support/protection blanket shall conform to Section 303, "Concrete and Masonry Construction" of the Greenbook.

Utility support/protection blankets shall be constructed to support and protect existing utilities in place per SPPWC Plan No. 224-2, at locations directed by the Engineer. Payment for Utility Support/Protection Blanket" will only be made if the item is constructed. The Contractor is responsible for normal support and protection of existing utilities.

All costs involved in meeting the above requirements shall be included in the unit price bid for "Construct Headwall (Inlet)" and "Construct Concrete Collar", and no additional compensation will be made therefore.

2.20 STREET LIGHT RELOCATION

Street Light Relocations shall conform the requirements of Section 307 "Street Lighting and Traffic Signals" of the Greenbook.

The Contractor shall remove the existing base as part of the project. The contractor is responsible for rewiring the run as necessary.

As part of the relocation, the contractor is responsible for constructing all necessary underground facilities, including conduits, pull boxes and foundations. A Street Light Pull Box shall be provided adjacent to each relocated street light. At the Contractor's option, underground conduit may be Rigid Galvanized Conduit (RGC) or Polyvinyl Chloride (PVC) pipe. PVC requires the pipe zone be backfilled with 3-sack slurry concrete. RGC requires no encasement.

Payment for relocating the street lights shall be included in the unit price bid for "Relocate Existing Street Light" in the Payment Items Section of these Specifications, including providing temporary lighting to ensure full lighting coverage during the relocation of existing street light standards, and no additional compensation will be made therefore. For additional requirement, refer to Special Condition Section 5.04 Existing City's Utilities/Facilities, Paragraph 3 "Street Lighting Facilities".

2.21 RESTORATION OF PLANTED AREAS

All unpaved areas graded or disturbed during construction shall be planted with sod where possible or ground cover to match the existing plant life bordering said areas. The Contractor shall cover these areas with mulch and maintain them for 90 days. The planting shall be protected from damage due to the erosion or trespass by providing proper safeguards to prevent such damage.

Planted areas adjacent to the proposed work which are disturbed by the Contractor, shall be planted with seed or ground cover to match the existing. Areas shall be covered with mulch or grass, where appropriate, watered and maintained for 15 days to the satisfaction of the Engineer.

Payment for the above work, including grading, planting, sodding, and maintenance, shall be included in the unit price bid for the various related items of work and no additional compensation will be made therefore.

2.22 EXISTING IRRIGATION AND ELECTRICAL FACILITIES IN PUBLIC LANDSCAPED AREAS

The Contractor shall insure that electrical outlets have power at all tree well locations along Artsakh Avenue. Before the project receives Final Inspection Approval, a representative from Facility Services and Parks, shall verify that all electrical outlets are working and shall notify the project administrator in writing as such.

The Contractor is required to notify Community Services & Parks at (818) 548-3736, 72 hours prior to commencing demolition of existing planters and or disrupting existing electrical and water service for planters or median strips along Artsakh Avenue. This will allow Parks to notify its landscape contractor Mariposa and also to take appropriate measures to mark existing irrigation lines and irrigation wiring in these areas.

The Contractor shall immediately notify Parks Services Manager-Contracts concerning any damage to existing irrigation lines. Irrigation lines servicing the planters shall be capped and the contractor shall leave the capped lines exposed until Parks can inspect and certify. Each capped line must have a metal tracer to allow for the line to be detected for possible future use.

The Contractor shall preserve irrigation service to all existing tree wells. A representative from Parks shall inspect all tree wells and verify that all tree well irrigation is working prior to Final Inspection Approval. Any damage to tree well irrigation shall be immediately reported to Parks. Irrigation repairs must be left exposed until Parks can inspect and verify that the work is satisfactory.

The Contractor is responsible for any and all damage to medians, irrigation wiring, trees and landscape along Artsakh Avenue. Any damage to turf, shrubs, flowers, trees resulting from disruption of electrical or water service or from debris, storage, dumping, etc. shall be repaired to the satisfaction of Parks, Recreations and Community Services.

All costs involved in complying with the above requirements shall be included in the unit prices bid for the various related items of work, and no additional compensation will be made therefore.

2.23 TREE ROOT REMOVAL

The Contractor's attention is directed to the fact that at various locations, the construction of concrete curb and gutter, Portland cement concrete and Asphalt concrete pavements may require prior removal of tree roots that have initially damaged the existing pavements and curbs, or will potentially damage new pavements and curbs.

A. Root Pruning

1. When pruning out selective roots, great care shall be given to retain as much root surface as possible, including sufficient buttress root dispersal around the radius of the tree.
2. No more than one-third (1/3) of the tree's total root system shall be removed.
3. No root shall be cut back any closer than 18" from the base of a trunk, or 12" from where a trunk flare breaks soil surface.
4. All root cutting must be done consistent with professional arboriculture standards, specifically the ANSI A300 Root Management Standard. When roots less than 2" in diameter must be pruned, clean cuts taken back to the nearest node shall be made with no crushing or tearing of the remaining root. No root shall be cut back closer than 18" from the base of the trunk, or 12" from where the trunk flare breaks soil surface. Soil shall be backfilled immediately following roots exposure to minimize drying of the roots.
5. Offending roots shall be cut back four (4) inches away from new hardscape to the nearest node.
6. Pruning cuts shall be made clean and smooth with no crushing or tearing of the remaining root. Should a root 2" or larger in diameter be inadvertently damaged while performing the work, surrounding soil shall be hand excavated and the root pruned back clean at the nearest undamaged portion.

B. Root Shaving

1. Root shaving is the removal of a small portion of a nonessential buttress root or general root with a diameter of four (4) inches or greater.
2. Roots will be shaved down to allow for at least two (2) inches of clearance between the root and the new hardscape.
3. No more than one-third (1/3) of a root's diameter shall be shaved off.
4. Shaving cuts shall be made clean and smooth with no crushing or tearing of the remaining root.

Soil shall be backfilled immediately following pruning or shaving activity to minimize drying of the roots.

Prior to pruning and/or shaving of tree roots, the Contractor must contact the City's Urban Forester at (818) 548-3950.

Root removal and shaving is considered a part of the sub-grade preparation and shall be included in the unit price bid for various related work of these Specifications and no additional compensation will be made therefore.

2.24 TREE PLANTING

The Contractor shall provide minimum 24-inch box trees of the species designated on the plans. The trees shall be planted in the parkway/sidewalk area as shown on the plans.

A. Nursery Stock Standards

The Contractor shall make every effort to insure that they plant only vigorous, healthy trees which can easily be trained into an attractive natural form, with strong roots and good crown development. The specifications for acceptable nursery stock shall be as follows:

1. All trees shall be true to type or botanical name as ordered or as shown on the planting plans.
2. All trees should be of a size equivalent to that of a twenty four-inch (24") box sized containerized tree with a trunk caliper of one and one half inches (1-½"), or greater, measured at six inches (6") above soil grade.
3. All trees shall have a single, fairly straight trunk with a good taper and good branch distribution vertically, laterally and radially.
4. All trees shall be healthy, have a form typical for the species or cultivar, be well rooted, and shall be properly trained.
5. The root ball of all trees shall be moist throughout and the crown shall show no sign of moisture stress.
6. All trees shall comply with Federal and State laws requiring inspection for plant diseases and pest infestations.
7. No tree shall be accepted that has been topped, headed back, pollarded or lion-tailed.
8. No tree shall be accepted that has co-dominant stems or excessive weak branch attachments that cannot be trained out without jeopardizing the natural form of the species.
9. No tree shall be accepted that is root bound, shows evidence of girdling or kinking of the root system, or has "knees" (roots) protruding above the soil.

The City Forestry staff shall reserve the right to refuse any nursery stock that does not meet these standards. Contractor is required to call Urban Forestry Division at (818) 548-3950 at least 48 hours in advance for inspection of tree stock delivered to site. Forestry staff may require the Contractor who has planted un-inspected sub-standard trees, on City property or within City right-of-ways, to have these trees removed and replaced at the Contractor's own expense.

B. Transplanting

1. Refer to Section 13 Planting Specifications.

C. Planting Material Standards

Unless otherwise approved by the City's Urban Forester, all City trees shall be planted using materials that meet the following criteria:

1. Tree Stakes – Shall be two (2) sturdy, ten foot (10') long lodge pole pine stakes. Stakes will be placed on the outer edge of the root ball on either side of the tree, parallel to the curb or walkway or perpendicular to prevailing winds.
2. Staking Ties – Shall be sixteen (16") to eighteen (18") inch rubber cinch ties to be fastened to each stake with galvanized roofing nails. Ties shall be pulled around the tree's trunk in a manner that supports the top-heaviness of the canopy, but shall be loose enough to allow for free movement of the tree in the wind.
3. Trunk Guards – An approved trunk guard shall be placed around the base of the trunk just above the soil grade. A trunk guard is a device used to deter mechanical damage, as a result of wounds inflicted on a tree's trunk by such devices as weed whips and lawnmowers.
4. Decomposed Granite – All decomposed granite shall be of a medium grade to allow ample water infiltration, while still providing a tight compacted surface. The contractor shall submit a sample of the material to be used for approval prior to ordering the material.
5. Shredded Bark/Wood Chip Mulch – All mulch shall be of a medium to fine grade, and shall be clean and free of rocks and debris.

D. Tree Planting Specifications

Most nursery tree stock in California is sold in a containerized form. The following guidelines are specific for containerized stock. If utilizing bare root or balled and burlapped trees, refer to the appropriate International Society of Arboriculture (ISA) guidelines for planting instructions:

1. All trees shall be planted immediately after the planting container has been removed. Containers shall not be cut or otherwise damaged prior to delivery of trees to the planting area.
2. The planting hole is one of the most important factors in establishing a healthy tree. Measure the width and depth of the root ball prior to digging. The diameter of the planting hole shall be dug at least two (2) times wider than that of the root ball. The depth of the planting hole shall be dug slightly shallower than the depth of the root ball to allow for the top two (2") inches of the root crown to remain above the finished grade.
3. Before placing the tree into the planting hole, tamp down the base of the hole to allow the tree to stand straight and to avoid the potential of the tree settling below the finish grade. Scarify or scrape the sides of the planting hole to break down any glazing or compaction that may have occurred as a result of digging.
4. Position the tree in the hole so that the tree stands upright and the top of the root crown is slightly exposed above the grade. Then, backfill the planting hole with clean, native soil no higher than halfway up the root ball. Slightly tamp the soil to remove air pockets, but be sure not to compact the soil too much. Complete the backfilling to the finish grade. Once again, tamp the soil slightly to remove air pockets.
5. Form a watering basin out of backfill material, approximately six inches (6") high. The basin shall be installed four inches (4") outside of and around the edge of the planting hole. Remove all nursery stakes, ties and ribbons from the tree, and install the planting materials as specified above.
6. A three (3") to four (4") inch layer of City-approved decomposed granite shall be placed within the planting basin (tree well) of the tree. The decomposed granite shall be compacted and shall slope from $\frac{1}{4}$ " below the top of sidewalk to the top of the root ball at the base of the trunk. A horizontal space of three (3") inches shall be left between the tree's stem and the decomposed granite to allow airflow and to restrict moisture from remaining static around the base of the trunk.
7. A three (3") to four (4") inch layer of City-approved wood chip mulch shall be placed within the planting basin of the tree. A space of three (3") inches shall be left between the tree's stem and the mulch layer to allow airflow and to restrict moisture from remaining static around the base of the trunk. The contractor shall submit a sample of the material to be used for approval prior to ordering the material.

E. Root Barriers

The specifications for the installation of root barriers shall be as follows:

1. Root barriers shall only be required in cases where parkway width is five feet or less, and at the discretion of the Urban Forester.
2. Barriers shall be installed in sheets directly against and parallel to new landscape with the top of the barrier kept no more than $\frac{1}{2}$ inch over the finish grade.
3. Adjacent to the sidewalks and curbs, barriers shall be installed at a depth of no greater than 18 inches and 24 inches respectively.
4. Barriers shall be installed at a slight angle (approximately 70-75 degrees) with the base of the barrier tilted underneath the hardscape and away of the tree.

All costs involved in the furnishing and installation of a root control barrier including meeting the above requirements shall be included in the unit price bid for "Root Control Barrier", and no additional compensation will be made therefore.

F. Maintenance and Care

After planting the trees, the Contractor shall immediately and continuously maintain the trees to promote their optimum growth. Maintenance of the trees shall include, but not be limited to any method or procedure including the application of pesticides, soils conditioners and nutrients necessary to promote the establishment of the trees and their root systems.

The Contractor shall also be responsible for the proper watering of the trees and for keeping the area around the tree free and clean from weeds and debris. All new trees shall be given an initial deep watering. The Contractor shall water all new trees every ten (10) days or less, as needed to keep the root zone moist within the construction maintenance period.

G. Acceptance and Guarantee

When all trees are planted, complete in place, the Contractor shall notify the City's Urban Forester in the Maintenance Services Division at (818) 548-3950 for the purpose of setting a date for the initial acceptance inspection. Trees not conforming to the conditions and stipulations set forth in these Special Provisions at the time of the initial acceptance inspection shall be immediately removed by the Contractor from the project site and acceptable replacements planted in their place.

With the acceptance of the trees in place by the City's Forestry staff representative, a ninety (90) day maintenance period will begin. The Contractor shall continue to be responsible and warranty the trees as to their growth, health and establishment and shall continue to ensure that the tree wells are kept free of debris and weeds, that the stakes support the tree, and that the tree remains watered of the new trees every ten (10) days or less throughout the ninety (90) day maintenance period.

Trees showing signs of failing growth, deteriorating in health or not establishing themselves, including trees incurring injury or damage so as to render them unsuitable for the purpose intended shall be immediately replaced in kind and size at the Contractor's expense and a new ninety- (90) day maintenance period will begin for the replaced trees from the date of their replacement with all the conditions and stipulations previously set forth herein in effect for each tree replaced.

At the end of the ninety (90) day period of guarantee and with each subsequent end of replacement tree period of guarantee, the Contractor shall notify and request from the City, a final acceptance of the tree planting portion of the project.

Upon receiving final acceptance of the trees by the City's Urban Forester, the Contractor shall be relieved of his responsibilities to maintain or water. The trees shall then become the responsibility of the City for maintenance and care.

Trees shall fall under the one-year project warranty. The contractor shall replace all dead, dying, or failing trees within the one year warranty to the satisfaction of the City.

H. Payment

Payment for tree planting shall be included in the unit prices bid for related bid items of these Specifications and no additional compensation will be made therefore.

I. Tree Protection Standards – Construction Management

Construction damage associated with new development taking place around existing trees can be detrimental to those trees in a number of ways. The following policy shall establish construction specifications to preserve and protect existing or native trees located on a site that is planned for development.

General Site Evaluation. The Urban Forester will specify on the appropriate measures to take regarding existing trees on the project site. The Urban Forester will work with the Planning Division to identify which trees will need to be removed and how those removals will be mitigated, and which trees shall need to be preserved and how those trees will be protected. The Urban Forester shall also examine site access and traffic route considerations, excavation limitations, appropriate locations for the piling of soil and debris, and the storage of equipment and vehicles as each of these activities pertain to trees on the project site.

Protective Fencing. Temporary, protective fencing shall be installed around any existing tree that is to be preserved on a project site. This fencing must be made of a material that has high visibility, such as fluorescent-colored, and must be posted at regular intervals around the tree. This fencing shall be placed at a minimum distance of fifteen (15) feet from the trunk of the tree or five (5) feet outside the dripline of the tree whichever distance is greater or to the limit of the parkway area. No activity shall take place within this fenced in area.

Irrigation. Providing supplemental irrigation for trees under water stress may be the single most important treatment. Irrigation should be designed to wet the soil within the dripline to the depth of the root zone and to replace that water once it is depleted. Light, frequent irrigation should be avoided. Create a six-inch berm around trees at the edge of the dripline and fill with no more than six inches of mulch. Fill the basin with water. Irrigation should wet the top two to three feet of soil to replicate similar volumes and normal seasonal distribution.

Construction Mulching. If the Urban Forester determines that traffic encroachment within the dripline of a preserved tree is unavoidable, then a six (6) to twelve (12) inch layer of temporary mulch shall be placed over the affected area to disperse the weight of traffic and equipment. Additional weight dispersal and mobility may require the placement of large plywood sheets over the mulched area. Construction mulching and plywood must be removed carefully using hand tools, so as not to damage the tree, as soon as the required activity within the dripline of the tree has been completed.

Excavation Requirements. Whenever possible, services such as water lines and utilities shall be routed around the dripline of trees that are being preserved on a site. If the Urban Forester determines that excavation within the dripline of a preserved tree is unavoidable, then every effort shall be made to tunnel under or through the tree's root system with a minimal amount of pruning, rather than to trench across the tree's roots.

All root pruning shall be in accordance with the Maintenance Guidelines established for such activity in this management plan.

Grade Changes. A change of grade around a tree, even well outside of a tree's root zone, can have serious impact on the tree due to reduced aeration or poor drainage.

The Urban Forester shall recommend that development specifications include requirements for mitigating such impacts to trees that are to be preserved on a project site based upon the type of grade changes that are to be implemented, tree species, drainage patterns, soil conditions and future irrigation and maintenance plans.

The Urban Forester shall employ the following mitigation measures whenever feasible:

Raised Grades. If a grade around an existing tree is to be raised with a backfill less than 6 inches in depth, then the Urban Forester should consider vertical mulching as a mitigation measure. If a grade around an existing

tree is to be raised more than 6 inches, than the Urban Forester should consider specifying the construction of a tree well as a mitigation measure.

Lowered Grades. If a grade around an existing tree is to be lowered along the side of its root zone, then the Urban Forester should consider specifying the construction of a terraced dry wall as a mitigation measure. If a grade around an existing tree is to be lowered along all sides of its root zone, then the Urban Forester should consider specifying the construction of a tree island as a mitigation measure.

2.25 **CONSTRUCTION SURVEY**

A. General

The Contractor shall provide construction survey for all the streets shown in Section 2.2 (LOCATIONS OF WORK) of these Special Conditions and including any street(s) which may be added to the contract, including office research of notes, plats or other necessary documents; marking removal limits; grade staking; tying and relocating utilities. All work shall be done to the satisfaction of the Engineer.

The City of Glendale will provide copies of notes for all existing survey control points within the project limits. Prior to start of construction, the Contractor Shall provide for the perpetuation of all existing monumentation within the project limits. The Contractor shall notify the City of Glendale, in advance, in the event that any monumentation or witnesses to the monumentation should fall within any removal areas. **The Contractor shall be liable for a back charge in an amount up to \$2,000.00 per point obliterated or destroyed without notice or authorization from the City of Glendale.**

The Contractor shall provide, at the time of the pre-construction meeting, a tentative schedule of operations to allow the Contractor's Surveyor sufficient time to set temporary construction control.

Any questionable grade, elevation, location or element of design shown on the plans shall be brought to the immediate attention of the Engineer in writing for clarification prior to construction.

The City reserves the right to verify all staking and monumentation for horizontal and vertical accuracy. The allowable error shall not exceed 0.01 feet vertically or horizontally. Any staking found to exceed allowable error shall be reset at the sole expense of the Contractor and no additional compensation will be made therefore. In cases where the Contractor is unable to place a monument, such as conflicts with underground utilities, the Contractor shall notify the Engineer for review, confirmation, and approval of the omission.

All work described in this Section shall be done by or under the direction of a Professional Land Surveyor or a Registered Civil Engineer authorized to practice Land Surveying in the State of California herein referred to as "Surveyor".

B. Staking

The Contractor's Surveyor shall have all the necessary tools, materials, personnel available at the job site for setting blue, yellow and red top hubs at the time that they are set, and shall adequately reference all such stakes by setting hubs three (3) inches below subsurface.

The Surveyor shall have the option of establishing line and grade either by setting stakes to finished grade, marking the cuts and fills on the pavement, or referring to stakes, spikes, drill holes, chisel cuts, etc., on a grade sheet. Normally, stakes will be set and stationed by the Surveyor for rough grade, curbs, headers, sewers, storm drains, and structures and a corresponding cut or fill to finished grade (or flow line) indicated

on a grade sheet. If the Surveyor elects to set stakes to the finished grade, the top of these stakes will be colored with blue crayon or paint. All elevations will be established with a Surveyor's level or Theodolite.

For street improvements, the Surveyor will establish rough grade elevations at 50-foot intervals along the street. After completion of the rough grading, he/she will establish elevations for curb or pavement headers. An elevation for pavement will be established at all points indicated by elevations shown on the plans. Elevations will be established at 25-foot intervals on the centerline and at all grade changes. For resurfacing over existing pavement or constructing 2 or 3 course bituminous pavement, the Surveyor will paint data on the surface of the existing pavement and/or base course and each lift to indicate the fill to finished grade at such locations and intervals as to provide adequate control for laying the wearing surface course to finished grade.

Flow line elevations will be established by the Surveyor at all changes in grade and at 25-foot intervals when the grade is greater than 0.50% and at 10-foot intervals for grades of 0.50% or less. For flow lines adjacent to curbs on grades 1.0% or over, when the curb is new and has a uniform curb face, flow line elevations will not be set on existing curbs, the grade of which may be irregular, grade points will be set at all changes in grade and at 25-foot intervals. Sufficient flow line elevations will be set to facilitate the construction of warped pavement sections or for special drainage conditions.

For integral curb and gutter, blue tops for the flow line will not be set but curb elevations shall be established at all changes in grade and at 25-foot intervals when the grade is more than 0.50% and at 10-foot intervals when the grade is 0.50% or less. In the case of integral curb and gutter with a varying curb face, grade sheets will show cuts and fills to the top of the curb or to the flow line and indicate the required curb face.

Distances and measurements, except elevations and structural dimensions, are given and made on horizontal planes.

Copies of all grade sheets, cut sheets and notes shall be provided to the ENGINEER the day after survey work is performed.

C. Payment

All costs involved in meeting the above requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

**The following works are exempted and will be paid by the appropriate bid pay items:
Perpetuation and reestablishment of survey markers such as Centerline Ties, Property Corners,
Survey Well Monuments, etc.**

2.39 Selective Structure Demolition

- A. Refer to Section 14 Selective Structure Demolition.

2.40 Cast-In-Place Concrete

- A. Refer to Section 15 Cast-in-Place Concrete.

2.41 AESS Framing

- A. Refer to Section 16 AESS Framing.

2.42 Decorative Metal

- B. Refer to Section 17 Decorative Metal.

2.43 Exterior Finish Carpentry

- A. Refer to Section 18 Exterior Finish Carpentry.

2.44 Exterior Paints and Coatings

- A. Refer to Section 19 Exterior Paints and Coatings.

2.45 High-Performance Coatings

- B. Refer to Section 20 High Performance Coatings

2.46 Site Furnishings

- A. Refer to Section 21 Site Furnishings.

2.47 Textile Canopy System

- A. Refer to Section 24 Textile Canopy System.

2.48 Exterior Lighting

- A. Refer to Section 23 Exterior Lighting.

2.49 Unit Paving

- A. Refer to Section 24 Unit Paving.

2.50 Playground Protective Surfacing

- A. Refer to Section 25 Playground Protective Surfacing.

SECTION 3 - CHANGES IN WORK

3.01 ADDITION OR DELETION OF WORK

The City may change the Plans, Specifications, character of the work, or quantity of work as indicated in the contract documents, provided the total arithmetic dollar value of all such changed, both additive and deductive, does not exceed 25 percent of the Contract Price. Should it become necessary to exceed this limitation, the change shall be agreed upon to proceed with the Change Order.

In the event work is added or deleted to the Contract, basis of payment for such addition or deletion shall be per the Contract Unit Price as indicated in the Bidding Form. All amounts shall be considered as representing the total in-place costs to include but not limited to costs for construction survey, signage and barricading, notification to adjacent businesses and residents, equipment, clean-up and protection of adjacent facilities, labor, material, overhead taxes, insurance, bonds, profit and other incidental and appurtenant work necessary for the complete improvement as shown or indicated in the plans and specifications.

SECTION 4 - CONTROL OF MATERIALS

4.01 CONSTRUCTION LIMITS AND UNAUTHORIZED REMOVALS

The exact limits of removals for construction or reconstruction of Asphalt concrete pavements, Portland cement concrete gutters, driveway aprons, curbs and sidewalks will be marked in the field by the Contractor's Surveyor in accordance with the project plans and approved by the Engineer prior to the start of saw cut and/or removal operations by the Contractor. Should the Surveyor encounter any questionable removals in the field, he/she will confer with the Engineer in the field to verify the actual limits of removal.

The actual limits of paving of each street and cross street will be marked in the field by the Contractor's Surveyor and approved by the Engineer. Should the Surveyor encounter any questionable paving limits in the field, he/she will confer with the Engineer in the field to verify the actual limits of street paving.

The Contractor shall perform his/her saw cutting operations in conformity with NPDES requirements (General Condition, Section 2.16 Water Pollution Control) and Section XI, Subsection C of the City of Glendale, Public Works Division's Excavation Permit Policy, which states, "Pavement saw cuts shall not extend beyond the boundaries for that section of pavement that is to be removed. Over cutting of pavement removals will not be accepted." Should the Contractor over cut Portland Cement Concrete pavements, and curb, then he/she shall extend the removal to the next score line or expansion joints to include that portion of the cut Portland Cement Concrete pavement or curb.

The costs involved in replacing the additional concrete pavements or curb shall be at the Contractor's sole expense.

If the Contractor over cuts Asphalt Concrete pavement, then the Engineer shall determine the new limits of removal to include the areas where the Contractor has over cut. The additional costs for pavement removal, sub-grade preparation and grading shall be at the Contractor's sole expense. The Engineer shall calculate the additional Asphalt Concrete pavement tonnage that would be incurred by the additional removal area and the amount shall be deducted from the certified weight tickets submitted to him/her during the paving operations. Any unauthorized removals (improvements or other items not designated for removal) resulting from Contractor's and/or his/her Surveyor's operations shall be replaced at the Contractor's sole expense.

SECTION 5 - UTILITIES

5.01 EXISTING SUBSTRUCTURES

The Contractor is advised that the following substructures may exist at various locations within the immediate vicinity of the project limits:

<u>Structure Type</u>	<u>Owner</u>	<u>Contact No. or Person for Exact Location</u>
Sprinkler System	Adjacent Property Owner	Resident
Traffic Signal Facilities	City of Glendale Public Works Department	(818) 548-3960
Sewer and Storm Drain Facilities	City of Glendale Public Works Department	(818) 548-3945
Storm Drain Facilities	Los Angeles County Public Works Department	(626) 458-3129
Water lines, valves, meters, manholes	Glendale Water & Power Department Water Services Division	(818) 548-2062
Water lines, valves, meters, manholes	Crescenta Valley Water District	(818) 248-3925
Water lines, valves, meters, manholes	Metropolitan Water District of Southern California	(213) 217-7726 (818) 832-2110
Electric conduits, pullboxes, vents	Glendale Water & Power Department Electrical Services Division	(818) 548-3923
Street lights, conduits, pullboxes	Glendale Water & Power Department Electrical Services Division	(818) 548-3921
Gas service lines meters and valves	Southern California Gas Company	(818) 701-3316 (323) 881-3530
Telephone conduits, and manholes	AT&T	(800) 422-4133
Cable TV Conduits	Charter Communications	(818) 547-5013
City Owned Irrigation Systems	Community Services & Parks	(818) 548-3734

It shall be the responsibility of the Contractor to determine the exact location of all substructures including their service connections prior to commencing work. The Contractor shall repair at his/her sole expense, any damage to any existing substructure caused by his/her operations. At the Owner's option, said repair may be made by the Owner, and the actual cost thereof shall be paid by the Contractor.

5.02 UTILITY LOCATIONS

The Contractor shall determine the location and depth of all utilities, including service connections, which have been marked by the respective owners and which may affect or be affected by his/her operations. The Contractor shall perform this work in a timely manner to allow the respective owners sufficient time to relocate the interfering utilities.

The Contractor shall also note that field markings made by various utilities using Underground Service Alert (USA) shall be considered as identified utilities even when they are not shown on the plans.

Two (2) working days after the conclusion of the Contractor's work at each site/location all remaining field markings related to the project made by various utilities using USA shall be removed by the Contractor as directed by the Engineer.

Full compensation for locating utilities and removal of markings shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

5.03 LOCATION AND PROTECTION OF UNDERGROUND HAZARDOUS UTILITIES

The Contractor is hereby notified that, as specified in these Special Conditions, there are underground utilities within the construction area, which may be potentially hazardous if damaged. A hazardous substance shall be defined as one having the potential for an immediate disaster, such as, but not limited to gasoline, high-voltage electricity, fuel oil, butane, propane, high-pressure natural gas, chlorine or other chemicals.

Abandoned or inoperative utilities designed to carry hazardous substances and unidentified or unknown utilities shall be considered hazardous until determined otherwise. Whenever the Contractor is directed by the Engineer to tap those lines, the Contractor shall provide personnel specialized in this work and payment thereof will be made under the Extra Work provisions of these specifications. During all excavation operations, the Contractor will be required to exercise extreme caution and protect these utilities from damage.

At least 48 hours prior to any excavation in the proximity of those lines, the Contractor shall notify the Owners of these utilities to accurately determine the horizontal locations and depths of their potentially hazardous lines as follows, , prior to Contractor completing the potholing.

1. The Contractor shall not trench or excavate within the area where a utility known to carry a hazardous substance exists until its Owner is present and its location have been determined the Owner. The intervals between pot holes or location points shall be sufficient to determine the exact location of the line and shall not exceed the distance set forth as follows:
 - a. Excavation for highway or street construction:
The utility shall be located at intervals not greater than 25 feet for lines up to 8 inches in diameter, 50 feet for lines of 8 inches to 24 inches in diameter and 100 feet for lines greater than 24 inches in diameter.
 - b. Clearance:
If it is determined that the horizontal or vertical clearance between the utility known to carry hazardous substances and the construction limit is less than 12 inches (18 inches if scarifying), the Contractor shall confer with its Owner. Unless the Owner elects to relocate the line or take it out of service, the Contractor shall not excavate until the line has been completely exposed by its Owner within the limits of construction.

2. Once the physical location of the utility known to carry hazardous substances has been determined, the Contractor, in cooperation with and with the concurrence of the utility Owner, shall determine how to protect and/or support the utility from damage before proceeding with this work. The Owner of the utility has the right to support and/or protect its utility at the sole expense of the utility Owner.
3. The Contractor shall notify the contracting agency, the public agency maintaining records for that jurisdiction and the Owner, if known, whenever previously unidentified or unknown underground utilities are encountered so that the location can be accurately established and made a part of the permanent sub-structure records.

Full compensation for complying with any or all of the above requirements shall be considered as included in the price bid for various related items of work, and no additional compensation will be made therefore.

5.04 EXISTING CITY'S UTILITIES/FACILITIES

The Contractor shall uncover existing utilities facilities (pull boxes, conduits, fire hydrants, water meters and valves) in conflict with the proposed improvements and notify the following agencies 48 hours prior to start of construction of various items for their locations.

1.	Water facilities	Glendale Water & Power (GWP)	(818) 548-2062
2.	Electrical facility	GWP	(818) 548-3921
3.	Fiber Optic	GWP	(818) 548-3923
4.	Street Lighting	GWP	(818) 548-4877
5.	Traffic signal facilities – Traffic Section		(818) 548-3945

The Contractor will be responsible for protecting and maintaining in place the existing conduits. Care should be taken during removal operations to determine the exact location and depth of the conduit.

Any damage caused by the Contractor must be reported immediately such that repairs to water facilities can be made by their respective owner.

Repairs to traffic signal facilities shall be done only by a licensed Traffic Signal Contractor licensed to do work in the City of Glendale. All costs for the repairs shall be borne by the Contractor and at no cost to the City.

Relocation of water or traffic signal facilities interfering with the proposed work shall be done by the Glendale Water & Power Department, Engineering Division at no cost to the Contractor unless otherwise shown on the plans.

A. Existing Electric Facilities

1. Power Poles

A minimum of five feet of undisturbed soil shall be maintained around each power pole. Excavation in the vicinity of any power pole shall be adequately and properly shored to prevent the power pole from being undermined.

All overhead facilities must maintain proper clearance as per California State GO-95 (California Public Utilities Commission-General Code 95)

2. Electrical Vaults

These are the minimum requirements to lower the vault lids to grade:

2.1 **Poured-in-place Electrical Vaults:**

1. Expose the vault lid
2. Remove the vault lid (Note: Presence of a GWP safety crew is required with 48-hour in advance notice from this point on)
3. Grind the necking down to the desired elevation
4. Reset the vault lid and adjust it to the finished grade using shims
5. Form the inside opening
6. Form the outside and grout with 3-sack mix concrete (using of concrete vibrator is required)
7. GWP will remove the inside forms once the concrete is cured

Note: It shall be the contractor's responsibility to furnish and replace any damaged vault lid since GWP does have them in stock.

2.2 **Precast Electrical Vaults:**

1. Expose the vault lid
2. Remove the vault lid (Note: Presence of a GWP safety crew is required with 48-hour in advance notice from this point on)
3. Remove one of the extension rings
4. Reset the vault lid and adjust it to the finished grade using shims
5. Form the inside opening by plywood
6. Form the outside and grout with 3-sack mix concrete (using of concrete vibrator is required)
7. GWP will remove the inside forms once the concrete is cured

These are the minimum requirements to raise the vault lids to grade:

1. Expose the vault lid
2. Raise the vault lid using shims to the finished grade from inside (Note: Presence of a GWP safety crew is required with 48-hour in advance notice)
3. Form the inside opening by plywood
4. Form the outside and grout with 3-sack mix concrete
5. GWP will remove the inside forms once the concrete is cured

Payment for adjustments of electrical vaults lids to finished grade shall be included in the unit prices bid for "related bid items of these Specifications and no additional compensation will be made therefore.

A release agent must be used to separate asphalt from existing vault lids. All existing vault lids locations must be marked. Full compensation for complying with any or all of the above requirements shall be considered as included in the price bid for various related items of work, and no additional compensation will be made therefore.

3. **Street Lighting Facilities**

The Contractor shall comply with the "Street Light Clearance Procedures" included in General Conditions Exhibits of these specifications.

The Contractor will be responsible for protecting and maintaining in place the existing street lighting conduits. Care should be taken during removal operations to determine the exact location and depth of the conduit.

The Contractor is cautioned that some of the street light systems are high-voltage. Please contact Glendale Water and Power, Street Light Section at (818) 548-4877 at least 48 hours prior to the start of construction.

The City of Glendale Street Light Maintenance Crew does not work every other Friday. It is the Contractor's responsibility to determine the dates and pay for the overtime costs (four hour minimum) for the crew, if the Contractor elects to work on the crew's non-working Friday.

All costs involved in complying with these requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

B. Existing Water Facilities

1. Water Valves

1. Immediately after pavement removal or pavement grinding is performed, and prior to any street paving work being done, the Contractor shall measure and record the locations of all water valve box covers, water MH covers, and water vaults located with the paving zone.
2. In addition, the Contractor shall furnish, install and affix temporary locator markers to the center of each of the water valve box covers, water MH covers, and water vaults noted in Item 1, above. This is required to help ensure that valves will not be paved over and can be located for adjustment to grade.
3. The Contractor shall notify the Glendale Water & Power Department, Water Services Division and/or Crescenta Valley Water District in writing three (3) days prior to paving operations so that water staff can visit the site and verify that all water covers have been properly marked-out by the Contractor.
4. Adjust Covers to Grade – After the paving work has been completed, the Contractor shall raise all valve box covers, manholes and vaults to the finished grade of the paved street. Payment for adjusting covers to grade shall be included in the unit prices bid for related bid itemse” of these Specifications and no additional compensation will be made therefore.
5. Replacing Water Valve Boxes and Covers in Concrete – Whenever concrete removal and replacement affects existing water valve boxes and covers, or whenever a new water valve box is installed in concrete pavement, water valve box and cover shall be Tyler Union 6855 Series Cast Iron Two-Piece Valve box (Box 664-A with 5 ¼” Drop Lid) or approved equal. Payment for replacing water valve boxes and covers in concrete pavement shall be included in the unit prices bid for the various P.C.C. concrete bid item prices and/or “Furnish and Install New Water Valve Box and Cover” of these Specifications and no additional compensation will be made therefore.
6. Replacing Water Valve Boxes and Covers in Planting – Whenever concrete removal and replacement affects existing water valve boxes and covers, or whenever a new water valve box is installed in concrete pavement, water valve box and cover shall be Tyler Union 6855 Series Cast Iron Two-Piece Valve box (Box 664-A with 5 ¼” Drop Lid) or approved equal. Payment for replacing water valve boxes and covers in concrete pavement shall be included in the unit prices bid for the various P.C.C. concrete bid item prices and/or “Furnish and Install New Water Valve Box and Cover” of these Specifications and no additional compensation will be made therefore.
7. Painting Water Valve Box Covers – All new and existing water valve box covers shall be painted as specified here, whether or not the valve box cover is already painted.

- A. Distribution Valves-Blue
- B. Transmission Valves-White
- C. Fire hydrants Valves-Yellow
- D. Fire line Valves-Red
- E. Recycled Water Main Valves-Purple

8. **Valve Markers** – The Contractor shall furnish and install round water valve markers on the curb adjacent to all valve cover locations. The markers shall be affixed with a proper adhesive manufactured for this purpose, and shall be approved by the City prior to installation. All costs involved in furnishing and installing valve markers, including painting shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.
9. Within three (3) days after the work described in Items 4, 5, and 6 above have been completed, the Contractor shall notify the Glendale Water & Power Department, Water Services Division and/or Crescent Valley Water District in writing so that water staff can verify and approve the work done by the Contractor.

2. Reflective Fire Hydrant Markers

The Contractor shall provide and install two (2) blue reflective pavement markers at each fire hydrant, whether an existing marker was obliterated or not. One marker shall be placed on the top of curb, and one marker shall be placed three feet (3') toward the fire hydrant from the centerline or the median curb.

Within three (3) days after the work described in Item have been completed, the Contractor shall notify the Glendale Water & Power Department, Water Services Division and/or Crescent Valley Water District in writing so that water staff can verify and approve the work done by the Contractor.

3. Pipeline Support and Protection

The Contractor shall provide temporary and permanent supports for water mains in accordance with City of Glendale Water and Power Department, Water Division Drawing No. 1668-A and SPPWC Standard Plan No. 224-2 and 225-2.

Eighteen (18) inches of earth fill over the water pipe shall be placed prior to application of tamping equipment.

Impact, free fall, or stomping equipment will not be permitted for backfill compaction within three (3) feet of the top of water mains.

Water mains outside of the contract pay lines and lying parallel to sanitary sewer construction shall not be exposed or disturbed during construction; special precautions shall be taken by the Contractor to avoid undermining or settling of water facilities.

Contractor shall support water main, horizontally and vertically, where water main and sanitary sewer main are in close proximity during excavation of new sewer line in case of soil failure and sloughing.

Full compensation for complying with any or all of the above requirements shall be considered as included in the unit price bid for various related items of work and no additional compensation will be made except as otherwise specified above.

SECTION 6 - PROSECUTION, PROGRESS, AND ACCEPTANCE OF WORK

6.01 CONTRACTOR'S SCHEDULE OF OPERATIONS

The Contractor shall submit to the Engineer, prior to commencement of construction, a schedule of operations, indicating the estimated time and the method of operation required for the completion of the various portions and phases of the project. The schedule is to assure completion within the time specified. The schedule must incorporate any traffic requirements and must be in a form acceptable to the Engineer.

In addition, the following construction constraints shall be observed by the Contractor and shall be taken into consideration when preparing the schedule of operations:

1. The construction shall be limited to **ONLY** one side of the street at a time. No work shall be started on the opposite side until all work on the other side is completed. Work covered under this condition includes all underground and concrete works. Planting, landscaping and paving operations are not included in this phasing of work. All Portland Cement Concrete work shall be completed on both sides of the street before any reconstruction or resurfacing of the street can commence.
2. The construction of curbs, gutters, sidewalks, and driveway aprons shall be done on **ONLY** one side of the street at a time. Local access to all residential properties and businesses shall be provided adequately at all times. All concrete work shall be completed on both sides of the street before any reconstruction or resurfacing on the street can commence.
3. The Contractor shall replace all removed Portland cement concrete improvements and asphalt concrete pavements within 24 hours after removal.
4. Closure of streets for resurfacing of existing asphalt concrete pavement shall be limited to street sections that can be performed and completed in one workday such that local access to business can be provided during normal business hours of each day. The limits of street closure are to be submitted to the Engineer for approval two weeks prior to start of work. Street closure during paving operations shall be limited between 10:00 P.M. and 6:00 A.M. in any given day except as noted below or as approved by the Engineer in writing. All required postings and signage shall be done in accordance with these specifications.
5. A minimum of one traffic lane shall be made available to vehicular traffic with access to the Exchange and Marketplace parking garage during construction. Vehicular traffic shall not be delayed for more than 20 minutes. One entrance on Artsakh Avenue to the Exchange and Marketplace Parking garage shall always remain accessible with all work that impacts egress and entrance to the following driveways shall be limited to working hours as indicated:
 - Exchange Parking Northern Driveway: 2:00 A.M to 6:00 A.M
 - Exchange Parking Southern Driveway: 12:00 A.M to 6:00 A.M
 - Marketplace Parking Northern Driveway: 12:00 A.M to 6:00 A.M
 - Marketplace Parking Southern Driveway: 12:00 A.M to 6:00 A.M
6. All work that impacts the egress and entrance to the alley driveway between 106 and 110 Artsakh Avenue shall be limited between 12:00 A.M and 6:00 A.M. in any given day. All required postings and signage shall be done in accordance with these specifications.
7. Resurfacing of the streets shall be scheduled as a continuous operation within the limits of the project.
8. The working hours for all non - street roadway work on Artsakh Avenue shall be limited between 7:00 A.M. and 3:30 P.M. daily.

9. A minimum of five feet (5'-0") wide walking path shall remain open for access to local business during working hours and shall be protected and separated by temporary construction fencing throughout the duration of this project.

10. Several streets which are part of this project are minor or major arterial. To minimize the impact to the public, the Contractor shall prepare a Six (6) phase schedule

Phase 1:

Underground Infrastructure Improvements (Electrical and Fiber Optic Conduits, Storm Drains, Irrigation Lines, Fire Service Lateral)

Phase 2:

Sidewalk Improvements (Substructure Foundations, Brick/Granite/Concrete Pavement, Curbs, Gutters, ADA Ramps, Landscaping Hardscapes)

Phase 3:

Street Improvements (Brick/Granite/Asphalt Pavement, Utility Adjustments)

Phase 4:

Traffic Signal Modifications and Installation of Traffic Striping and Signing

Phase 5:

Site Furnishing and Landscape Improvements (Furniture, Playground Surface, Painted Graphic, Trees and Plants, Lighting, Parking Garage Improvements, etc.)

Phase 6:

Public Artwork and Sculpture Installations

Road operations for Phases 1-5 shall be completed before November 13, 2025.

*Moratorium for all Work operations for ALL Phases between November 13, 2025 to January 11, 2026.

The contractor shall ensure continuous public access to the businesses, streets, sidewalks, and parking garages during moratorium period. The Contractor shall not be allowed to commence the next phase of the schedule unless the current phase is completed.

In preparing his/her bid, the Contractor shall take into account all scheduling and financial impacts of phasing the work. All costs involved in complying with any or all of the above requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

6.02 NOTIFICATION OF ADJACENT PROPERTIES

Prior to the partial or complete closure of any street or alley, the Contractor shall give advance written notice not less than seven (7) working days to residential properties and not less than 14 working days to business or commercial properties being impacted by such closure. In addition, prior to the partial or complete closing of any driveway, the Contractor shall give a written notice not less than 72 hours to residential properties and 96 hours to business properties being impacted by such driveway closure. The notices shall first be approved by the Engineer and shall specify the date(s) of closure and the approximate number of days the driveways will be closed. A separate written notice shall be issued to the property owners affected by the tree removal in front of their property.

If after notification, a change in the schedule of the Contractor occurs resulting in changes to the dates of closures for the street, alley or driveway, the Contractor shall be required to re-notify all the properties affected in accordance with the instructions and time requirements stated in the preceding paragraph.

The notice shall specify the date and nature of the proposed work fronting the property and the approximate number of days required to complete the work. The Contractor shall submit to the Engineer the notices for approval three (3) weeks prior to delivery. The Contractor shall provide the Engineer with a list of persons contacted in person and the dates and times contact was actually made prior to start of work.

The Contractor's failure to comply with the above provisions will result in the immediate stoppage of work and temporary shutdown of the project without the benefit of time extension. The Contractor shall be allowed to resume his/her operations only after such notifications have been approved.

All costs involved in complying with the above requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

6.03 2-WEEK DOOR HANGER NOTIFICATION

Prior to the partial or complete closure of any sidewalk, driveway, street, parking or driving lane, or alley, the Contractor must print and distribute 2-week door hangers to every residence and/or business of at least one block in all directions from the limits of the construction.

Door hangers shall be distributed to all residential, commercial and business establishments of the street(s) where work is being performed and one block each way from the immediate area of construction not less than fourteen (14) days in advance of the construction activity.

The notice shall specify the date and nature of the proposed work fronting the property and the approximate number of days required to complete the work. The Contractor shall submit to the Engineer the notices along with a list of addresses that the door hangers to be delivered to, and the date of the notification, including the proposed construction date(s), as written on the door hanger, one week prior to the distribution of the door hangers.

Door hangers shall be printed onto card stock paper. A sample door hanger is shown in Appendix A of these Specifications. A separate written notice shall be issued to the property owners affected by the tree removal in front of their property.

If after notification, a change in the schedule of the Contractor occurs resulting in changes to the dates of closures for the street, alley or driveway, the Contractor shall be required to re-notify all the properties affected in accordance with the instructions and time requirements stated in the preceding paragraph.

The Contractor's failure to comply with the above provisions will result in the immediate stoppage of work and temporary shutdown of the project without the benefit of time extension. The Contractor shall be allowed to resume his/her operations only after such notifications have been approved.

All costs involved in complying with the above requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

6.04 3-DAY DOOR HANGER NOTIFICATION

The Contractor must print and distribute 3-day door hangers to every residence and/or business of at least one block in all directions from the limits of construction not less than three (3) working days prior to start of any construction.

The notices shall first be approved by the Engineer and shall specify the date(s) of closure and the approximate number of days the construction work will last.

The Contractor shall submit to the Engineer the notices along with a list of addresses that the door hangers to be delivered to, and the date of the notification, including the proposed construction date(s), as written on the door hanger, one week prior to the distribution of the door hangers.

Door hangers shall be printed onto a card stock paper. A sample door hanger is shown in Appendix A of these Specifications.

If after notification, a change in the schedule of the Contractor occurs resulting in changes to the dates of closures for the street, alley, driveway, the Contractor shall be required to re-notify all the properties affected in accordance with the instructions and time requirements stated in the preceding paragraphs.

The Contractor's failure to comply with the above provisions will result in the immediate stoppage of work and temporary shutdown of the project without the benefit of extension of time. The Contractor shall be allowed to resume his operations only after such notifications have been approved.

All costs involved in meeting the above requirements shall be included in the unit prices bid for the various related

6.05 NOTIFICATION PRIOR TO CONSTRUCTION

The Contractor must notify the following City Divisions and utility companies three (3) working days prior to start of construction, and two (2) working days prior to all inspection services.

A. Public Works Department

Engineering Division -

- | | |
|---|----------------|
| 1. Sarkis Oganesyanyan, City Engineer | (818) 548-3945 |
| 2. Huang Zheng, Project Manager | (818) 548-3945 |
| 3. Tahmasb Arasteh, Construction Inspection | (818) 548-3945 |
| 4. Yvonne Guerra, Administrative Analyst | (818) 548-3945 |

Traffic Section – Pastor Casanova (818) 548-3945

1. Modification of existing traffic signal facilities.
2. Installation of new traffic signal facilities.
3. Installation of new traffic striping.
4. Temporary traffic control during construction.
5. Posting of Temporary "No Parking" signs.

Integrated Waste Management – Dan Hardgrove (818) 548-3950

1. Trash pick-up routes – Six (6) days written notification prior to start of construction.

Maintenance Services Division – Dan Hardgrove (818) 548-3950

1. Notify five (5) days prior to start of construction.

B. Glendale Water and Power Department

Water Services Division (818) 548-2062

1. Relocation of water meters, fire hydrants, water service connections, etc.
2. Inspection of water mains exposed in trenches.
3. Adjustment of water valve covers and water vault manholes.

Electric Services Division (818) 548-3921

1. Relocation of electric and fiber optic facilities.
2. Installation of street lighting systems.
3. Inspection of existing electric duct in trenches.

- C. Parks, Recreation and Community Services Department
Koko Panossian, (818) 548-3871, 72 hours (3 days) prior to start of construction within the vicinity of their facilities.
- D. Glendale Police Department
Traffic Bureau - (818) 548-3130
Patrol Operations - (818) 548-4890
- E. Glendale Fire Department
Communications Center - (818) 956-4800
- F. A.T. & T. / SBC
Cable Locating Service – Roger Zorn, (626) 356-7327
(800) 422-4133 (USA) Cable Locating Service
- G. Southern California Gas Company
Local Distribution Center - (213) 881-3531
Distribution Section (High Pressure) – Mike Reed (818) 701-4546
Valve Adjustment Dispatch – (800) 427-2200
Emergency – (800) 433-5071
- H. Southern California Gas Company
North Basin Transmission Division - (818) 701-4546
Two (2) working days before start of construction
- I. Underground Service Alert - (800) 422-4133 or Encino Office (818) 788-1552
(Gas Company personnel must be present during construction in the vicinity of their facilities)
- J. Metropolitan Transportation Authority
Fran Louis - Stops and Zones Representative (323) 922-6726
Special Event Dispatcher – (213) 922-4632
48 hours before the start of construction
- K. Charter Communication - Jim Reick (818) 847-5013
- L. Crescenta Valley Water District - David Gould (818) 248-3925
- M. Metropolitan Water District of Southern California (MWD)
David Porter, Operations Division, (818) 360-6810, 72 hours prior to the start of construction
- N. MCI Worldcom – Local One Call System
Marco Gonzalez, (972) 656-6016
- O. Dial-A-Ride - (818) 247-0691, 48 hours prior to the start of construction
- P. U. S. Postal Service – Glendale Main Office
Lisa Ball or Eileen Manus, (818) 265-9261

All costs involved in meeting the above requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

6.06 MISCELLANEOUS REQUIREMENTS

A. Trash Collection

The Contractor must organize and/or schedule his/her work in such manner that trash collection on scheduled pick-up days may be performed without hindrance. Information regarding refuse pick-up days may be obtained by calling (818) 548-3916. The Contractor shall provide written notification to the Glendale Sanitation Section at least six (6) days in advance of starting any work on any given street.

B. Department of Community Development and Housing Requirements

1. To minimize any temporary construction impacts on the neighborhood, the Contractor shall ensure that parking for construction workers is confined to within the project site unless other arrangements have been made and approved by the Engineer to accommodate the project-generated additional parking.
2. The Contractor is required to maintain fencing, barricades, signs, restrooms and construction equipment at the construction site free of graffiti at all times.
3. Upon completion of work in any specific street or location, the Contractor shall remove any survey, site or reference markings that have been painted or inked into any curb, street, sidewalk or any other permanent feature on site.
5. During construction, the Contractor shall maintain landscaping, sidewalks and parkways in and around the project site in a clean and proper manner. If pedestrian or vehicular access is obstructed, alternate paths of travel shall be provided, maintained and identified.

All costs involved in complying with any one or all of the above requirements shall be included in the unit prices bid for the various related items of work, and no additional compensation will be made therefore.

6.07 FIRE DEPARTMENT REQUIREMENTS

The Contractor shall provide a continuous clear access to the existing fire hydrants along the construction route with a minimum 20-foot space required for fire apparatus hook-up at hydrants.

The Glendale Fire Department shall be given priority access to any given structures at any time.

The Contractor shall notify the Glendale Fire Department Communications Center at (818) 956-4800, of his/her construction location, on a daily basis.

6.08 PROJECT SIGNAGE REQUIREMENTS

The Contractor must provide three (3) - 4' x 4' project signs as shown in Appendix A of these Specifications. The signs shall be installed at the beginning, middle, and end of each project location at least one (1) week prior to the start of construction. Each sign shall contain the summarized project name, the approximate month and year when construction will be in progress, other wordings required by the Engineer, and the colored Public Works logo (provided by the City). The sign shall be fastened to a 4" x 4" x 12' S4S wooden post using at least two (2) lag bolts

with washers and shall be installed not be less than seven (7) feet above the ground. The lag bolts shall have a minimum diameter of 3/8". The exact location of the project sign shall be determined by the Engineer. The project signs may be installed on other types of platforms, upon approval of the Engineer.

The project sign shall be approved by the Engineer as to form, content and letter size prior to fabrication.

It shall be the Contractor's responsibility to maintain and to keep the project signs legible and free of graffiti. After the project is completed, the Contractor shall remove and dispose of all project construction signs.

Changeable Message Signs (CMS) will be required for this project. Seven (7) CMS shall be installed along the project location and side streets, at least three (3) weeks in advance of construction start.

Location of the CMS in the City of Glendale:

1. On E. Wilson Ave, north and south of Artsakh Ave
2. On E Broadway, north and south of Artsakh Ave
3. On Harvard St., north and south of Artsakh Ave
4. On Maryland Ave, North of Wilson Ave

The CMS board shall have the 3 changeable message screens/display/phases, minimum 3 lines per screen, each line minimum 10 characters/letters to program.

All cost involved in fabrication, maintenance and meeting the above requirements shall be included in the unit prices bid for various items of work, and no additional compensation will be made therefore.

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

7.01 TRAFFIC CONTROL AND BARRICADING

All work relating to Traffic Control and Barricading shall conform to the latest edition of the California Manual on Uniform Traffic Control Devices (MUTCD) or Work Area Traffic Control Handbook (WATCH), whichever requirements are more stringent, including the following additional requirements:

A. Traffic Control Plans

Seven (7) copies of a construction area traffic control plan and/or seven (7) copies of a channelization plan for construction or storing of materials in the public right-of-way, prepared by, or under the supervision of a Traffic Engineer licensed in the State of California, shall be submitted by the Contractor to the Engineering Division for review and approval three (3) weeks prior to the commencement of any work. The Engineering Division shall be notified on a daily basis of the locations and times for the use of public right-of-way.

B. Installation of "Temporary No Parking" Sign Guidelines

- a. The Contractor shall be given a sample copy of the "Temporary No Parking" sign. It is the Contractor's responsibility to duplicate or reproduce the necessary amount of signs needed to complete the construction of the project. The printed signs shall be approved by the City of Glendale, Engineering Division, 633 E. Broadway, Room 205. Unauthorized duplication or use of the signs is prohibited.
- b. All "Temporary No Parking" signs must be clearly marked in Black or Blue ink or marker (1/4" min. thickness) and must match with the information received upon verification by the Police Department.
- c. Spacing for the "Temporary No Parking" signs shall be approximately thirty five (35) feet apart. In areas with parking meters, each applicable meter post shall have a separate sign. These signs shall be attached to the parking meter pole only. Posting signs on the meter heads is not permitted.
- d. The "Temporary No Parking" signs shall be affixed to poles, posts street light standards, trees delineators, or barricades. These signs shall be placed at a height that allows the driver of a standard size automobile to clearly observe the signs. **Only plastic band, string, rope or other type of fastener shall be used.** The use of nails, tape, glue, and other adhesive is prohibited on City of Glendale property. The "Temporary No Parking" signs must be posted so that the sign is flat and legible.
- e. In areas where there are no poles, light standards or trees, "Temporary No Parking" signs shall be displayed by securing the signs on barricades or delineators to be provided by the Applicant/Contractor installing the signs. Signs must be placed 3' from the curb or roadway.
- f. All posting of "Temporary No Parking" signs shall be completed **30 hours prior to the start time indicated on the "Temporary No Parking"**. Upon completion of the posting of the signs, the Applicant/Contractor MUST notify the Glendale Police Traffic Bureau at (818) 548-3130 in order to verify correct posting of the signs. Police verification shall occur Monday through Friday 8:00 am to 4:00 pm. No Police verification is available on Saturdays, Sundays or City holidays.

- g. Police enforcement of the "Temporary No Parking" signs shall occur 24 hours after the approval of the posted signs by the Glendale Police Traffic Bureau.
- h. "Temporary No Parking" signs shall only be valid for a period of seven (7) consecutive days. Additional days will require posting of new signs, verification and approval by the Glendale Police Traffic Bureau.
- i. **At no time shall the "Temporary No Parking" signs be re-used, altered, moved or changed in any manner.** Any changes made to these signs will void all enforcement for the area posted.
- j. Any "Temporary No Parking" sign used for construction purposes shall only be posted for the hours as defined in Section 8.36.080 Glendale Municipal Code. Deviation in work hours must be approved in writing by the Engineer of Public Works prior to posting.
- k. The Applicant/Contractor shall be responsible for assuring that the signs remain posted and are legible. In addition, it is the Applicant/Contractor's responsibility to remove all signs and posting materials immediately after the expiration of the posted time.
- l. "No Parking" signs may not be re-used by eliminating, adding to or altering any of the dates, times, reasons or other information originally entered on the signs.
- m. The City of Glendale reserves the right to require removal or to remove any posted "No Parking" signs without notice.
- n. The Contractor shall be responsible for covering all posted traffic signs relating to the parking restrictions within the immediate vicinity of their operations. After covering of the signs have been completed, the Contractor shall immediately notify the City's Traffic Section at (818) 548-3960 and the Glendale Police Traffic Bureau at (818) 548-3130.

C. Access

The Contractor shall maintain access to all properties/business establishments at all times throughout the duration of the contract. The Contractor is responsible for providing ramps and/or steel plates to maintain access to driveways.

A minimum of one travel lane width shall be ten (10) feet shall be made available to vehicular traffic with access to the Exchange and Market parking garage during construction. Vehicular traffic shall not be delayed for more than 20 minutes. One entrance to the Exchange and Market Parking garage shall remain accessible at all times. See Section 2.20 "Traffic Control" for more information on traffic control and public safety.

Should access to any establishment have to be closed due to construction constraints, the Contractor shall first notify the Engineer one week before closing such access in order to determine whether alternate access or parking is available. When construction activity impacts street parking and/or access, Contractor's plan and limit of work must consider availability of parking nearby to accommodate parking spaces lost due to construction activity, as well as provide reasonable walking distance to residents/businesses.

D. Special Conditions

All work shall conform to CALTRANS "Manual of Traffic Controls for Construction and Maintenance Work Zones, 1990".

1. Where existing centerline delineations are obscured, damaged, removed or reflectivity reduced, or where detours or temporary traffic lanes have been created through the construction zone, the contractor shall place temporary centerline delineation at the end of each working day and shall maintain such delineation until permanent striping is placed.
2. During the construction, no portion of streets within the project area shall be left without proper channelization. Temporary reflectors shall be used to identify lane geometry.
3. The Contractor shall have all proposed hauling routes approved by the Traffic Section prior to the start of construction.

E. Traffic Control Plan Requirements

Within one week of receiving Notice of Award, the contractor shall meet the Traffic Engineering staff to discuss the proposed traffic control plan and construction phasing. This meeting will allow the design engineer to become aware of unusual traffic conditions and concerns in the construction area, as well as available data (such as existing striping plans) that may expedite the design and approval process. Preparing the **construction traffic control plan (CTCP)** without the initial consultation could result in additional submittals for further plan check and delay for approval. CTCP submittal will require a minimum **three weeks** review period for the first and second submittals. The design engineer should plan accordingly.

The CTCP shall include the following items:

1. The CTCP shall be prepared under the supervision of and signed by a registered Professional Civil Engineer or Traffic Engineer licensed to practice in the State of California.
2. The CTCP shall be consistent with the principles and techniques put forth in the latest edition of the Work Area Traffic Control Handbook (WATCH), the Manual of Uniform Traffic Control Devices (MUTCD), and the MUTCD California Department of Transportation (Caltrans) MUTCD Supplement, whichever requirement is more stringent.
3. The CTCP shall be drawn on 24" x 36" size paper, unless permission is given by the Traffic Engineering staff to print on a different paper size.
4. The CTCP shall be drawn in ink. Pencil is not acceptable. Computer Aided Design (AutoCad) drawings are the preferred submittal.
5. General notes, to be provided by Traffic Engineering staff, shall be included on the CTCP. Additional notes may be added to the CTCP to handle special conditions.
6. The CTCP shall be drawn at a scale of 1"=40', unless permission is given by the Traffic Engineering staff to print at a different scale.
7. The CTCP must clearly depict the exact sequence of the basic construction operations, the anticipated duration of each phase. Multiple phases of construction shall require a separate CTCP for each construction phase.

8. The CTCP shall include all existing striping within the project.
9. All traffic signals within the project area shall be identified on the CTCP. Construction-related temporary traffic signal modifications or temporary signal re-timing shall be included in the CTCP.
10. All existing regulatory, warning, and guide signs within the project area shall be shown. Signs to be covered (bagged) shall be identified.
11. A traffic detour signing plan shall be required for all detours.

F. Temporary Changes

All temporary changes to traffic signs, curb markings, striping and pavement markings shall be completed by the Contractor, and returned to their original condition by the Contractor, whether required by the Contractor's Traffic Control Plan, general construction activities, or the City's traffic safety requirements. This shall include, but not be limited to:

1. Traffic signs which are temporarily covered or removed;
2. Curb markings which are changed, added or removed; and
3. Traffic striping and pavement markings which are changed, added or removed.

The striping shall be removed by sandblasting, grinding or other methods approved by the Engineer.

All costs for providing and maintaining traffic control and barricading and complying with all of the above requirements shall be included in the unit prices bid for the various related items of work, and no additional compensation will be made therefore.

7.02 STORAGE OF MATERIALS AND EQUIPMENT

It shall be the Contractor's responsibility to obtain adequate storage sites for his/her materials and equipment. If any of these site(s) are located within the City limits, the Contractor shall so advise the Engineer. All such site(s) shall be maintained to the satisfaction of the Engineer so as to not create a public nuisance during or after their use. The subject site(s) will be the only location for the Contractor's plant and storage of materials and equipment. The use of alternate location(s)/site(s) will require prior approval by the Engineer. The Contractor's operation and use of storage yards shall be consistent with the General Provision Article 1.13 of these Specifications.

All costs involved in complying with these requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

7.03 TEMPORARY WATER METER

The Contractor shall obtain and install a temporary water meter from the Glendale Water & Power Department, Water Services Division, (818) 548-2062, prior to drawing water from a fire hydrant. Drawing of water from a fire hydrant without a temporary water meter is prohibited and the Contractor is subject to Police citation.

All costs involved in complying with these requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

7.04 MAINTENANCE OF EXISTING DRAINAGE

The Contractor shall be responsible for maintenance of all existing street drainage. All costs involved in the maintenance of existing street drainage shall be included in the unit bid for the various related items of work and no additional compensation will be made therefore.

7.05 WORKING IN CONFINED SPACES

The Contractor will be required to follow CAL/OSHA safety work procedures when working in confined spaces in accordance with Title 8, California Administrative Code, General Industry Safety Order Article 108, Section 5156 – Confined Spaces. The Contractor shall provide special equipment such as lifeline harness system, breathing apparatus, gas detection devices, safety training of workers, and record keeping system.

Prior to start of construction, the Contractor shall submit for approval by the Engineer a written confined space safety program.

All costs involved in meeting the above requirements shall be included in the unit prices bid for the various related items of work and no additional compensation will be made therefore.

7.06 COOPERATION AND COLLATERAL WORK

The Contractor is hereby advised that other Contractors may be performing work at these same areas of work. The Contractor shall cooperate and coordinate his activities with these other Contractors.

The Contractor shall be responsible for ascertaining the nature and extent of any simultaneous, collateral, and essential work by others. The City, its workers and contractors and others, shall have the right to operate within or adjacent to the Project during the performance of work.

The Contractor shall coordinate operations and cooperate with the other forces to minimize interference.

The Contractor shall include in its Bid all costs involved as a result of coordinating its work with others. The Contractor shall not be entitled to additional compensation for damages resulting from such simultaneous, collateral and/or essential work. If necessary to avoid or minimize such damage or delay, the Contractor shall redeploy its work force to other parts of the Project.

Should the Contractor be delayed by the City, and such delay could not have been reasonably foreseen or prevented by the Contractor, the Engineer shall determine the extent of the delay, the effect on the Project, and any extension of time.

7.07 CONTRACTOR'S REPRESENTATIVE

Before starting work, the Contractor shall designate in writing, a representative who shall have complete authority to act for it. An alternative representative may also be designated. The representative or alternate shall be present at the Project whenever work is in progress, or whenever actions of the elements necessitate its presence to take measures necessary to protect the Project, persons or property. Any order of communication given to this representative shall be deemed delivered to the Contractor. A joint venture shall designate only one representative and alternate.

The absence of the Contractor's representative to perform these responsibilities is a justifiable cause to stop the work without the benefit of extension of time for the Contractor.

SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

(NOT USED)

SECTION 9 - MEASUREMENT AND PAYMENT

9.01 ITEMS FOR "BIDDING PURPOSES ONLY"

The quantity of items marked with an asterisk (*) shown in the Bidding Schedule Tabulation are for bidding purposes only. The Engineer shall determine the exact locations and quantities, if any, where the above items will be needed. The Contractor shall be paid for actual quantities used, if any, at the unit prices bid if the items were required by the Engineer.

9.02 FINAL PAY ITEMS

Bid Items marked with an "(F)" in the Bid Proposal shall be considered Final Pay quantities, unless the quantity or plans are revised by the Engineer, or the item or any portion of the item is eliminated. If the plans are revised, the quantity will be increased or decreased by the amount calculated by the change. If a Final Pay item is eliminated, the quantity will be eliminated. If a portion of the Final Pay item is eliminated, the Final Pay quantity will be revised in the amount represented by the eliminated portion of the item of work.

The estimated quantity for each item of work designated as "(F)" in the Bid Proposal shall be considered an approximated quantity only, and no guarantee is made that the quantity which can be determined by computations, based on the details and dimensions shown on the plans, will equal the estimated quantity. No allowances will be made in the event that the quantity based on computations does not equal the estimated quantity in the Bid Proposal.

In case of discrepancy between the quantity shown in the Bid Proposal for a final pay item and the quantity or summation of quantities for the same item shown on the plans, payment will be based on the quantity shown in the Bid Proposal.

9.03 PAYMENT BASED ON CERTIFIED WEIGHT TAGS

For the payment purposes, the Contractor shall provide the Engineer with a copy of certified weight tickets (Weighmaster's certificate of Weight and Measure) for the following items:

1. Asphalt Concrete (AC) Pavement, including variable thickness leveling course and Asphalt Concrete (AC) base course
2. Asphalt Rubber Hot Mix (ARHM) Pavement
3. Temporary Asphalt Concrete (AC) Pavement
4. Crushed Aggregate Base (CAB)
5. Crushed Miscellaneous Base (CMB)
6. Emulsion for CIR Asphalt Concrete
7. Cement Additive for CIR Asphalt Concrete

SECTION 10 - TRAFFIC SIGNAL, SIGNING, AND STRIPING

10-1	GENERAL
10-2	TRAFFIC SIGNAL, WATER SERVICE, AND STREET LIGHT CONDUITS
86-1	GENERAL
86-2	MATERIAL AND INSTALLATION
86-3	CONTROLLER ASSEMBLIES
86-4	TRAFFIC SIGNAL FACES AND FITTINGS
86-5	DETECTORS
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86-7	REMOVING/REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT
86-8	PAYMENT FOR LUMP SUM PRICE ITEMS
86-9	BATTERY BACKUP SYSTEM (BBS)
86-10	VIDEO DETECTION SYSTEM/VEHICLE DETECTION SENSORS
86-11	CLOSED CIRCUIT TELEVISION (CCTV) (NOT USED)
86-12	FIBER OPTIC CABLES
86-13	IP VIDEO ENCODER MPEG4 (IPVE) (NOT USED)
86-14	LAYER 2 GIGABIT ETHERNET SWITCH TYPE 2 (GigE) (NOT USED)
86-15	REMOTE COMMUNICATIONS MODULE & SERVER
86-16	17-INCH DIAGONAL RACK MOUNT LCD MONITOR
SECTION 310	STRIPING AND PAVEMENT MARKINGS
SECTION 312	SIGNS

SECTION 10
TRAFFIC SIGNAL, SIGNING & STRIPING

10.1 GENERAL

The text of Section 307 of the Standard Specifications for Public Works Construction is hereby deleted and replaced with the following:

All equipment, materials, and components for traffic signal, and communication systems, and the installation thereof, shall conform to the Caltrans Standard Plans, dated 2015 and Caltrans Standard Specifications, Section *86, "Signals and Lighting," dated January 2010, except as noted in the Special Provisions and on the Plans. Copies of these documents are available from Caltrans, Office of Business Management Material Operation Branch, 1900 Royal Oaks Drive, Sacramento, CA 95815.

Wherein Section 86 reference is made to other sections of the Caltrans Standard Specifications, these sections are hereby included unless otherwise specified.

Wherein Section 86 reference is made to Section 4-1.03D, it shall mean Section 3-3 of the Standard Specifications for Public Works Construction and its supplement and these Special Provisions.

The following special provisions are supplementary and in addition to the provisions of the Caltrans Standard Specifications, and are only called out if elaborations, amendments, specifying of options, or additions are required.

10.2 TRAFFIC SIGNAL, WATER SERVICE, AND STREET LIGHT CONDUITS.

The Contractor shall uncover existing water, street lights and traffic signal facilities (pull boxes, conduits, fire hydrants, water meters and valves) in conflict with the proposed improvements and notify the following agencies 48 hours prior to start of construction of various items for their locations.

- a) Water facilities – Glendale Water and Power Department (818) 548-2062
- b) Traffic signal facilities – Engineering Division (818) 548-3945
- c) Street light facilities – Glendale Water and Power Department, Street Lighting (818) 548-4877

The Contractor shall be responsible for protecting and maintaining in place the existing conduits. Care should be taken during removal operations to determine the exact location and depth of the conduit. Any damage to the conduit done by the Contractor must be reported immediately so that repairs can be made.

All costs for the repairs shall be borne by the Contractor.

86-1 GENERAL

86-1.03 Cost Break-down. The Contractor is required to submit the cost break down for the traffic signal work 7 calendar days after receiving the Notice of Intent to Award.

86-1.04 Equipment List and Drawings. The street lighting and traffic signal equipment list shall be submitted to the Engineer within ten (10) working days after the date of the Notice to Proceed.

Materials lists, manufacturer's data, brochures, technical data, etc., shall be labeled and identified, and shall be submitted in bound booklet form.

The Contractor shall retain one copy of all approved material lists and samples at the job site, readily accessible for inspection by the Engineer. Said materials lists and samples shall be the basis for approval or rejection of work.

86-1.05 Warranties, Guarantees, and Instruction Sheets. The Contractor shall guarantee the entire work constructed by him under this contract and will fully meet all requirements as to quality of workmanship and materials furnished by him. The Contractor shall make, at his own expense, any repairs or replacements made necessary by defects in workmanship or materials furnished by him that becomes evident within one (1) year after filing of the Notice of Completion of the work and to restore to full compliance with the requirements of these specifications, any part of the work which during the one (1) year period is found to be deficient with respect to any provision of the plans and specifications. The Contractor shall make all repairs and replacements promptly upon receipt of written orders from the Engineer. If the Contractor fails to make the repairs and replacements promptly, the City may do the work and the Contractor and his surety shall be liable to the City for the cost.

Whenever any work is to be guaranteed or maintained by a manufacturer, supplier, or subcontractor, said obligation shall be that of the Contractor.

All guarantees shall be in writing and delivered to the Engineer by the Contractor prior to final acceptance of the work.

86-1.06 Maintaining Existing and Temporary Electrical Systems. All work and materials required to keep the existing traffic signal and highway safety lighting systems operational will be considered as included in the lump sum prices bid and no additional compensation will be allowed therefore. Such work and materials may include, but shall not be limited to, overhead and underground temporary wiring, if applicable.

Where the Contractor-installed facilities are damaged prior to final acceptance by the Engineer, the Contractor shall repair or replace such facilities at the Contractor's expense.

The Contractor shall receive approval to shutdown any traffic signal system 48 hours in advance from the Engineer. Traffic signal system shutdowns shall be limited to periods between the hours of 9:00 a.m. and 3:00 p.m.

The Contractor shall place one "Stop Ahead" and one "Stop" sign for each direction of traffic to direct vehicle and pedestrian traffic through the intersection during traffic signal system shutdown. Temporary "Stop Ahead" and "Stop" signs shall be either covered or removed when the system is turned on. Location of the signs shall be as directed by the Engineer. In addition, the Contractor shall furnish additional traffic control if required by the Engineer.

"Stop Ahead" and "Stop" signs shall be furnished by the Contractor and shall conform to the provisions in Section 12-3.06, "Construction Area Signs," of the State Standard Specifications except that the base material for the signs shall not be plywood.

86-1.07 Scheduling of work. The Contractor shall order poles and all associated traffic signal equipment immediately after the receipt of the Notice to Proceed. A complete submittal of material order and delivery schedule is required.

In addition, the Contractor shall erect signal and luminaries standards within three weeks from the day when foundations are installed unless approved otherwise by the Engineer. If standards cannot be installed within the previously mentioned time limit, temporary asphalt shall be placed in all excavated areas to provide adequate and safe access for pedestrians. The cost for placing and removing temporary asphalt shall be included in the Contract lump sum price and no additional compensation will be allowed.

86-2 MATERIALS AND INSTALLATION

86-2.01 Excavating and Backfilling. All excavation and backfill shall conform to Caltrans Standard Specifications, except as noted for City of Glendale trench resurfacing detail 25-153. Excavation pits shall not be in walkways or continuation/elongation of private walkways into the public right-of-way.

86-2.02 Removing and Replacing Improvements. All shall apply.

86-2.03 Foundations. Portland cement concrete shall conform to Section 90-2, "Minor Concrete," of the Caltrans Standard Specifications.

Flyash substitutes and/or admixtures shall not be permitted.

All cast-in-drilled-hole foundations for traffic signal standards excluding Type 1 pole foundations, a hole the same size as the pole foundation shall be drilled and filled with one-sack slurry and re-drilled the following day for the actual pole foundation.

86-2.04 Standards, Steel Pedestals, and Posts. In addition to identifying each pole shaft as detailed on Caltrans Standard Plan RSP ES-1C, the Contractor shall also identify each mast arm for both signals and luminaries. The stamped metal identification tag shall be located on the mast arm near the connection plate and shall contain the same information required on the pole shaft.

Where the Caltrans Standard Plans refer to the side tenon detail at the end of the signal mast arm, the applicable tip tenon detail may be substituted.

Decorative Poles:

All traffic signal and luminaire standards shall be Type WR5, manufactured by Ameron, or Type P16-B864 manufactured by Union Metal Corporation or equivalent. Vehicles and luminaire mast arms shall be straight. Vehicle mast arms shall be mounted with flange to accept the specially made internally illuminated street name signs. Signal standards and equipment shall be painted "Midwest Brown". The City of Glendale will maintain the integrity of the painted signal equipment after installation and acceptance of project. This requirement shall apply to the following intersections:

- Harvard Street to Artsakh Avenue
- E. Broadway at Artsakh Avenue
- Wilson Avenue at Artsakh Avenue

Standard Caltrans Poles: (NOT APPLICABLE)

All traffic signal and luminaire standards shall be the State of California Department of Transportation standard poles. Signal standards, mast arms, posts and other ferrous materials shall be galvanized as provided in Section 86-2.15 'GALVANIZING' of the Standard Specifications, State of California Department of Transportation. This requirement shall apply to the following intersections:

- Not applicable

86-2.05

Conduit. Conduit shall be rigid PVC Schedule 80 conforming to the requirements in the UL Standard for Rigid Non-Metallic Conduit (Publication UL 651), except when existing metal conduit runs are to be modified or extended, conduit of the same material only shall be used. All conduit installed beneath railroad tracks shall be Type 2 conduit per Section 86-2.05A of the Caltrans Standard Specifications. Street lighting conduit shall be Type 1, rigid galvanized steel, unless otherwise noted on the plan. Electrical service conduit shall be Type 1, rigid galvanized steel, unless otherwise noted on the plan.

All conduits with 2 inch or less diameter shall be installed at a minimum depth of 36 inches below grade in the pavement and at connections with 24"x36"x36" pull boxes, and minimum 24 inches below grade in the sidewalks. All conduits with 3 inch diameter shall be installed at a minimum depth of 36 inches below grade at all locations. All conduits with 4 inch diameter shall be installed at a minimum depth of 60 inches below grade at all locations. All conduits shall have a minimum 2 foot radial clearance from all existing utilities.

All fiber optic conduits shall be installed to a depth of not less than 36 inches below finished grade in all areas. All conduits (traffic signal or fiber optic) installed beneath railroad tracks shall be installed to a depth of not less than 5 feet below bottom of tie.

All copper conductor and cable conduit runs shall have no more than a total of three 90 degree bends or two 90 degree bends and two 45 degree bends. All fiber optic conduit runs shall have 3 foot radius sweeps and 90 degree bends into pull boxes.

All traffic signal conduit ends shall terminate 3 inches above the gravel surface and 9 inches minimum clearance between the top of the bushing and the top of the pull box shall be provided. In addition, conduits shall be terminated at 90 degrees to the ground level. Conduit ends shall have bell or end bushing and be sealed with oakum after conductors are installed.

All fiber optic conduits shall have pull rope and a green #10 AWG copper tracer wire. Fiber optic conduit ends shall have bell or end bushing and be sealed with oakum after fiber optic cables are installed.

Metal conduit couplings shall be threaded or compression type. Thread less connections or threaded coupler with two bolts as a clamp will not be allowed.

All conduit runs may be installed by open trenching, directional boring, jacking or drilling methods unless otherwise noted on the plan. Open trenching, directional boring, jacking, or drilling methods shall not begin or terminate in walkways or continuation/elongation of private walkways into the public right-of-way. No additional compensation will be granted to the Contractor for using one method over the other.

86-2.06

Pull Boxes. Pull boxes shall be made of pre-cast reinforced Portland cement concrete (PCC) or Polymer Concrete. All reinforced PCC pull boxes shall be provided with polypropylene cap with ultra violet inhibitor as manufactured by OES Concrete Product or approved equal. All Polymer Concrete pull boxes shall be as manufactured by Armorcast Products Company or approved equal.

All traffic signal pull boxes shall be No. 6E unless shown otherwise on the plan. All fiber optic pull boxes shall be No. 6E unless shown otherwise on the plan.

Lift pins on all fiber optic pull box covers shall be stainless steel. All traffic signal and signal interconnect pull box covers shall be marked "TRAFFIC SIGNAL" unless otherwise noted on the plan. All fiber optic pull box covers shall be marked "FIBER OPTICS" unless otherwise noted on the plan.

Pull boxes shall be installed no less than 1 foot from any existing, proposed or future (as shown on plans) wheelchair ramp and no less than 3 feet from any existing, proposed or future (as shown on the plans) traffic signal pole unless approved by the Engineer in the field. Pull boxes shall not be placed in walkways or continuation/elongation of private walkways into the public right-of-way. All pull box locations shall be approved by the Engineer in the field prior to installation.

86-2.07A

Auxiliary AC Outlet for Traffic Signal Controller Cabinet Assembly. The Auxiliary AC Outlet shall consist of the following materials and specifications:

Installation of one (1) single-gang, metallic electrical outlet box, insulating cable bushing, one (1) heavy duty 20amp, 125VAC duplex electrical power outlet receptacle, and cover. Installation of 2-conductor #12AWG cable with integral ground conductor from outlet box to main cabinet power terminals and a 20 amp in-line fuse.

The new outlet box should be located on the rear, lower- right side of the Traffic Signal Cabinet and not conflicting with any other equipment. The single-gang electrical box shall be rigidly attached to cabinet with minimum of two (2) sheet metal

screws, and without piercing exterior of cabinet. Installation shall include all materials required for a fully functional auxiliary power outlet.

Materials List:

- One(1) Single gang metallic electrical box
- One (1) metallic duplex outlet cover
- One (1) insulation bushing/fitting
- One (1) 20A, 125VAC heavy duty, commercial grade duplex electrical power outlet
- One (1) 2-conductor, #12 AWG cable w/ integral ground wire (Approx. Length = 18 in.)
- One (1) 20 amp in-line fuse
- Minimum 2 sheet metal screws

86-2.08 Conductors. Splicing of individual signal cable shall be made in signal standard terminal blocks and in controller cabinets only. A minimum of three feet of slack shall be provided in each pull box and on loop cable in the controller cabinet.

Splices of individual conductors and drain wires for street name signs and safety lighting shall be done in the pull box only. Splices shall be per method "B" as shown on Caltrans Standard Plan RSP ES-13A.

86-2.08A Conductor Identification. In addition to the section listed in the Caltrans Standard Specifications, the following is added:

At the controller cabinet, all cables shall be marked per pole as shown on the conductor schedule (A, B, C, D, E, etc)

86-2.08B Multiple Circuit Conductors. The insulation for multiple circuit conductors shall be Type THW polyvinyl chloride.

Multiple conductors for all traffic signal phases terminating in the controller cabinet output file shall be terminated in crimp style terminated lug. If more than 2 conductors need to be terminated at the same location, the screw type-clamping lug shall be used for that terminal.

86-2.08E Signal Interconnect Cable. All Signal Interconnect cable shall be removed per the direction of the engineer if encountered at no additional cost.

86-2.09 Wiring. Splices shall be Type C insulated by Method B as shown on State Standard Plan RSP ES-13A.

86-2.10 Bonding and Grounding. Bonding and grounding jumpers shall be visible after cap have been poured on foundations.

86-2.11 Service. Electrical service equipment installation and conduit run details shall meet the City of Glendale Water and Power Department requirements and the appropriate sketch in Appendix "D". Conduits used for electrical service shall be rigid galvanized steel or PVC as shown on the plan. When PVC conduits are used, they shall be provided with concrete encasement per Glendale Water and Power Department requirements. **The**

contractor shall furnish and install service cabinet type (Model USP16) manufactured by Meyers Pacific Utility Products and meeting the requirements of Section. The Contractor shall be responsible for all service details, and scheduling far in advance of need. The Contractor is encouraged to work on service cabinets and their associated conduits and pull boxes prior to receiving signal equipment.

The Contractor is required to pay all service connection fees and provide inspection release form once installation is complete. For more information, please contact the Glendale Water and Power Department, Mr. Victor Pacheco at 818-550-4591.

Service equipment wiring shall consist of 120/240V with 120V unmetered luminaires, traffic signal, and illuminated street name sign equipment. Circuit breakers shall be rated 50 amps for the traffic signals, 30 amps for the highway safety lighting, and 15 amps for illuminated street name signs.

86-2.12 Testing. The text of Subsection 86-2.14 is hereby deleted and replaced by the following:

Attention is directed to Section 4-1, "Materials and Workmanship" of these Special Provisions. The first paragraph of Section 86-2.14A, "Materials Testing," of the Caltrans Standard Specifications is superseded by the following:

Controller assemblies, units and auxiliary equipment including wiring diagrams and manuals, shall be delivered to the City's maintenance contractor. Contractor to coordinate with City for the exact location and address of maintenance contractor.

The cost of testing controller cabinet and assemblies shall be paid by the Contractor. The cost of picking up and delivering the controller cabinets for testing shall be included in the contractor's lump sum bid.

Whenever the term "State" is used in Section 86-2.14A, "Materials Testing," it shall be understood to mean and refer to the agency specified by the Engineer.

The cost of subsequent testing for failed material shall be paid by the Contractor.

86-2.13 Painting. All paint shall be furnished by the Contractor.

Paint shall be Ameron Amersfield "Midwest Brown" gloss finish for the following intersections:

- Harvard Street to Artsakh Avenue
- E. Broadway at Artsakh Avenue
- Wilson Avenue at Artsakh Avenue

The Contractor shall furnish a color chip to the Engineer for approval. New and used traffic signal equipment to be painted "Midwest Brown" shall include vehicle head housing, pedestrian signal head housings, back faces of backplates, internally illuminated street name sign frames, luminaires, pedestrian push button units, anchor bolts and washers, video detection camera riser arms, CCTV camera mounts, controller cabinets and service cabinets.

All new signal standards, luminaire standards, mast arms and pedestrian push button posts shall be painted Ameron Amersfield "Midwest Brown" gloss finish by the manufacturer. The Contractor shall furnish a color chip to the Engineer for approval prior to manufacturer painting equipment. The front face of the back plates and the inside surface of the signal visors shall be painted black. The paint for equipment shall be aliphatic polyurethane. All painting systems for exterior application shall be supplied by the same manufacturer to ensure compatible protective coating system and color material.

Poles shall be handled in a manner that will preserve the overall appearance and prevent damage to the coating. The use of chains or cables for loading, unloading, shipping or installing is prohibited. Only 0.75 inch diameter or larger non-abrasive nylon rope or equivalent nylon belting shall be used. Adequate hold-downs and appropriate blocking shall be utilized for shipping to prevent load movement and damage to the outer coating in transit. No handling shall be allowed until "dry-through" conditions have been achieved with coating.

For painting of existing signal standards, luminaire standards, mast arms, pedestrian push button posts, and signal equipment, all painting systems for exterior application shall be supplied by the same manufacturer to ensure compatible protective color coating system and color match. Prior to the paint application, poles, mast arms, and signal equipment shall be cleaned to remove dirt, bird droppings, stickers, paint chips, and anything else that would prevent the paint from properly bonding to the surface. The Contractor shall apply a rust inhibitor primer to cover all exterior surfaces prior to painting. The Contractor shall apply paint with rollers, spraying applications will not be allowed. The Contractor shall apply enough paint to cover and provide a uniform finish throughout.

86-2.14 Bird Spikes. Bird spikes shall be BIRD-X Stainless steel BIRD SPIKES (Model #: STS) or approved equal. Bird spikes shall have a base mold of transparent polycarbonate, with two types of spiked projections: stainless steel projections protrude up and out (angled) to both sides; a central row of polycarbonate projections protrude straight up.

The bird spikes shall have stainless steel bird spike projections (4.5" spread) with narrow stainless steel bird spike projections (1.75" spread) and a central row of straight-up polycarbonate projections.

Bird spikes shall be installed with a special adhesive and adhesive shall not be visible to traffic.

86-3 CONTROLLER ASSEMBLIES

86-3.00 Caltrans ROW Controller Assembly. (NOT APPLICABLE) For controllers in Caltrans ROW, contractor shall obtain Caltrans furnished Type 332 controller cabinet and controller. Contractor shall coordinate with Caltrans in regards to procurement, labeling, software, warranties, guaranties, software license and installation, and traffic signal timing installation. Coordinate with Ralph Griffo (213) 999-1905.

86-3.01A City ROW Controller Assembly. The controller assemblies will consist of existing/new Model 2070 controller units in existing/new Model 332 cabinets.

Model 2070 Controller Units shall comply with the Caltrans Transportation Electrical Equipment Specifications (TEES) dated March 12, 2009, plus TEES Errata 1 dated January 21, 2010, shall be on the August 24, 2010 Caltrans "Qualified Products List" and the following City requirements. In case of conflict, the City requirements shall govern the procurement.

1. Procurement is for Model 2070 Controller with a Unit Version of "2070 E" including these specified modules:
 - o 2070-1E CPU Module
 - o 2070-2A or 2070-2E Field I/O Module
 - o 2070-3B LCD/Front Panel Module
 - o 2070-4A Power Supply
 - o 2070-6A dual 1200 baud modem
 - o 2070-7A dual RS232 serial ports.
2. A permanent label, "CITY OF GLENDALE", shall be stenciled or embossed on the front of Model 2070 Controller Unit.
3. The Model 2070 controller shall operate Mc Cain 2033 intersection control software.
4. Warranties and Guaranties: It is the responsibility of the contracted vendor to ensure that all equipment provided has been thoroughly tested prior to shipment, and that each shipment conforms to these specifications. The minimum warranty for any equipment and materials shall be for a period of two (2) years from the date of test acceptance by the Engineering Division, City of Glendale. The warranty shall cover all manufacturers' defects, parts, labor, and shipping costs. The warranty for each unit of equipment that requires repair shall be extended by the length of time that the unit is out of service for repair.

86-4 TRAFFIC SIGNAL FACES AND FITTINGS

86.4.01 All vehicle signal heads including programmed visibility heads shall have 12 inches (300 mm) lenses, visors, and backplates. All pole-mounted three-section vehicle heads shall have standard backplates. All mast-arm mounted vehicle signal heads or five-section vehicle heads mounted on Type 1-A and Type 15 TS poles shall have louver backplates.

All signal heads shall be aluminum alloy. All nonprogrammed lenses shall be glass with aluminum reflectors. Plastic housings, visors, and backplates will not be permitted.

All signal mounting required shall be furnished by the Contractor. Holes drilled on poles for the purpose of fitting wire shall be grinded to provide smooth edge prior to mounting. Top and bottom openings of signal heads shall be sealed with neoprene gaskets.

86-4.02

Light Emitting Diode Signal Module (12 inch) balls and (12 inch) arrows. All (red, amber and green) traffic signal sections shall be provided by the Contractor and shall be Light Emitting Diode "LED" module and shall conform to the following specifications:

LED Circular Signal Module Specification 300mm (12 in) Balls and 300mm (12 in) Arrows

1. The purpose of this specification is to provide the minimum performance requirements for Light Emitting Diode circular traffic signal modules hereafter called modules. This includes 300mm (12in), circular vehicle traffic signal modules and 300 mm (12 in) omnidirectional arrows. All modules will comply with either the **Vehicle Traffic Control Signal Heads - Light Emitting Diode (LED) Circular Supplement, Adopted June 27, 2005**, or the **ITE arrow spec Vehicle Traffic Control Signal Heads - Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement, Adopted July 1, 2007**, hereafter called VTCSH for both specs, which are published by the Institute of Transportation Engineers, hereafter called ITE. The following requirements are in addition to, or clarification of the VTCSH.

2. All modules must fit in existing signal housings without the use of special tools.

Electrical

3. Luminous intensity requirements of the VTCSH must be met across the entire temperature range from -40°C to +74°C, (-40°F to +165°F).

4. The following cable colors shall be used for the AC power leads on all modules: white for common, red for the red module line, yellow for the yellow module line, and brown for the green module line.

5. The AC power leads shall exit the module via a rubber grommited strain relief, and shall be terminated with quick connect terminals with spade tab adapters. The leads shall be separate at the point at which they leave the module.

6. All external wiring used in the module shall be anti-capillary type cable to prevent the wicking of moisture to the interior of the module.

7. All power supplies shall be conformally coated for additional moisture and thermal protection.

8. The module shall have an incandescent, non-pixelated appearance when illuminated.

9. Nominal power usage is measured at 25° C, 120 VAC. For the 300 mm (12") modules it shall not exceed 8 watts for Red, 12 watts for Yellow, and 9 watts for Green modules. For the arrows it shall not exceed 6 watts for any color.

10. All modules shall use LEDs that have been manufactured with materials that have industry acceptance as being suitable for uses in outdoor applications. At no time is the use of LEDs that utilize AlGaAs technology acceptable.

Mechanical

11. The external lens shall have a smooth outer surface to prevent the build up of dirt & dust and shall be designed to minimize the potential for sun phantom signals.
12. The module lens material must be clear for green indications, and tinted for all other indications. A tinted transparent film or coating is not permitted.
13. A module shall be sealed against dust and moisture intrusion, including rain and blowing rain per Mil-Std-810F Method 506.4, Procedure 1.
14. Arrow modules shall be clearly marked with the phrase "Suitable for mounting in any orientation."
15. All modules must be certified in the **Intertek LED Traffic Signal Modules Certification Program** and be labeled with the ETL Verified Label shown in Figure 1.



Figure 1 -- Intertek- ETL Verified Label

Warranty

16. Manufacturers shall provide a written warranty issued by the factory located in the NAFTA country of module origin with the following minimum provisions.
17. Modules shall, at the manufacturer's option, be repaired or replaced if the module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery.
18. Modules shall, at the manufacturer's option, be repaired or replaced if the module exhibit luminous intensities less than the minimum specified values within the first 60 months of the date of delivery.
19. Upon request, the LED lamp module manufacturer shall provide written documentation of its ability to satisfy a worst-case, catastrophic warranty claim. A current corporate annual report duly-certified by an independent auditing firm, containing financial statements illustrating sufficient cash-on-hand and net worth to satisfy a worst-case, catastrophic warranty claim is an example of suitable documentation.
20. The documentation shall clearly disclose the country in which the factory of

module origin is located, the name of the company or organization that owns the factory including all of its parent companies and/or organizations, and their respective country of corporate citizenship.

21. For firms with corporate citizenship in the United States of less than seven years, the documentation shall clearly disclose the process by which the end-users/owners of the modules will be able to obtain worst-case, catastrophic warranty service in the event of bankruptcy or cessation-of-operations by the firm supplying the modules within North America, or in the event of bankruptcy or cessation-of-operations by the owner of the factory of origin.

All new LED units furnished by the Contractor shall be Part No. GTx (balls) and GT1 (arrows) modules manufactured by GE or approved equal.

- 86-4.06 Pedestrian Signal Faces. Pedestrian signals shall be Type A with international symbols of man and hand. **The unit provided shall be a countdown pedestrian indication type manufactured by "Dialight" Part No. 430-6479-001X or approved equal.** All pedestrian signal mounting shall be provided by the contractor. Pedestrian signals shall have clamshell mountings.

All pedestrian signal housings shall be of one piece design.

All pedestrian indications shall be international symbol of man and hand.

All pedestrian signal mountings shall be furnished by the Contractor.

86-5 DETECTORS

- 86-5.01 Vehicle Detectors. The detector sensor units shall be digital and self-turning in design with on LED indication per channel and two channels per detector unit. Detector units shall be Type LMD222 for left and through traffic lanes and Type LMD602t for right-turn lanes.

- 86-5.01A Inductive Loop Detectors. Slots for round traffic signal loop detectors shall be 6 feet in diameter and .375 to a maximum of .500 inch in width, and 5.0 inches in depth. The slots shall be either core drilled or cut by the use of "circle loop cutter" machine. This machine must be so configured, that once started it will continue to cut a circle without any overlap and able to circumscribe a six-foot diameter round loop without being raised or repositioned. This method of installation shall not cause any additional holes to be placed in the pavement for the purpose of anchoring the installing machine. Home runs shall be saw-cut to the appropriate pull box and shall be .5 inch in width by 5.0 inches in depth. In addition, home runs shall be routed along the lane lines, limit lines, and crosswalk lines when applicable.

The loop wire shall be of double insulated type and meet the specification for Caltrans Type 2 traffic loop wire. The tubing shall have an outside diameter of 0.27 inch. It shall be of a continuous and un-spliced conductor shall be wound three turns in a clockwise direction into the saw cut by hand when the saw cut width is approximately .375 inch or shall be performed and stacked for insertion in the saw cut. When the saw cut width is approximately .500 inch, the preformed loop shall be used and consist of three (3) turns of loop wire stacked in a circle six (6) feet

diameter, each turn shall be laid on top of another and be secured in such a manner that when it is placed in the saw cut, it will remain in place and not drop in the slots. Loop wires in the home run slot shall be twisted in one direction only with at least 2 turns per foot.

Loops shall be installed on the same day in which the loop slots are cut including placement of the loop conductors and sealant. Slots shall be completely dried before the loop conductors are installed. Loop sealant shall be hot melt rubberized asphalt in accordance with Caltrans specifications. The sealant shall be injected into the saw cut through a heated nozzle. Pouring sealant into the saw cut will only be permitted if the loop saw cut is .5 inch wide.

Residue resulting from slot cutting operations shall not be permitted to flow across shoulders or lanes occupied by public traffic and shall be removed from the pavement surface. Water and slurry shall be vacuumed out, leaving a clean and dry loop area. This vacuumed water shall be dumped in a private dumpsite and it will not be allowed in catch basins and storm drain.

Contractor shall obtain approval of exact loop location prior to final placement. The locations of the loops, beginning loop wires and home runs shall be pre-marked for inspection before cutting and installation.

Stubout conduits for loop detectors shall be inserted next to the gutter edge in the street and be a minimum of 1.5 inches in diameter PVC Schedule 80 and installed at a minimum depth of 8 inches from the top of the pavement. Install a 3 inch diameter PVC Schedule 80 sleeve between the stubout end and the top of pavement. Dust seal shall be used at the end of the conduit during loop installation. Loop sealant is not allowed in the conduit. The end of future loop stubout shall be exposed for inspection and backfill with sand and cold patch. The exact location of each stub out shall be marked with concrete nail driven into the top of the curb. The concrete nail shall have a red top.

Loop detector lead-in cable shall be Type B. All shields shall be connected to ground on the input panel in the 332 cabinet. Inductive loop detector expansion joint shall be as shown on State Standard Plan ES-5E shall be installed wherever a loop wire saw cut crosses a pavement type change or where vertical pavement fracture may occur as determined by the Engineer.

Contractor shall obtain approval of exact loop location prior to final placement. The locations of the loops and home runs shall be premarked for inspection before cutting.

86-5.01B Video Detection. Refer to Section 86-10 Video Detection System.

86-5.02 Pedestrian Push Buttons.

Caltrans ROW. Pedestrian push buttons shall be Polara Navigator APS or approved equal, unless otherwise indicated by the Caltrans inspector in the field. Pedestrian push buttons shall meet all ADA accessibility requirements. Pedestrian push button signs shall be pedestrian actuated signal sign R10-3b. APS buttons shall be

programmed by either percussive tones or standard speech walk messages, as required by the Caltrans inspector in the field.

City ROW. Pedestrian push buttons shall be Polara Engineering Inc. iDS or approved equal, unless otherwise indicated in the General Notes of the respective traffic signal modification plan. Pedestrian push buttons shall meet all ADA accessibility requirements. Pedestrian push button signs shall be pedestrian actuated signal sign R10-3b.

The pedestrian push button shall be touchless or pressure activated and can withstand an impact from a baseball bat or hammer. When the button is activated, a beep will sound and the LED will light and stay on until the walk cycle. The push button body material shall be made of aluminum, powder coated and vandal proof. The button body shall be colored green. The button material shall be made of 316 Stainless Steel. The button shall have a Piezo driven solid state switch with an operating force to activate the switch of 3 lbs maximum. The button shall have an operating temperature range of -30 degrees F to 165 degrees F.

The operating voltage of the button shall be 18 VDC and have an operational life of greater than 100 million operations. The beeper shall sound simultaneously with LED flash. The LED luminous intensity shall be greater than 1200 mcd (ultra bright red) with a viewing angle of 160 degrees.

86-6 LIGHTING

86-6.01 High Pressure Sodium Luminaires.

86-6.02 LED Luminaires. Highway safety lighting luminaires shall be of the full cut-off type. The integral driver components shall be mounted on a separate down opening door. The gasket, if IP66 rating is required, shall be high-grade silicone rubber to provide an integral seal. Minimum light distribution shall be as shown on State Standard Plan RSP ES-10A.

Newly installed Luminaires shall be operational the same day of the installation, under no circumstances the intersection will be allowed to be left without illumination for any period of time.

All luminaires shall be American Electric Lighting (AEL) – Autobahn Series or approved Equal. All components and entire Luminaire shall be made in the U.S.A. Each luminaire shall be provided with a NEMA twist-lock photo cell receptacle, appropriate voltage NEMA twist lock Photo Cell, and wattage indication label and meet the following specifications:

Galvanized Pole: ATBM-F-MVOLT-R3-NL-P7-AO
2 bolt mounting
4000K CCT
Type 3 Distribution

Decorative Pole: ATBM-F-MVOLT-R3-BZ-P7-AO
2 bolt mounting
4000K CCT

Type 3 Distribution

Warranty: 5 year Driver & LED; 10 year paint finish

86-6.03 Internally Illuminated Street Name Signs.

Internally Illuminated Street Name Signs. All internally illuminated street name signs (IISNS) shall use a LED light source from the edge of the sign and shall be manufactured by National Signal or approved equal. The sign housing frame shall be made of aluminum with a Midwest Brown or natural aluminum finish with a height of 22" or 24" and maximum thickness of 3". The sign panels shall have clear film with 3M protective film.

All street name signs shall have white letters on Monarch Blue background with a 0.5" white border. All "Ped Xing" signs shall have black letter and yellow background with a 0.5" white border, and with the additional requirements:

**Sign Panel Size: 22" x 72" – 96" x 2.5" if single street name
24" x 72" – 96" x 2.5" if two street names**

Font: HWY D/E

Font Size: 12" UC/9" LC

Font Color: White

Sign Panel Background Color: Monarch Blue

Sign Panel Material: 0.093 Clear Polycarbonate

**Frame Finish: Midwest Brown (Decorative Poles)
Natural Aluminum (Standard Caltrans Poles)**

Signs shall be mounted with Midwest Brown Rigid Sign Mounts or adjustable mounting brackets or approved equal.

The sign panel brightness shall be a minimum 250 cd/m². The LED shall have a minimum service life of 100,000 hours and have an operating temperature range of -30 degrees C and 70 degrees C.

A 1/2" close nipple and LB conduit shall be installed on the mast arm at the coupling point. The cable between sign and conduit shall be a 3-conductor AWG No. 16 Type SJO. The green conductor of the cable shall be used for grounding between sign housing and conduit. The cable shall enter the sign housing and conduit through neoprene bushed CGB connectors. All internally illuminated street name signs shall be provided with individual photocells.

86-6.04 Retro-reflective (RIGID) Mast Arm Street Name Signs. (NOT USED)

86-6.05 Photoelectric Controls. Photoelectric control shall be Type IV for all highway safety lighting and internally illuminated street name signs.

All new photoelectric control units furnished by the Contractor shall be Part No. LED4536SWK manufactured by Intermatic or approved equal, unless otherwise indicated by the Engineer in the field.

86-6.06 High Intensity Discharge Lamp Ballasts. The integral ballasts for highway safety lighting luminaries shall be designed for operation on 120 volt multiple circuits.

86-7 REMOVING/REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT

All signal equipment to be salvaged, if any, except otherwise directed by the engineer in the field, shall be delivered to an address in the City of Glendale to be determined by the Engineer in the field. Contractor shall contact the recipient of the salvaged equipment 48 hours prior to the scheduled acceptance of delivery.

All other existing equipment, which is not to be reused, shall become the property of the Contractor.

86-7.01 Reinstalling Removed Electrical Equipment.

When removed electrical equipment is to be reinstalled, the Contractor shall furnish and install all necessary materials and equipment, including signal mounting assemblies, anchor bolts, nuts, washers and concrete as required to complete the new installation.

86-7.02 Bird Spikes.

The Contractor shall clean the mast arms thoroughly removing all dirt and bird droppings. If the mast arms are to be painted by the Contractor, the bird spikes shall be installed after the mast arms are painted. The Contractor shall install bird spikes per manufacturer instructions to ensure proper installation.

86-8 PAYMENT FOR LUMP SUM PRICE ITEMS

Payment for lump sum price items shall be made in accordance with appropriate payment clause. The City according to the following schedule will process progress payment:

<u>Percent of Lump Sum Bid</u>	<u>Work Completed</u>
10%	All signal pole submittals approved and ordered
10%	All hardware submittals approved and ordered
12%	All conduits and pull boxes in place
12%	All foundations dug and concrete poured
5 %	All loops cut with wires and sealant in place
5 %	All wires pulled in all conduits
20%	All signals standards and poles installed
12%	All signal hardware and controller cabinet installed
14%	Miscellaneous concrete and minor work completed, and operation and maintenance manual submitted
100%	Total Project

86-9 BATTERY BACKUP SYTEM (BBS)

86-9.1 SCOPE

The BBS shall provide uninterruptible reliable emergency power to a traffic intersection in the event of a power failure or interruption. The uninterruptible power supply (UPS) shall provide

battery power to traffic intersections for a period of time as specified. The transfer from utility power to battery power will not interfere with the normal operations of the traffic controller, conflict monitor or any other peripheral devices within the traffic control system. The battery back system shall be Meyers Power Products, Inc. MP2000E, or Alpha Technologies Caltrans FXM 1100 UPS, or approved equal. The BBS / UPS system shall be comprised as noted below and shall include, but not be limited to: External UPS/Battery cabinet attached to 332 controller cabinet, inverter/charger (UPS), power transfer switch (PTS), Four (4) AGM 105 Ah batteries, a separate manually operated non-electronic bypass switch, all necessary hardware and interconnect wiring.

The system shall be capable of providing power for full run-time operation, flashing mode operation, and a combination of both full and flash mode operation of an intersection. The operation of the flash mode shall be field programmable to activate at various times, battery capacities, or alarm conditions locally using the touch pad or remotely using a standard PC's Ethernet or RS-232 interface.

Field programmability via touch pad or RS232 interface must be in ASCII formats and must not require any external or proprietary software. The DB-9 connector for the RS232 interface must be installed on the front panel of the UPS. Remote programmability and acquire status information via Ethernet connection using a web browser interface.

The system shall be designed for outdoor applications and meet the environmental requirements as detailed herein.

86-9.2 SYSTEM CAPACITY AND RUNTIMES

The BBS shall be configured such that it provides a MINIMUM of two (2) hours of full run-time operation for an intersection using LED traffic and pedestrian signals. The UPS shall be Meyers Power Products, Inc. MP2000E, or Alpha Technologies Caltrans FXM 1100 UPS, or approved equal with 80% minimum inverter efficiency. The batteries shall be four (4) AGM 105Ah.

86-9.3 RELAY CONTACTS

86-9.3.1 The UPS shall provide the user with 6 sets of N/O N/C panel-mounted, potential free, and fully programmable relay contacts rated 1 Amp, 120 VAC and labeled C1 through C6. Each relay's setting shall be programmable to activate under any number of conditions locally using the touch pad or remotely using the RS-232 interface. The available settings for the relays are outlined below.

Relay contacts C1 through C6 can be independently configured to activate under any of the following conditions:

86-9.3.2 ON BATTERY, relay activates when BBS switches to battery power.

86-9.3.3 LOW BATTERY, relay activates when batteries have reached a certain level of remaining useful capacity while on battery power. This number is adjustable from 0 to 100%.

86-9.3.4 TIMER, relay activates after being on battery power for a given amount of time. This number is adjustable from 0 to 8 hours.

86-9.3.5 ALARM, relay activates after a specific or general alarm is detected. These alarm conditions include: line frequency, low output voltage, no temperature probe, overload, batteries not connected, high temperature, and low temperature. The relay can be programmed to activate when any of these alarm conditions is met, or when a specific condition is met.

86-9.3.6 FAULT, relay activates after a specific or general fault is detected. These fault conditions include: short circuit, low battery voltage, high battery voltage, high internal temperature, and excessive overload. The relay can be programmed to activate when any of these fault conditions is met, or when a specific condition is met.

86-9.3.7 OFF, relay is disabled and will not activate under any condition

86-9.4 DEFAULT RELAY SETTING

86-9.4.1 Relay C1 shall be set to activate whenever the UPS transfers to battery power and shall be labeled "ON BATT"

86-9.4.2 Relays C2 and C3 shall be set to activate whenever the batteries reach 40% of remaining useful capacity and shall be labeled "LOW BATT".

86-9.4.3 Relays C4 and C5 shall be set to activate whenever the UPS has been on battery power for 2 hours and shall be labeled "TIMER".

86-9.4.4 Relay C6 shall be set to activate when any alarm condition is detected and shall be labeled "ALARM"

86-9.5 OPERATION

86-9.5.1 The Manual Bypass Switch shall be rated at 240VAC, 40 Amps minimum.

86-9.5.2 The BBS shall use a temperature compensated battery charging system. The charging system shall compensate over a wide range of 2.5 to 4 mV / °C / Cell. The charger shall be rated 10 Amps at 48 VDC.

86-9.5.3 The temperature sensor shall be external to the UPS unit. The temperature sensor shall be supplied with 2 meters (6' 6") of wire.

86-9.5.4 Batteries shall not be charged when battery temperature exceeds 50°C ± 3°C.

86-9.5.5 When utilizing battery power, the BBS output voltage shall be between 110VAC and 125VAC, pure sine wave output with THD < 3% at 60 Hz +/- 3 Hz.

86-9.5.6 In the event of UPS failure, battery failure or complete battery discharge, the power transfer switch shall revert to the NC (and de-energized) state, where utility power is supplying the cabinet.

86-9.6 ENVIRONMENTAL

The operating temperature for both the inverter/charger (UPS), power transfer switch (PTS) and manual bypass switch (MBPS) shall be -37 °C to +74 °C.

86-9.7 PRODUCT COMPATIBILITY

86-9.7.1 BBS shall be compatible with all of the following for full phase, flash operation mode or a combination of both full and flash mode operation:

- Type 332 cabinets,
- Type 170 controllers,
- Type 2070 controllers,
- NEMA TS1 Controllers,
- NEMA TS2 Controllers.
- Electrical Service Pedestals

86-9.7.2 **The BBS System shall fit inside a Meyers Power Products, Inc. Model No. BC-100HZ-UPS external cabinet attached to the 332 cabinet, or approved equal.**

86-9.8 LOSS / RESTORATION OF UTILITY POWER

86-9.8.1 In the event the BBS senses the utility line voltage is outside the Hi and Low Limits (100 & 130 VAC respectively set as default), the BBS shall transfer the load to battery power.

86-9.8.2 The BBS shall return to line mode when the utility power has been restored to above 105VAC for more than 30 seconds. This line qualification time can be adjusted to 3, 10 or 30 seconds locally using the touch pad or remotely using the RS-232 interface.

86-9.8.3 The BBS shall return to line mode when the utility power has been restored to below 125VAC for more than 30 seconds. Or, the BBS shall return to line mode when the utility power is back to nominal, in cases where the nominal voltage is between 125 and 130VAC. This line qualification time can be adjusted to 3, 10 or 30 seconds locally using the touch pad or remotely using the RS-232 interface.

86-9.8.4 The maximum transfer time allowed, from disruption of normal utility line voltage to stabilized inverter line voltage from batteries, shall be 65 milliseconds. The same maximum allowable transfer time shall also apply when switching from inverter line voltage to utility line voltage.

86-9.9 BACK-FEED AND OTHER PROTECTIONS

86-9.9.1 The BBS shall be equipped to prevent a malfunction feedback to the cabinet or from feeding back to the utility service per UL 1778, Section 48 "Back-feed Protection Test". The upstream backfeed voltage from BBS system shall be less than 1 Volts AC for the protection of the traffic engineer or a technician.

86-9.9.2 The BBS shall have lightning surge protection compliant with IEEE/ANSI C.62.41 for 2000 Volts AC.

86-9.10 MOUNTING / CONFIGURATION

Installation configuration and mounting consists of Meyers Power Products, Inc. MP2000E, or Alpha Technologies Caltrans FXM 1100 UPS, or approved equal with single string (4 batteries) at 25C and 105 Ah. The system shall be complete including Rack mount bypass assembly, RS-232 Serial Port, Ethernet Port, Power Transfer Switch (PTS) and manual relay switch. The battery backup system shall be manufactured by Meyers Power Products, Inc., Alpha Technologies, Inc., or approved equal. The battery backup system is installed in the following configuration:

- A. Install battery backup system in exterior UPS Battery cabinet manufactured by Meyers Power Products, Inc. Model No. BC-100HZ-UPS or approved equal and attached to the 332 controller cabinet.
- B. Foundation: The 332 Controller Cabinet foundation shall be extended to extend fully underneath the depth of the BC-100HZ-UPS cabinet and include anchor bolts per manufacturer specifications.

All necessary hardware for mounting (shelf angles, rack, shelving, harness, etc.) shall be included in the bid price of the BBS. When the external cabinets are used, they shall meet all adequate environmental and physical requirements. In addition exterior cabinets shall be painted with color to match the existing cabinets at the intersection.

86-9.11 FUNCTIONALITY, DISPLAYS, CONTROLS, DIAGNOSTICS AND MAINTENANCE

- 86-9.11.1 The BBS shall include a LCD display to indicate current battery charge status, various input/output voltages, power output, battery temperature, date, time and settings of the various field programmable relays. The same parameters shall be available via RS232 interface for remote monitoring.
- 86-9.11.2 The UPS shall provide the power and the temperature control for an external fan in a separate battery cabinet. The temperature setting shall be adjustable from the touch pad or remotely via RS-232. The temperature range shall be from +20C to +55C in 1 degree C increment.
- 86-9.11.3 The optional BUCK or BOOST mode shall be provided in case of extended power variations.
- 86-9.11.4 The UPS shall be provided with a resettable inverter event counter and a cumulative inverter timer that is accessible via the LCD screen or remotely via RS-232.
- 86-9.11.5 The UPS shall be equipped with an event log for at minimum the last 100 events. The events shall be time and date stamped. The event log shall be retrievable via RS-232 and the last event in the log shall be viewable from the LCD screen.
- 86-9.11.6 The BBS shall be capable of performing a SELF-TEST, locally from the UPS front panel LCD, or remotely via RS-232 interface. The duration of the SELF-TEST shall be programmable in 1-minute increments from 1 min. to 4 hours.
- 86-9.11.7 Certain maintenance controls such as Battery Test, BBS inverter ON/OFF viewing the Event log and changing default settings shall be password protected. The UPS shall be provided with a default password. The user can change the password in order to restrict access to sensitive functions.

86-9.11.8 The following LED lights conditions shall be used to indicate current status:

Red LED Flashing for ALARM
Red LED steady ON for FAULT
Green LED Flashing for battery back-up mode
Green LED steady ON for normal line mode operation

86-9.11.9 BBS shall be easily replaced and installed (complete turnkey system with all necessary hardware). BBS shall not require any special tools for installation. The manual bypass switch shall allow replacement of the UPS without having to lose power to the intersection.

86-9.12 BATTERY SYSTEM

86-9.12.1 Individual batteries shall be AGM 105Ah, 12V type and shall be easily replaced and commercially available off the shelf.

86-9.12.2 The battery system used in the BBS shall consist of 4 batteries. Batteries shall be provided with quick disconnect terminals and a keyed battery cable for easy field installation. Battery sizing will be determined by the load and runtime requirements for any given intersection.

86-9.12.3 Batteries shall be extreme temperature, deep cycle, sealed prismatic lead-calcium based AGM/VRLA (Absorbed Glass Mat/ Valve Regulated Lead Acid) batteries.

86-9.12.4 Batteries shall be certified to operate over a temperature range -25°C to $+74^{\circ}\text{C}$

86-9.12.5 The batteries shall be provided with appropriate interconnect wiring and a corrosion-resistant stationary or swing-out mounting tray and/or brackets appropriate for the cabinet into which they will be installed.

86-9.12.6 Batteries shall indicate maximum recharge data and recharging cycles.

86-9.12.7 Recharge time for the battery, from protective low cutoff to 80% or more of full battery charge capacity, shall not exceed twenty (20) hours.

86-9.12.8 The external battery cabinet shall be vented through the use of louvered vents, filter, and one thermostatically controlled fan operated from the UPS. The Fan will automatically turn ON at the temperature programmed into the UPS.

86-9.13 SERVICE AND WARRANTY

86-9.13.1 Manufacturer shall provide a five (5) year factory-repair warranty for parts and labor on the BBS.

86-9.13.2 Manufacturer shall provide 24 hour trouble shooting via "800" number.

86-9.13.3 Manufacturer shall make field maintenance available via 24 hour customer service "800" number.

86-9.14 SPECIFICATIONS

	Input Specifications
Nominal Input Voltage	120VAC, Single Phase
Input Voltage Range	120VAC +/- 25%
Input Frequency	60 Hz +/- 5%
	Output Specifications
Nominal Output Voltage	120VAC, Single Phase
Power Rating	1250VA (875 Watts) / 2KVA (1500 Watts)
Output Frequency	60 Hz (+/- 5%)
Voltage Wave Form	Sine Wave, THD < 3%
Efficiency (nominal)	95-97%
Mechanical Size	
Inverter / Charger	17" wide x 5.25" high (3U) x 10" deep
PTS Assembly	17" wide x 5.25" high (3U) x 7" deep
Weight	Under 50 Lbs

86-10 VIDEO DETECTION SYSTEM

- 86-10.1 System Hardware:
- The video detection system shall consist of video camera, surge suppressor for video, Video Detection Processor (VDP), which mounts in a standard detector rack, an optional detector rack mounted Extension Module (EM), a pointing device, and Windows™-based system configuration software for an optional computer interface.
- 86-10.2 System Software:
- The system shall include software that detects vehicles in multiple lanes using only the video image. Detection zones shall be defined using only an on-board video menu and a pointing device to place the zones on a video image. Up to a minimum of 24 detection zones per camera shall be available. A separate computer shall not be required to program the detection zones, but shall be optional and shall provide more features and capabilities.
- 86-10.3 Functional Capabilities:
- The VDP shall process video from one or two sources. The source can be a video camera or video player. The video shall be input to the VDP in NTSC composite video format and shall be digitized and analyzed in real time.
- The VDP shall detect the presence of vehicles in up to a minimum of 24 detection zones per camera.
- Detection zones shall be programmed via an on-board menu displayed on a video monitor and a pointing device connected to the VDP. The menu shall facilitate placement of detection zones, settings of zone parameters, and/or to view system

parameters. A separate computer shall not be required for programming detection zones, or to view system operation, but shall be optional and shall provide more features and capabilities.

The VDP shall detect vehicles in real time as they travel across each detector zone.

The VDP shall have a communication port for communications with an external computer. The method communications shall be either through a 9-pin sub-miniature RS-232 port or an RJ-45 Ethernet port.

The VDP shall accept new detector patterns from an external computer through the communications port when the external computer uses the correct communications protocol for downloading detector patterns. A Windows™-based software designed for local or remote connection and providing video capture, real-time detection indication, and detection zone modification capability shall be provided with the system.

The VDP shall send its detection patterns to an external computer through the communications port when requested when the external computer uses the appropriate communications protocol for uploading detector patterns.

The VDP I/O shall have the capability of 24 outputs and 8 inputs using external wire harness for expanded flexibility. An optional method would be to use an EM. This would be used if an alternative method is needed to avoid the need of rewiring the detector rack. The extension module shall be connected to the VDP by a simplified wiring cable with modular connectors. The EM shall be at a minimum 2-channel-per-unit configuration. EM configurations shall have the ability to be programmed to direct outputs to the appropriate output channel.

The camera system shall be able to transmit the composite video signal, up to 1000 feet under ideal conditions. Typical distances for minimal signal degradation are less than 500 feet.

In the event of loss of video signal, the associated VDP shall default to a safe condition, such as a constant call on each active detection channel.

The VDP shall be capable of automatically detecting a low-visibility condition, such as fog, and respond by placing all defined detection zones in a failsafe condition, such as a constant-call mode, call during red only, or a fixed time call. An optional operations log entry shall record the tie of the failsafe output to assist in maintenance and troubleshooting. A user-selected output shall be active during the low-visibility condition that can be used to modify the controller operation if connected to the appropriate controller input modifier(s). The system shall automatically revert to normal detection mode when the low-visibility condition no longer exists.

86-10.4 Vehicle Detection:

A minimum of 24 detection zones shall be supported and each detection zone shall be user-definable in size and shape to suit the site and the desired vehicle detection region.

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single phase of traffic movement.

Detection zones are drawn on the video image from the video camera. To do this, a pointing device is used to outline the detection zones with a graphical interface that is built into the VDP and displayed on a video monitor. The type of pointing device shall communicate through either a 9-pin RS-232 port or a standard USB port. No separate computer shall be required to program the basic detection zones.

The VDP's memory shall be non-volatile to prevent data loss during power outages. The VDP shall continue to operate (that is, detect vehicles) using the existing zone configurations even when the operator is defining/modifying a zone pattern. The new zone configuration shall not go into effect until the configuration is saved by the operator.

The selection of the detection zone for current use shall be done either through a local menu selection or remote computer via a communication port. It shall be possible to activate or download a detection zone pattern for a camera.

When a vehicle is detected crossing a detection zone, the detection zone will flash on the video overlay display screen to confirm the detection of the vehicle.

Detection shall be at least 98% accurate in most weather conditions. Detection accuracy depends on site geometry, camera placement, camera quality, weather conditions, and detection zone location. These accuracy levels do not include allowances for occlusion or poor video due to camera location or quality.

Detector placement shall not be more distant from the camera than ten times the mounting height of the camera.

The VDP shall provide a minimum of 24 channels of vehicle presence detection per camera through a standard detector rack edge connector and one or more extension modules or through a wiring harness.

If a loss of video signal occurs, the VDP shall output a constant call for each enabled detector output channel. During the background learning period, the VDP shall output a constant call.

Detection-zone output capabilities shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse, extend, and delay outputs shall be user-definable from a minimum of 0.1 to 25.0 seconds.

A minimum of six detection zones shall be able to count the number of vehicles detected. The count value shall be internally stored for later retrieval through the communication port. The data collection interval shall be user-definable in periods of a minimum of 5, 15, 30 or 60 minutes, or optional counts by phase.

86-10.5

Radar Sensor (NOT USED)

The radar sensor shall operate in the 24 GHz frequency band.

The radar detection range shall be 600 feet minimum, +/- 5%.

The radar sensor shall be able to track up to 20 independent objects simultaneously.

Object speed detection shall be within a range of 0 to 150 miles per hour +/- 1.0 miles per hour.

The radar sensor shall be able to detect vehicles in 1 to 4 traffic lanes.

The radar sensor shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications. The housing shall allow the radar to be adjusted to allow proper alignment between the sensor and the traveled road surface.

When mounted outdoors in the enclosure, the radar shall operate in a temperature range from -34 °C to +74 °C and a humidity range from 0% RH to 100% RH.

The radar sensor shall communicate with the sensor data combiner.

The radar sensor shall acquire its power from the sensor data combiner.

86-10.5.1 Multi-Sensor Assembly

Both camera and radar sensors shall be housed in an overall, single enclosure assembly.

The overall size of the multi-sensor enclosure shall not exceed 14 inches x 15 inches x 17 inches.

The overall weight of the multi-sensor unit shall not exceed 11 pounds.

The effective projected area (EPA) shall not exceed 2.0 square feet.

The maximum power consumption for the multi-sensor assembly shall be less than 10 watts typical, 20 watts peak.

86-10.5.2 Sensor Data Combiner

A sensor data combiner that combines sensor information from both video and radar sensors shall be employed.

The sensor data combiner shall supply primary power to each sensor unit.

The sensor data combiner shall facilitate digital communications between the sensor data combiner and each of the sensor units.

The sensor data combiner shall get its primary power from an AC power source using industry standard 3-conductor cabling.

The sensor data combiner shall communicate with the detection processor using a single coax cable. Both video imaging and radar data shall use the single coax cable.

The sensor data combiner shall also employ industry standard Wi-Fi connectivity for remote sensor system setup using a mobile programming device such as a netbook or tablet computer. Video camera and radar sensor shall be able to be configured independently.

The sensor data signal shall be fully isolated from the mechanical enclosure and power cabling

Cable terminations at the sensor data combiner shall not require crimping tools.

The sensor data combiner shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications.

86-10.6 Video Detection Processor and Extension Module Hardware:

The VDP and EM shall be specifically designed to mount in a standard NEMA TS 1, TS 2, 2070 ATC, and 170-type detector racks, using the edge connector to obtain power and provide contact closure outputs. No adapters shall be required to mount the VDP or EM in a standard detector rack.

The VDP and EM shall operate in a temperature range from -34°C to +74°C and a humidity range from 0%RH to 95%RH, non-condensing.

The VDP and EM shall be powered by 12 or 24 VDC. These modules shall automatically compensate for the different input voltages.

VDP power consumption shall not exceed 300 milliamps at 24 VDC. The EM power consumption shall not exceed 120 milliamps at 24 VDC.

The VDP shall utilize flash memory technology to enable the loading of modified or enhanced software through the communication port without modifying the VDP hardware.

The VDP and EM shall include detector output pin-out compatibility with industry standard detector racks.

The front of the VDP shall include detection indications, such as LEDs, for each channel of detection that displays detector outputs in real time when the system is operational.

The front of the VDP shall include one BNC video input connection suitable for NTSC video inputs as required. Video must be inputted via a BNC connector on the front face of the processor. RCA-type connectors/jacks for video inputs are not allowed. Video shall not be routed via the edge connectors of the processor.

The front of the VDP shall include one BNC video output providing real time video output that can be routed to other devices. An RCA-type connector/jack for video output is not allowed.

86-10.7 Video Detection Camera:

Video detection cameras used for traffic detection shall be furnished by the VDP supplier and shall be qualified by the supplier to ensure proper system operation.

The camera shall produce a useable video image of the bodies of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 2.0 lux to 10,000 lux.

The camera shall use a CCD sensing element and shall output color video with resolution of not less than 380 lines horizontal.

The camera shall include an electronic shutter control and iris based upon average scene luminance.

The camera shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry by means of a portable interface device designed for that purpose and manufactured by the detection system supplier. The horizontal field-of-view (FOV) shall be adjustable from 9 to 45 degrees. This camera configuration may be used for the majority of detection approaches in order to minimize the setup time and spares required by the user.

The camera shall be housed in a weather-tight sealed enclosure. The enclosure shall be made of aluminum. The housing shall be field-rotatable to allow proper alignment between the camera and the traveled road surface.

The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view. The camera enclosure with sunshield shall be less than 6" diameter, less than 15" long, and shall weigh less than 6 pounds when the camera and lens are mounted inside the enclosure.

The camera enclosure shall include a thermostatically controlled heater to assure proper operation of the lens functions at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.

When mounted outdoors in the enclosure, the camera shall operate satisfactorily in a temperature range from -34 °C to +60 °C and a humidity range from 0% RH to 100% RH. Measurement of satisfactory video shall be based upon VDP system operation.

The camera shall be powered by 120-240 VAC 50/60 Hz. Power consumption shall be 15 watts or less under all conditions. An optional power configuration shall be available to facilitate 12 VDC operations.

The cameras shall be installed on signal mast arms or luminaire mast arms of traffic signal poles. For optimum detection, the camera should be centered above the lane mark on the traveled roadway. The camera shall view approaching vehicles at a

distance not to exceed 350 feet for reliable detection (height-to-distance ratio of 1:10). Camera placement and FOV shall be unobstructed and as noted in the installation documentation provided by the supplier.

The camera enclosure shall be equipped with separate, weather-tight connections for power and video cables at the rear of the enclosure. These connections may also allow diagnostic testing and viewing of video at the camera while the camera is installed on a mast arm or pole using an optional lens adjustment module (LAM) supplied by the VDP supplier. Video and power shall not reside within the same connector.

Multiple camera configurations shall be available to support color video output in either NTSC standards.

The video signal shall be fully isolated from the camera enclosure and power cabling.

The coaxial cable to be used between the camera and the VDP in the traffic cabinet shall be Belden 8281. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. 75-ohm BNC plug connectors should be used at both the camera and cabinet ends. The coaxial cable, BNC connector, and crimping tool shall be approved by the supplier of the video detection system, and the manufacturer's instructions must be followed to ensure proper connection.

The power cabling shall be 16-18 AWG 3-conductor cable with a minimum outside diameter of 6-9 mm. The cabling shall comply with the National Electric Code, as well as local electrical codes.

The video detection camera shall be installed by supplier factory-certified installers and as recommended by the supplier and documented in installation materials provided by the supplier. Proof of factory certification shall be provided.

86-10.8 Warranty:

The video detection system supplier shall provide a 2-year warranty on the video detection system and camera.

During the warranty period, technical support shall be available from the supplier via telephone and this support shall be available from factory-certified personnel or factory-certified installers.

Updates to VDP software shall be available from the supplier without charge.

86-10.9 Maintenance and Support:

The video-detection-system supplier shall maintain an adequate inventory of parts to support maintenance and repair of the video detection system. These parts shall be available for delivery within 30 days of placement of an acceptable order at the then current pricing and terms-of-sale of the supplier of said parts.

The video detection system supplier shall maintain an ongoing program of technical support for the video detection system. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an

acceptable order at the then current pricing and terms-of-sale of the supplier of on-site technical support services.

During the video detection system installation process, the supplier shall provide eight hours of installation and training support. Installation or training support shall be provided by a factory- authorized representative.

86-11 CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM (NOT USED)

86-12 FIBER OPTIC CABLES

86-12.1 Requirements for Contractor

The Contractor shall be responsible for the furnishing, installation, splicing, termination, and testing of the fiber optic cable and all related equipment/components shall meet the following requirements:

- A. The Contractor shall have minimum of three years experience in the installation of fiber optic cables, including fusion splicing, terminating and testing of single-mode fiber optic cable.
- B. The Contractor shall have completed at least two systems where fiber optic cables are installed in outdoor conduits and the system has been in continuous satisfactory operation for at least one year. As proof, the Contractor shall submit the following reference material within a maximum one page format:
 - Name of System owner
 - Contact name for operation of System
 - Contact name for maintenance of System
 - Date system was installed and accepted
 - Address of System owner
 - Telephone and fax number of System Owner
 - Short description of the project

Each project must have included the installation of at least 20,000 linear feet of fiber optic cable and 100 terminations of fiber optic cable. If more than two projects are needed to meet the footage and terminations requirements, submit additional reference sheets.

The above material shall be submitted with the project proposal bid package so that references can be checked prior to award of the contract. Prior to contract award, the Engineer will contact the above references and confirm that they do meet the above specifications. If satisfactory references are not obtained, then the next low bid Contractor will be selected.

The Contractor shall furnish, install, splice and test all the required fiber optic cable. All splicing kits, fiber optic cable caps, moisture/water sealants, terminators, splice trays, patch cords, connectors, pig tails and accessories to complete the fiber optic network shall be provided as incidentals. All equipment for installation, splicing and testing shall be provided by the Contractor.

86.12.2 General

This item shall govern for the furnishing and installation of fiber optic cable in designated locations as shown on the plans and as detailed in accordance with these Specifications.

86-12.3 Requirements

Fiber optic cables shall be supplied in the configurations shown on the plans and specified in these Specifications.

Each fiber optic cable shall be suitable for both underground conduit/duct placement and indoor application. The fiber optic cable shall be plenum and fire rated. Additionally, there will be ancillary drop and connecting (patching) optical fiber cables procured under this Contract and these Specifications, which are more precisely described elsewhere in this document.

All materials furnished, assembled, fabricated or installed under this item shall be new, corrosion resistant and in strict accordance with the details shown on the plans and in these Specifications. All fibers in the cables shall be usable fibers and free of surface imperfections and occlusions, in order to meet or exceed all of the optical, mechanical, and environmental requirements contained in these Specifications.

All cables shall be free of material or manufacturing defects and dimensional non-uniformity that would:

- Interfere with the cable installation employing accepted cable installation practices.
- Degrade the transmission performance and environmental resistance after installation.
- Inhibit proper connection to interfacing elements.
- Otherwise yield an inferior product.
- Each fiber optic cable for this project shall be all-dielectric, dry water-blocking material, duct type, with loose buffer tubes, and shall conform to these Specifications.

The Contractor shall furnish, install, splice and test all the required fiber optic cable. All splicing kits, fiber optic cable caps, moisture/water sealants, terminators, splice trays, patch cords, connectors, pig tails and accessories to complete the fiber optic network shall be provided as incidentals. All equipment for installation, splicing and testing shall be provided by the Contractor.

All fiber optic glass/cable on this project shall be from the same qualified manufacturer regularly engaged in the production of optical fiber material.

The optical fibers shall be contained within buffer tubes. The buffer tubes shall be stranded around an all-dielectric central member. Aramid yarn and/or fiberglass shall be used as a primary strength member, and a medium or high-density polyethylene outside jacket shall provide overall protection.

The cable shall be qualified as compliant with Chapter XVII, of Title 7, Part 1755.900 of the Code of Federal Regulations, "REA Specification for Filled Fiber Optic Cables."

86-12.4 Packaging

1. The completed cable shall be packaged for shipment on non-returnable wooden reels. Required cable lengths shall be stated in the purchase order.
2. Top and bottom ends of the cable shall be available for testing.
3. Both ends of the cable shall be sealed to prevent the ingress of moisture.
4. Each reel shall have a weather resistant reel tag attached identifying the reel and cable.

Fiber optic cable meeting the above specifications is available from Corning Cable Systems, P.O. BOX 489, Hickory, NC 28603-0489. Any other cable meeting the above specifications shall also be considered.

86-12.5 Cable Marking

1. The optical fiber cable outer jacket shall be marked with manufacturer's name, the month and year of manufacture, the words "Optical Cable," telecommunications handset symbol as required by Section 350G of the National Electrical Safety Code[®] (NESC[®]), fiber count, fiber type, and sequential meter marks.
2. The markings shall be repeated every two (2) feet.
3. The actual length of the cable shall be within -0/+1% of the length marking.
4. The marking shall be in a contrasting color to the cable jacket.
5. The marking shall be approximately 0.1 inches in height and must be permanent and weatherproof.

86-12.6 Quality Control

The manufacture of supplied optical cable, optical cable assemblies, and hardware shall be TL 9000 and/or ISO 9001 registered. All cabled optical fibers shall be 100% attenuation tested. The attenuation of each fiber shall be provided with each cable reel.

86-12.7 General Considerations

The fiber optic cable shall consist of, but not be limited to, the following components:

- Single-mode optical fiber
- Buffer tubes
- Central member
- Filler rods (as needed per cable type)
- Stranding
- Dry-filled water blocking tape and water blocking yarn
- Tensile strength member
- Ripcord

- Outer jacket

Single-mode Optical Fiber - Each optical fiber shall be glass and consist of a doped silica core surrounded by concentric silica cladding. All fibers in the buffer tube shall be usable fibers, and shall be sufficiently free of surface imperfections and occlusions to meet the optical, mechanical, and environmental requirements of these specifications. The coating shall be a dual layered, UV cured acrylate. The coating shall be mechanically or chemically strippable without damaging the fiber.

Buffer Tubes.- The loose buffer tubes shall be single or dual layered in construction. For single layer, use polypropylene. For dual layer, the inner layer shall be made of polycarbonate and the outer layer shall be made of polyester. Buffer tubes shall provide clearance between the fibers and the inside of the tube to allow for expansion without constraining the fiber. The fibers shall be loose or suspended within the tubes and shall not adhere to the inside of the tube. Each buffer tube shall contain either 6 or 12 fibers based upon the total fiber count in the cable and the fiber assignment table as shown on the plans and these Specifications. No individual fiber tube shall contain more than 12 fibers.

The loose buffer tubes shall be extruded from a material having a coefficient of friction sufficiently low to allow free movement of the fibers. The material shall be tough and abrasion resistant to provide mechanical and environmental protection of the fibers, yet designed to permit safe intentional "scoring" and breakout, without damaging or degrading the internal fibers.

Buffer tube filling compound shall be a homogenous, hydrocarbon-based gel with anti-oxidant additives. It shall be used to prevent water intrusion and migration. The filling compound shall be non-toxic and dermatologically safe to exposed skin. It shall be chemically and mechanically compatible with all cable components, non-nutritive to fungus, non-hygroscopic and electrically non-conductive. The filling compound shall be free from dirt and foreign matter and shall be readily removable with conventional, nontoxic solvents.

Buffer tubes shall be stranded around a central member by a method, such as the reverse oscillation stranding process, that will prevent stress on the fibers when the cable jacket is placed under strain.

Each buffer tube shall be distinguishable from other buffer tubes in the cable by using the same color coding as specified for fibers elsewhere in this document.

Central Member - The central member, which functions as an anti-buckling element, shall be a glass reinforced plastic rod with similar expansion and contraction characteristics as the optical fibers and buffer tubes. To provide the proper spacing between buffer tubes during stranding, a symmetrical, linear, overcoat of polyethylene may be applied to the central member to achieve the optimum diameter.

Filler rods - Fillers may be included in the cable cross-section. Filler rods shall be solid medium or high density polyethylene. The diameter of filler rods shall be the same as the outer diameter of the buffer tubes.

Stranding - The buffer tubes shall be helically wrapped using the reverse lay stranding process around the central member in order to decouple the buffer tubes and optical fibers from the mechanical forces experienced during installation.

Completed buffer tubes shall be stranded around the central member using stranding methods, lay lengths, and positioning such that the cable shall meet mechanical, environmental, and performance specifications. A polyester binding shall be applied over the stranded buffer tubes to hold them in place. Binders shall be applied with sufficient tension to secure the buffer tubes to the central member without crushing the buffer tubes. The binders shall be non-hygroscopic, non-wicking, and dielectric with low shrinkage.

Core and Cable Water-block material - The cable core shall use a dry water-blocking material to block the ingress and migration of water. The water-blocking performance shall be equivalent to flooded optical cables when tested in accordance with industry standards (ICEA, RUS). Dry water-blocking material is used in optical cables to enhance the ease of handleability while maintaining reliable water-blocking performance.

Tensile Strength Member - Tensile strength shall be provided by high tensile strength aramid yarns and/or fiberglass which shall be helically stranded evenly around the cable core and shall not adhere to other cable components.

Ripcord - The cable shall contain at least one ripcord under the jacket for easy sheath removal.

Outer jacket - The all-dielectric cables (no armoring) shall be sheathed with medium or high density polyethylene. The minimum nominal jacket thickness shall be 1.4 mm. Jacketing material shall be applied directly over the tensile strength members and shall not adhere to the aramid strength material. The polyethylene shall contain carbon black to provide ultra-violet light protection, and it shall not promote the growth of fungus. The jacket shall be free of holes, splits, and blisters. The cable jacket shall contain no metal elements and shall be of a consistent thickness.

The outer jacket for the backbone cable shall have a different color from the outer jacket for the distribution cable. The color of the jacket for the backbone, distribution, and drop cable shall be approved by the Engineer before ordering.

86-12.8

Fiber Characteristics

One hundred percent (100%) of the optical fibers shall meet or exceed the requirements contained in this specification.

The cable shall be tested in accordance with TIA/EIA-455-3A (FOTP-3), "Procedure to Measure Temperature Cycling Effects on Optical Fiber, Optical Cable, and Other Passive Fiber Optic Components." The average change in attenuation at extreme operational temperatures (-20°C to +70°C) will not exceed 0.05 dB/km at 1550 nm. The magnitude of the maximum attenuation change of each individual fiber will not be greater than 0.15 dB/km at 1550 nm. This figure includes an allowance of up to 0.05 dB/km for measurement repeatability.

All fibers within the finished cable shall be composed primarily of silica and shall have a matched clad index of refraction profile as well as the physical and performance characteristics that shall meet the requirements in the following table:

Parameters	Value
Mode	Single
Type	Corning Cable System or equivalent
Core diameter	8.3 μm (nominal)
Cladding diameter	125 $\mu\text{m} \pm 1.0 \mu\text{m}$
Core to Cladding Offset	$\leq 0.8 \mu\text{m}$
Coating Diameter	245 $\mu\text{m} \pm 10 \mu\text{m}$
Cladding Non-circularity defined as: $[1 - (\text{min. cladding dia} \div \text{max. cladding dia.})] \times 100$	$\leq 1.0\%$
Proof/Tensile Test	100 kpsi, min.
Attenuation: @ 1310 nm @ 1550 nm	$\leq 0.4 \text{ dB/km}$ $\leq 0.3 \text{ dB/km}$
Attenuation Uniformity	No point discontinuity greater than 0.1 dB at either 1300 nm or 1550 nm
Attenuation at the Water Peak	$\leq 2.1 \text{ dB/km @ } 1383 \pm 3\text{nm}$
Attenuation At Extreme Operational Temperatures	$\leq +0.05 \text{ dB @ } 1310 \text{ nm or } 1550 \text{ nm}$
Chromatic Dispersion: Zero Dispersion Wavelength (λ_0) Zero Dispersion Slope	$1301.5 \leq \lambda_0 \leq 1321.5 \text{ nm}$ $\leq 0.092 \text{ ps}/(\text{nm}^2 \cdot \text{km})$
Maximum Dispersion:	$\leq 3.5 \text{ ps}/(\text{nm} \cdot \text{km})$ for 1285 - 1330 nm $\leq 18 \text{ ps}/(\text{nm} \cdot \text{km})$ for 1550 nm
Cut-Off Wavelength	$< 1260 \text{ nm}$
Mode Field Diameter (Petermann II)	$9.3 \pm 0.5 \mu\text{m}$ at 1310 nm $10.5 \pm 1.0 \mu\text{m}$ at 1550 nm

86-12.9 Color Coding

Optical fibers shall be distinguishable from others in the same buffer tube by means of color-coding according to the following:

1. Blue (BL)	7. Red (RD)
2. Orange (OR)	8. Black (BK)
3. Green (GR)	9. Yellow (YL)
4. Brown (BR)	10. Violet (VL)
5. Slate (SL)	11. Rose (RS)
6. White (WT)	12. Aqua (AQ)

The colors shall be targeted in accordance with the Munsell color shades and shall meet TIA/EIA-598B "Color Coding of Fiber Optic Cables" and RUS 7 CFR 1755.900.

The color formulation shall be compatible with the fiber coating and the buffer tube filling compound, and be heat stable. It shall not fade or smear or be susceptible to migration, it shall not

affect the transmission characteristics of the optical fibers and shall not cause fibers to stick together.

86-12.10 General Cable Performance Specifications

The fiber optic cable shall withstand water penetration when tested with a one meter static head or equivalent continuous pressure applied at one end of a one meter length of filled cable for one hour, no water shall leak through the open cable end. Testing shall be done in accordance with TIA/EIA-455-82 (FOTP-82), "Fluid Penetration Test For Fluid-Blocked Fiber Optic Cable."

The cable shall exhibit no flow (drip or leak) for 24 hours at 80°C. The weight of any compound that drips from the sample shall be less than 0.05 grams (0.002 ounce). A representative sample of cable shall be tested in accordance with TIA/EIA-455-81B (FOTP-81), "Compound Flow [Drip] Test for Filled Fiber Optic Cable". The test sample shall be prepared in accordance with method A.

Crush resistance of the finished fiber optic cables shall be 220 N/cm applied uniformly over the length of the cable without showing evidence of cracking or splitting when tested in accordance with TIA/EIA-455-41 (FOTP-41), "Compressive Loading Resistance of Fiber Optic Cables." The 220 N/cm (125 lbf/in) load shall be applied at a rate of 2.5 mm (0.1 in) per minute. The load shall be maintained for a period of 1 minute. The load shall then be decreased to 110 N/cm (63 lbf/in). Alternatively, it is acceptable to remove the 220 N/cm (125 lbf/in) load entirely and apply the 110 N/cm (63 lbf/in) load within five minutes at a rate of 2.5 mm (0.1 in) per minute. The 110 N/cm (63 lbf/in) load shall be maintained for a period of 10 minutes. Attenuation measurements shall be performed before release of the 110 N/cm (63 lbf/in) load. The change in attenuation shall not exceed 0.4 dB during loading at 1550 nm for single-mode fibers and 1.0 dB during loading at 1300 nm for multimode fiber. The repeatability of the measurement system is typically 0.05 dB or less. No fibers shall exhibit a measurable change in attenuation after load removal.

The cable shall withstand 25 cycles of mechanical flexing at a rate of 30 ±1 cycles/minute with a sheave diameter not greater than 20 times the cable diameter. The cable shall be tested in accordance with Test Conditions I and III of TIA/EIA-455-104A (FOTP-104), "Fiber Optic Cable Cyclic Flexing Test." The magnitude of the attenuation change will be within the repeatability of the measurement system for 90% of the test fibers. The remaining 10% of the fibers will not experience an attenuation change greater than 0.1 dB at 1550 nm. The repeatability of the measurement system is typically ± 0.05 dB or less. The cable jacket will exhibit no cracking or splitting when observed under 5X magnification.

Impact testing shall be conducted in accordance with TIA/EIA-455-25B (FOTP-25) "Repeated Impact Testing of Fiber Optic Cables and Cable Assemblies." The cable shall withstand 20 impact cycles. The magnitude of the attenuation change will be within the repeatability of the measurement system for 90% of the test fibers. The remaining 10% of the fibers will not experience an attenuation change greater than 0.1 dB at 1550 nm. The repeatability of the measurement system is typically ± 0.05 dB or less. The cable jacket will not exhibit evidence of cracking or splitting at the completion of the test.

Using a maximum mandrel and sheave diameter of 560 mm, the finished cable shall withstand a longitudinal tensile load of 2700 N (608 lbs.) applied for one hour (using "Test Condition II" of the test plan). The test shall be conducted in accordance with TIA/EIA-455-33 (FOTP-33), "Fiber Optic Cable Tensile Loading and Bending Test." The measured fiber tensile strain shall be ≤ 60% of the fiber proof strain. The cable will not experience a measurable increase in attenuation when

subjected to the rated residual tensile load, 890 N (200 lbf). The repeatability of the measurement system is typically ± 0.05 dB or less.

The cable shall be capable of withstanding a bending radius of fifteen (15) times the cable diameter under tensile loading and ten (10) times the cable diameter under a no-load condition.

86-12.11 Drop Cable

The drop cable shall be a 12-SMFO and shall have one (1) or two (2) fiber strand(s) spliced into the appropriate fiber strand of the main branch cable as prescribed elsewhere in the Plans and/or these Specifications. The drop cable shall have the "active fibers" terminated at its other end with a ST type connector as described elsewhere in this specification.

Optical fiber cable used for a drop cable shall comply with all other aspects of the specifications as set forth in the Specifications for optical fiber cable. The drop cable shall have sufficient length to extend from the fiber splice location to the optical interface of the associated communications equipment, allowing for routing and securing with nylon ties plus cable slack at each end, unless otherwise specified in the Plans or these Specifications or directed by the Engineer.

86-12.12 Splice Equipment

All fiber optic cable splicing performed on this project shall be of fusion type and shall not exceed 0.1 dB loss per splice.

The field splices shall connect the fibers of the two fiber optic cable lengths together. The termination splices shall connect the fiber optic cable span ends with pigtails. The field splices shall be placed in a splice tray and the splice tray with splices shall be placed in a splice closure.

The termination splices shall be placed in a splice tray and the splice tray with splices shall then be placed in a fiber distribution unit or field cabinet as required. Splices shall be protected with a thermal shrink sleeve.

The fiber optic field splices shall be enclosed in splice closures, which shall be waterproof, rodent proof, and re-enterable, and shall accommodate all the fibers in a single cable.

Splice closures shall be complete with splice organizer trays, brackets, plugs, clips, cable ties, seals and sealant, and a dry encapsulate.

The splice closure shall be suitable for either a direct burial or pull box/vault application.

86-12.13 Splice Closures and Trays

The Contractor shall furnish and install fiber optic splice closures in vaults where splicing is required. The splice closure shall be capable of accommodating and terminating the required number of cable and fiber strands as shown on the plans and shall include the required encapsulant. The splice closure shall be able to accommodate up to 4 cable entries. If all 4 cable entry holes are not required, the remaining unused entry holes will be closed such that moisture does not enter the splice closure and affect the operation of the fiber optic cable. The splice closure shall have sleeves to size the cable entry to the appropriate cable diameter. Each splice closure shall come equipped with the required number of single-mode splice trays. The Contractor shall provide all mounting hardware required to securely mount the closures to the splice vault.

Included within the splice closure, the Contractor shall also supply and install splice trays. Each splice tray shall be appropriately sized to fit inside the splice closure. The splice trays shall be of injection-molded plastic type with a clear plastic cover so allow visibility of fibers without opening the tray. Each splice tray shall handle up to 12 single-mode fusion splices.

A minimum of 3 unopened kits required for the resealing of the splice closure shall be supplied with this contract and considered as part of the necessary equipment.

Acceptable splice closures, encapsulant, trays, and reseal kits shall be from Corning Cable System, P.O. Box 489, Hickory, NC 28603 -0489, or approved equal.

86-12.14 Fiber Optic Patch Panel

Fiber optic patch panel shall be 12 ST high-density adapter bulkhead. All fibers from the cable shall be terminated into a 19" rack mount fiber optic patch panel.

86-13 IP VIDEO ENCODER MPEG4 (IPVE) (NOT USED)

86-14 LAYER 2 GIGABIT ETHERNET SWITCH TYPE 2 (GigE)

86-14.1 Description

The GigE shall be a Cisco IE-3000 managed Ethernet switch providing two SFP fiber optic Gigabit Ethernet ports and eight 10/100Mbps ports. The GigE devices are located in:

- Traffic signal cabinets
- CCTV cabinets

86-14.2 Materials

(1) Layer 2 Gigabit Ethernet Switch Type 2 (GigE)

The GigE shall meet the following minimum requirements:

The GigE field units shall be DIN rail mounted.

The GigE shall comply with the following:

- 2 - Single mode SFP Fiber Optic Gigabit-Ethernet Ports
- 2 - Single mode SFP transceiver with LC fiber connectors
- 8 - 10/100BaseTX, auto-negotiating RJ-45 ports
- Full compliance with IEEE: 802.3, 802.3u and 802.3z
- Full duplex operation and flow control compliant with IEEE 802.3x
- Full compliance with IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- Full compliance with IEEE 802.1p Quality of Service
- Full compliance with IEEE 802.1q VLAN Tagging
- Non-blocking switching

Commented [HD1]: City to confirm if this section can be removed since existing controller, traffic signal cabinet and equipment will be re-used.

- SNMP v2 and RMON
- IGMP Snooping for multicast filtering
- Automatic learning of 8000 MAC addresses (min)
- Loss of link recovery time of less than 250ms
- Port configuration, status, statistics, security
- Telnet and CLI management interfaces
- LED indicators for link and activity
- 15dB optical link budget (min) for locations where the distance to the next switch does not exceed four miles
- 19dB optical link budget (min) for locations where the distance to the next switch exceeds four miles
- Powered from 120VAC, 60Hz (Cisco Brand)
- -34°C to +74°C operating temperature without the use of fans

The contractor shall provide fiber optic attenuators, where required.

(2) Warranty

All work and equipment shall be guaranteed for a minimum of one (1) year from the date of acceptance.

(3) Submittal Requirements

Prior to purchase or fabrication of any equipment or material for use on this project, the Contractor shall submit for review by the Engineer, appropriate catalog cut sheets and specifications for all standard, off-the-shelf items and shall submit shop drawings and other necessary data for all non-catalog or custom-made items.

Two sets shall be submitted to the Engineer for review and approval. Detailed submittal data is required. If reprinted literature, such as catalog cut sheets, is used to satisfy some or all of the submittal data requirements, there shall be no statements on the literature that conflict with the requirements of the contract documents. Any such statements shall be crossed off and initialed by the Contractor. Explanation of how specifications shall be met pertaining to items changed from the literature shall be given. All options that the Contractor is proposing to supply shall be clearly indicated on the submittal.

Prior to completion of the project or within 15 days of the Engineer's request, provide all final configuration information for contractor installed equipment. Submit two bound paper copies and one electronic copy in the form of a Microsoft® Office® document saved to a CD-ROM. Include all configuration parameters for each device. Include device location, make and model number, serial number, date of installation, Vendor, and vendor contact information, and warranty expiration date.

86-14.3 Construction Requirements:

The contractor shall furnish and install the communications equipment identified in this special provision as shown on the project plans.

The contractor shall install all communications equipment in a neat and orderly fashion utilizing cable ties and connector labels. The contractor shall coordinate with the Engineer on the placement and mounting of equipment within the cabinets, as well as labeling of the Ethernet switches with sequential labels provided by Seton (Style No. 35968)

(A) Installation Requirements:

- (1) The contractor shall install fiber optic communications equipment to implement communications between the ITS field devices and the TMC using Internet Protocol (IP) and IEEE 802.3 compliant equipment as shown in the project plans. The IEEE 802.3 compliant equipment shall use IEEE 802.1q VLAN tagging to assign each ITS device to a virtual local area network. The contractor shall request the VLAN and IP configuration information a minimum of 45 calendar days prior to requiring it.
- (2) The contractor shall implement Rapid Spanning Tree Protocol (IEEE 802.1w) on all Ethernet switches within the network and shall demonstrate proper operation by creating breaks at different points within the network and verifying that the network re-converges in less than 60 seconds.
- (3) The contractor shall develop and submit to the Engineer a cutover plan to connect, configure, and integrate the new and existing network communication equipment identifying planned outages (system offline) associated with testing and integration.

(B) Testing:

The contractor shall demonstrate that communications from the TMC building and the new and existing field devices works properly. The contractor shall test each device that is connected to the TMC building.

86-14.4 Method of Measurement:

The Layer 2 Gigabit Ethernet Switch type 2 (GigE) equipment will be measured as an each, complete and in place, in accordance with the plans and special provisions.

86-14.5 Basis of Payment:

All installation will be paid for at the contract lump sum price bid for each respective traffic signal modification item as designated on the bidding schedule, complete in place; this shall be full compensation for the work described herein and on the Plans.

86-15 REMOTE COMMUNICATIONS MODULE AND SERVER

86-15.1 General

Commented [HD2]: City to confirm if this section can be removed since existing controller, traffic signal cabinet and equipment will be re-used.

This specification sets forth the minimum requirements for a module that provides a single point interface to multiple rack-mounted video detection units. This module shall also have the capability to stream up to 4 simultaneous video streams over an Ethernet interface. Model shall be Iteris Vantage Edgeconnect or approved equal.

86-15.2

Functional Capabilities:

- (1) The interface device shall provide capabilities to enable multiple rack-mounted video detection processors to be locally and remotely accessed from a single point via one set of user interface devices. User interface devices are defined as a pointing device (mouse or track-ball) and video monitor.
- (2) Up to four video detection processor chains (video detection processor and extension modules) shall be accommodated.
- (3) The device shall allow the operator to switch video output display for any of the attached rack-mounted video detection processors by pressing a momentary switch or by using the remote access software.
- (4) Local user access to video detection programming shall be limited to the detection processor unit that is currently being displayed on the monitor.
- (5) All local programming and setup parameters for the video detection processor shall be user accessible through the interface unit without requiring the user to swap user interface cables between video detection processors.
- (6) Remote access to the device shall be through the built-in Ethernet port or EIA-232 port via access software running on a Microsoft Windows based personal computer.
- (7) An internet browser-based remote access firmware shall also be available for remote setup and diagnostics of the interface unit.
- (8) The interface unit shall support streaming video technology using MPEG4 and H.264 standards to allow the user to monitor video detection imagery over the Ethernet interface. Motion JPEG streaming video shall not be allowed.
- (9) The user shall be able to select which video input to be displayed on the output video monitor by repeatedly depressing the menu button.
- (10) The user shall be able to select a quad view of all of the four cameras simultaneously on the output video monitor by depressing the menu button.
- (11) The interface unit shall allow four independent streams, one from each video detection processor, to be transported via Ethernet to four independent streaming video players simultaneously in CIF resolution.
- (12) The interface unit shall also have a browser interface that allows the user to configure the module.

- (13) The browser interface shall also allow the user to view the streaming video on the browser interface.
- (14) The browser interface shall allow the user to select the resolution of the displayed streamed video.
- (15) The interface unit shall support the streaming and display of D1, CIF, QCIF, VGA and QVGA video resolutions in a single stream or four concurrent streams in CIF resolution.
- (16) The interface unit shall allow the user to select a quad-view of all four input video signals to be shown on the browser interface.
- (17) The interface unit shall allow the user to manage the unit's Ethernet bandwidth usage by allowing the user to select the maximum bandwidth limit between 256 kbps and 7.0 Mbps.
- (18) The browser interface shall allow the user to change the unit's Ethernet network settings of IP address, subnet mask and default gateway.
- (19) The interface unit shall allow the user to upload new application firmware through the use of the browser interface.
- (20) Access to the interface unit shall be under password control and the browser interface shall allow the user to change the password.
- (21) The interface unit shall have the capability to perform IP port redirecting between the remote management software and each attached video detection processor. A unique IP port number shall be assigned for each video detection interface. The port number shall not be identical to the web browser interface of 80.

86-15.3

Interface Device Hardware

- (1) The interface device shall be specifically designed to mount in a standard TS-1, TS-2, and 170 type detector rack, using the edge connector to obtain power. No adapters shall be required to mount the interface device in a standard detector rack.
- (2) The interface device shall occupy no more than two slots in the detector rack and shall provide a loop-type handle for easy installation and removal.
- (3) The interface device shall be powered by 12 or 24 volts DC and shall not consume more than 6.25 watts. The unit shall automatically compensate for the different input voltages and shall be hot-swappable.
- (4) The interface device shall operate in a temperature range from -35°C to +74°C and a humidity range from 0% RH to 95% RH, non-condensing.
- (5) Video Ports - The interface unit shall accommodate a maximum of four composite video inputs and one video output.

- (a) Video inputs and video output shall be made via BNC connectors to ensure secure connections. RCA or other straight friction plug-in type connections shall not be allowed. Video inputs shall use a vendor supplied "octopus" cable to accommodate the four video inputs. Provisions shall be made to accommodate the mating cable to utilize jack screws for securing the octopus cable.
- (6) The interface unit shall accommodate either monochrome or color video signals conforming to NTSC or PAL video standards.
- (7) The interface unit shall automatically sense the video input signal and configure the video output port to either NTSC or PAL standards. Each video input signal shall be separately sensed to allow mixed video signals.
- (8) The interface unit shall interface with up to four video detection processors using RJ-45 interface connectors.
- (9) The interface unit shall support the use of USB pointing devices. The unit shall support either a USB mouse or trackball. Pointing devices shall not require vendor specific pointing device software drivers.
- (10) An EIA-232 communications port shall be provided for local and remote access. The connector for this port shall be a 9-pin "D" subminiature connector on the front of the interface unit. Provisions shall be made to accommodate mating cables to utilize jack screws for securing cables.
- (11) Hi-intensity LED status lights shall be provided to facilitate system monitor. Indicators shall be provided to show the status of the internal processor, video lock and indication of which video input is being monitored.
- (12) An Ethernet port shall be integrated within the interface unit. The Ethernet port shall conform to 802.3 Ethernet specifications and shall auto-sense between 10 and 100 Mbps data rates. Industry standard TCP/IP (UDP and TCP packets) protocol shall be supported. The Ethernet connection shall be made through a RJ-45 connector.

86-15.4 Limited Warranty

The supplier shall provide a limited three-year warranty on the video detection system. See suppliers standard warranty included in the Terms and Conditions of Sale documentation.

During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.

86-15.5 Maintenance and Support

The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the system. These parts shall be available for delivery within 30 days of

placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.

The supplier shall maintain an ongoing program of technical support for the interface unit and video detection system. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on site technical support services.

Installation or training support shall be provided by a factory authorized representative.

All product documentation shall be written in the English language.

86-15.6 Remote Communications Server

Furnish and install remote communications server to allow communication with controller cabinet equipment and other field equipment meeting the requirements specified herein.

The RCS will be used to view, modify, update, and transfer IP video streams and data streams from the field equipment in the controller cabinet to the TMC, as necessary. All hardware shall be furnished and delivered by the contractor. All operating systems and application software shall be loaded and the server shall be made fully operational prior to acceptance.

86-15.6.1 Materials

All materials provided shall be for new un-depreciated stock. Refurbished materials shall not be acceptable. All materials provided shall be currently supported by the manufacturer, in current production, and not scheduled for end-of-life.

86-15.6.2 Remote Communications Server

The RCS shall meet the following minimum requirements:

Processor	Intel 7 th Generation Core i7 Processor @ 1.7GHz
Memory	16GB
Video Card	Intel 5000
Hard Drive	512GB Solid State
Battery Life	Up to 13.5 hours
Chassis/Screen	Tablet PC 12.3" PixelSense Display 10point Multitouch
Resolution	2736x1824 (267 PPI)
Aspect Ratio	3:2
Operating System	Windows 10 Pro
Data Ports	Full Size USB 3.0 MicroSDXC card reader Surface Connect 3.5mm Headset Jack Mini DisplayPort Cover port

Network	Wireless Wi-Fi 802.11ac/802.11 a/b/g/n Bluetooth 4.1
Cameras, Video, Audio	8.0MP rear-facing camera 1080p 5.0MP front-facing camera 1080p Dual microphones Stereo speakers with Dolby sound
Warranty/Tech Support	1 year for hardware defects and malfunctions 90 days tech support for preinstalled software
Other Equipment	Stylus Power Supply

86-15.6.3 Submittal Requirements

Prior to purchase or fabrication of any equipment or material for use on this project, the Contractor shall submit for review by the Engineer, appropriate catalog cut sheets and specifications for all standard, off-the-shelf items and shall submit shop drawings and other necessary data for all non-catalog or custom-made items.

Detailed submittal data is required. If reprinted literature, such as catalog cut sheets, is used to satisfy some or all of the submittal data requirements, there shall be no statements on the literature that conflict with the requirements of the contract documents. Any such statements shall be crossed off and initialed by the Contractor. Explanation of how specifications shall be met pertaining to items changed from the literature shall be given. All options that the Contractor is proposing to supply shall be clearly indicated on the submittal.

86-15.6.4 Construction Requirements

(1) Installation Requirements

(a) Remote Communications Server

The Contractor shall install the Remote Communications Server at locations designated by the Engineer.

(2) Testing

The Contractor shall generate a test procedure to demonstrate that the RCS is configured correctly and operating properly. The Contractor shall submit the test procedure to the Engineer for approval a minimum of one week prior to beginning any testing.

(3) Basis of Payment

Remote communications server will be paid for at the contract lump sum price bid for each respective traffic signal modification item as designated on the bidding schedule, complete in place; this shall be full compensation for the work described herein and on the Plans.

86-16 17-INCH DIAGONAL RACK MOUNT LCD MONITOR

86-16.1 General

This specification sets forth the minimum requirements for a 17-inch LCD color video monitor that is capable of being mounted in a 1U high 19-inch rack.

86-16.2 Functional Capabilities

The 17-inch diagonal color LCD monitor shall be housed in a sliding 1U high rack mount drawer.

The monitor shall be able to be flipped up vertically for viewing and flipped down horizontally for storage.

The drawer shall be able to be locked using a key to restrict unauthorized usage.

The LCD panel shall be industrial grade (Grade A) and employ thin film transistor (TFT) technology.

The LCD panel shall have a high contrast ratio of 700:1 minimum.

The LCD panel shall have a brightness level of 300 cd per square meter minimum.

The LCD panel shall have support computer resolution up to 1280 (horizontal) x 1024 (vertical).

The LCD panel shall support both NTSC and PAL video formats and shall be auto-sensing.

The LCD panel shall support 16.2 million display colors.

The typical pixel rise time shall be 2 milliseconds. The typical pixel fall time shall be 6 milliseconds.

The LCD panel shall have a pixel pitch of 0.264 (horizontal) x 0.264 (vertical) millimeters minimum.

The minimum viewing angle shall be 150 degrees horizontally and 135 degrees vertically.

The on screen display (OSD) shall enable control of brightness, contrast, phase & clock, color, horizontal and vertical positioning.

The LCD panel shall support VGA analog RGB, S-video and composite video interfaces.

The LCD panel shall have a MTBF rating of 50,000 hours minimum.

The monitor system shall be able to operate from 110 VAC or 220 VAC, 50 or 60 Hz.

The monitor system shall be FCC, VCCI, EMC and CE approved.

Commented [HD3]: City to confirm if this section can be removed since existing controller, traffic signal cabinet and equipment will be re-used.

The monitor system shall operate between 0 and 50 degrees Celsius, 90% non-condensing.

The monitor system shall be able to accept mechanical shock of 10 G's peak acceleration (11 ms, half sine wave)

The monitor system shall be able to accept vibrations of 5 to 500 Hz at 1 G RMS random vibration.

86-16.3 Physical Characteristics

The monitor system shall be 44.2 x 4.45 x 55 cm (17.4 x 1.75 x 21.6 in.) (W x H x D).

The monitor system shall weigh no more than 10.9 kg (24 pounds).

86-16.4 Warranty

The LCD monitor shall be warranted to be free of defects in material and workmanship for a period of not less than 3 years from date of receipt.

SECTION 310 – STRIPING, PAVEMENT AND CURB MARKINGS

310-5 PAINTING VARIOUS SURFACES

310-5.6 Painting Traffic Striping, Pavement Markings, and Curb Markings.

Existing traffic stripes and markings that do not conform to the Plans shall be removed by wet sandblasting.

310-5.6.4 Geometry, Stripes, and Traffic Lanes; and 310-5.6.5 Traffic Stripes and Markings. All details and dimensions for traffic stripes and markings shall conform to the 2015 Caltrans Standard Plans.

310-5.6.5 Traffic Stripes and Markings.

All striping and pavement markings shall be thermoplastic materials conforming to State Specifications PTH-02SPRAY, PTH-02HYDRO or PTH-02ALKYD. Glass beads shall be applied to the surface of the molten thermoplastic material and shall conform to the requirements of the State Specifications 8010-004 (Type II).

Marking for disable parking shall be thermoplastic materials conforming to State Specifications or blue hot tape marking shall be made of durable skid resistant material meeting ADA requirements.

Paint for blue, red and green markings shall conform to Section 84-3.02 of the Caltrans Standard Specification, 2010.

310-5.6.5.1 Application of Raised Pavement Markers. Subsection 310-5.6.5.1 is hereby added to the Standard Specifications as follows:

Where called for on the Plans, pavement markers shall be installed with or instead of painted stripes per Section 85, Pavement Markers, of the Caltrans Standard Specifications and appropriate details in the Caltrans Standard Plans.

310-5.6.5.4 All traffic paint used for traffic stripes, pavement markings, or curb markings shall conform to Section 84-3 of the Caltrans Standard Specifications. Curb markings will be re-stenciled with 4 inch numbers and letters with proper identification, such as loading zone, passenger loading zone along with times of day and parking limit time.

310-5.6.7 Layout, Alignment, and Spotting. The Contractor shall furnish the necessary control points for all striping and markings, and shall be responsible for the completeness and accuracy thereof to the satisfaction of the Engineer. No final markings shall be done without the approval of the engineer in the field.

Spotting shall be completed prior to the removal of any existing stripes. Existing stripes and markings shall be removed prior to painting new stripes and markings, but in no case shall any section of street be left without the proper striping for more than 24 hours, or over weekends or holidays. All lanes open to public traffic shall have lane line delineation.

310-5.6.8 Application of Paint. All paint shall be applied in two coats, the second coat shall be applied after the first coat is dry. Reflective material shall be applied as specified in Section 210-1.6.1 of the Standard Specifications.

320-5.6.10.1 Measurement and Payment. The first paragraph of Subsection 310-5.6.10 of the Standard Specifications is hereby deleted and replaced with the following:

Payment for traffic striping, marking and raised pavement markers will be considered as included in the lump sum price bid for each respective traffic striping modification item and in the unit price bid for the other items of work and no additional compensation will be allowed therefore.

SECTION 312 - SIGNS

Section 312 is hereby added to the Standard Specifications as follows:

312-1 Traffic Signs

312-1.1 General. All details and dimensions for traffic signs and the installation thereof shall conform to the latest editions of the California Department of Transportation Traffic Sign Specifications, Standard Plans, and Standard Specifications. Materials shall be certified as

meeting all applicable specifications. Copies of the Standard Plans, the Specifications, and the Manuals are available from the State of California, Department of Transportation, Central Publication Distribution Unit, 6002 Folsom Boulevard, Sacramento, CA 95819.

312-1.2 Sign Installation and Relocation. New or relocated signs shall be installed using 2-inch square unistrut type posts set a minimum 24-inches deep in a minimum 12-inch diameter P.C.C. The length of the metal post shall be sufficient to extend from the top of the sign to the bottom of the concrete footing and provide seven feet clearance between finish grade and the bottom of the sign(s). New or relocated signs shall be installed using 3/4 stainless steel banding .025 thick and buckles.

Aluminum side mount brackets for non-illuminated street name sign installations or relocations on to traffic signals standards shall be for a 9-inch wide street name sign. The bracket shall be fastened to the sign by 2 hex bolts that are 5/16 by 1-1/4 with locking nuts and washers. The bracket shall hold a sign blank that is 1/8 inch thick and be banded to light pole or traffic signal using 3/4 inch wide by .025 thick stainless steel banding and buckles.

All signs shall be retroreflective and shall be certified as meeting all applicable requirements. All school warning, crosswalk warning, advanced warning signs for both crosswalks and schools shall have Fluorescent yellow green retroreflective sheeting with overlay as specified in attached sheeting requirement tables.

312-1.3 Payment for Traffic Signs. Payment for traffic signs will be considered as included in the lump sum price bid for the respective traffic signage modification bid item and in the unit price bid for the other items of work and no additional compensation will be allowed therefore.

312-2 Sheeting Requirements. Signs shall conform to the following sheeting requirements or approved equal:

Retroreflective Sheeting Requirements on Street Signs

Category	Color Combo	Sheeting Type		
		Microprismatic		Protective Film Clear
		HIP	DGC	
Guide	WHITE ON GREEN	RS	OH	Required
Guide	WHITE ON BLUE	RS, OH	NR	Required
Guide	WHITE ON BROWN	RS, OH	NR	Required
Warning	BLACK ON YELLOW	RS, OH	NR	Required
Warning	BLACK ON FY	DNU	RS, OH	Required
Warning	(1) BLACK ON FYG	DNU	RS, OH	Required
Temporary	BLACK ON ORANGE	RS	NR	Required

Temporary	(2) BLACK ON FRO	DNU	RS, OH	Required
Regulatory	BLACK ON WHITE	RS, OH	NR	Required
Regulatory	WHITE ON RED	RS	NR	Required
Regulatory	(3) RED ON WHITE	RS	NR	Required
Regulatory	(3) GREEN ON WHITE	RS	NR	Required
Other	(4) NON-TCD SIGNS	RS	NR	Required

LEGEND: RS = OK on roadside signs OH = OK on overhead signs DNU = Do Not Use NR = Not required FY = Fluorescent Yellow FYG = Fluorescent Yellow Green FRO = Fluorescent Orange or Fluorescent Red Orange DGC = 3M Diamond Grade Cubed HIP = 3M High Intensity Prismatic	FOOTNOTES: (1) For school zone and pedestrian crossing. (2) Fluorescent orange is a color that appears brighter in daylight and twilight. (3) Parking type signs (4) E.G., Adopt-A-Highway. Click It Or Ticket, Report Drunk Drivers, etc.	NOTES: 1 Use same "Type" for legend & background on same sign. 2 Black is non-reflective and does not have an ASTM designation.
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312-3 HIGH PERFORMANCE PRISMATIC RETROREFLECTIVE SHEETING

312-3.1 Scope

This specification covers flexible white or colored, prismatic retroreflective sheeting (hereinafter called sheeting), and related processing materials designed to enhance nighttime visibility of traffic control signs and objects. The sheeting shall consist of cube corner prismatic optics encapsulated by a flexible transparent plastic film that has a smooth outer surface. The sheeting shall have a precoated adhesive protected by an easily removable liner.

The sheeting shall be part of a family of products required for the manufacture and imaging of traffic control signs as described in Section 312-3.4. Imaged (printed or overlain) areas of signs are covered only by Section 312-3.2, Section 312-6.2, Table 1, Section 312-3.6.3 and Table 2.

312-3.2 Prequalification and Performance History

Materials shall be considered for use only when, in the opinion of the agency, sufficient evidence exists to ensure that the materials and services offered can reliably conform to this specification. The sheeting manufacturer shall provide evidence of performance and suitability for use in accordance with the Agency's Qualified Products Procedures

312-3.3 Classification and Conformance

The sheeting shall meet the performance requirements contained in *all* of the standards and specifications listed below, as modified herein. The sheeting need not conform to any construction or composition limitations included in the reference specifications; and the

retroreflectance measurements shall be limited to observation angles less than 2.0°.

AASHTO M 268 Type III and Type IV	AS/NZ 1906.1 Class 1
ASTM D 4956 Type III and Type IV	BS 873 Class 1
CGSB 62-GP-11 Type 1	DIN 67520 Type 2
EN 12899-1 Class 2	FP-03 Type III and Type IV
GB/T 18833 Class 3	JT/T 279 Class 3
NBR 14644 Type II	NTC 4739 Type III and IV
SABS 1519.1 Class III	

The adhesive shall be a pressure-sensitive adhesive of the aggressive tack type requiring no heat, solvent or other preparation for adhesion to smooth, clean surfaces when properly applied at temperatures above 50°F. For application to rough surfaces, a surface primer may be required.

312-3.4 Imaging Systems

312-3.4.1 Process Inks

The process colors shall be a single line of traffic colors which may be applied before and after the sheeting is applied to a substrate; require no component premixing; and will air dry for packing in 4 hours or less and requires no clear coating.

312-3.4.2 Overlay Films

The sheeting manufacturer shall also manufacture colored imaging films and clear protective overlays, which are compatible with the sheetings, and when used in accordance with the sheeting manufacturer's instructions shall not lessen the warranty term as described in Section 312-3.7.2.

312-3.5 Test Panels and Test Conditions

Unless otherwise specified herein, when tests are to be performed using test panels, the specimens shall be applied to smooth aluminum 0.020 in. (0.508 mm), 0.040 in. (1.016 mm) or 0.063 in. (1.600 mm) in thickness cut from Alloy 6061-T6 or 5052-H38. The aluminum shall be degreased and lightly acid etched before the specimens are applied. Unless otherwise specified, all test samples shall be conditioned for 24 hours prior to testing and all tests shall be conducted at a temperature of $73 \pm 3^\circ\text{F}$ ($23 \pm 2^\circ\text{C}$) and $50 \pm 5\%$ relative humidity.

312-3.6 Material Requirements

312-3.6.1 Color Requirements:

Color shall be as specified and shall conform to the requirements for standard highway colors as defined all the standards and specifications listed in Section 312-3.3 above.

312-3.6.2 Coefficient of Retroreflection:

The coefficients of retroreflection shall be determined in accordance with ASTM E-810, for the minimum requirements of Table 1, as specified.

312-3.6.2A Units: Coefficients of retroreflection shall be specified in units of candelas per lux per square meter. The observation angles shall range from 0.2° to 1.0°. The entrance angles shall range from -4° to 40°.

312-3.6.2B For screen printed transparent colored areas on white sheeting, the coefficients of retroreflection shall not be less than 70% of the values for corresponding color in the above table. Standard traffic colors not available in integrally colored sheeting may be produced using acrylic overlay films.

312-3.6.3 Color Processing:

The retroreflective sheeting shall be designed to work in concert with recommended imaging systems. Color processing with compatible transparent and opaque process colors shall be possible in accordance with the sheeting manufacturer's recommendation at temperatures of 66 to 100°F (16 to 38°C) and relative humidity of 20 to 80%. The sheeting shall be heat resistant and permit force curing without staining of applied or unapplied sheeting at temperatures recommended by the sheeting manufacturer.

312-3.6.4 Flexibility:

The reflective sheeting shall be sufficiently flexible to show no cracking during application to substrates in accordance with the manufacturer's instructions.

312-3.6.5 Adhesion:

The retroreflective sheeting shall comply with the liner removal and adhesion requirements contained in the standards and specifications listed in Section 312-3.3.

312-3.6.6 Impact Resistance:

The retroreflective sheeting shall comply with the impact resistance requirements contained in the standards and specifications listed in Section 312-3.3.

213-3.6.7 Resistance to Accelerated Weathering:

The retroreflective sheeting shall comply with the weathering resistance requirements contained in the standards and specifications listed in Section 312-3.3.

312-3.6.8 Resistance to Heat, Cold and Humidity:

Three samples of retroreflective sheeting, 3 x 6 inch, applied to test panels in accordance with Section 312-3.5 above, shall be exposed as follows:

312-3.6.9 Heat:

One specimen shall be placed in an oven at $160^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ($71^{\circ}\text{C} \pm 3^{\circ}\text{C}$) for 24 hours, then conditioned as in Section 312-3.5 for 2 hours.

312-3.6.10 Cold:

The second specimen shall be exposed to an air temperature of $-70^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ($57^{\circ}\text{C} \pm 3^{\circ}\text{C}$) for 72 hours, then conditioned as in Section 312-3.5 for 2 hours.

312-3.6.11 Humidity:

The final specimen shall be subjected to 100% relative humidity at a temperature of $75^{\circ} - 78^{\circ}\text{F}$ ($23^{\circ} - 27^{\circ}\text{C}$) in accordance with US Federal Test Method Standard 141, method 6201, for 24 hours, then conditioned as in Section 312-3.5 for 24 hours.

Examination of each of the three samples following the exposures shall show no evidence of cracking, peeling, chipping or delamination from the test panel. After heat exposure the sheeting shall retain a minimum of 85% and a maximum of 115% of the original coefficient of retroreflection when measured at room temperature.

Table 1
Minimum Coefficient of Retroreflection
(Candelas per Lux per Square Meter)

White

	-4/5	30	40
0.2	360	175	90
0.5	150	70	45
1.0	20	10	9.0

Green

	-4/5	30	40
0.2	50	30	8
0.5	21	12	3.0
1.0	2.0	2.0	0.8

Yellow

	-4/5	30	40
0.2	270	135	65
0.5	110	60	32
1.0	14	8.5	7.0

Blue

	-4/5	30	40
0.2	30	14	5.0
0.5	13	6.0	2.0
1.0	1.0	0.8	0.5

Red

	-4/5	30	40
0.2	65	35	15

Brown

	-4/5	30	40
0.2	18	8.5	2.0

0.5	27	14	7
1.0	3.0	2.0	1.0

0.5	7.5	3.5	1.0
1.0	1.0	0.2	0.1

Orange

	-4/5	30	40
0.2	145	70	29
0.5	60	28	14
1.0	5.0	3.0	1.0

312-3.7 Performance Requirements and Obligations

312-3.7.1 Certification. The sheeting manufacturer shall submit with each lot or shipment, certification that states that the material supplied will meet all the requirements listed herein.

312-3.7.2 Field Performance Requirements

Sheeting processed and applied to sign blank materials in accordance with sheeting manufacturer's recommendations, shall perform effectively for the number of years stated in Table 2 of this specification. The retroreflective sheeting will be considered unsatisfactory if it has deteriorated due to natural causes to the extent that: (1) the sign is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night driving conditions; or (2) the coefficient of retroreflection is less than the minimum specified for that sheeting during that period listed in Table 2. All measurements shall be made after sign cleaning according to sheeting manufacturer's recommendations.

Table 2
Minimum Coefficient of Retroreflection

Candelas per Lux per Sq-Meter

(.20 obs, and -40 entrance)

Sheeting Color	Minimum Coefficient of Retro. (7 years) ¹	Minimum Coefficient of Retro. (10 years)
White	288	250
Yellow	216	170
Green	40	35
Red	52	45

¹ When sheeting is used in temporary work zone applications the warranty period shall be limited to 3 years

Blue	24	20
Brown	14	12
Orange	100	

For screen printed transparent colored areas on white sheeting, the coefficients of retroreflection shall not be less than 70% of the values for the corresponding color in the above table.

312-3.7.3 Sheeting Manufacturer's Replacement Obligation

Where it can be shown that retroreflective traffic signs manufactured with sheeting supplied and used according to the sheeting manufacturer's recommendations have not met the performance requirements of Section 312-3.7.2 due to internal defects, the sheeting manufacturer shall cover restoration costs as follows for sheetings shown to be unsatisfactory during:

312-3.7.3A The entire ten years (three years for work zone materials): the sheeting manufacturer will replace the sheeting required to restore the sign surface to its original effectiveness.

312-3.7.3B In addition, during the first seven years (excluding work zone materials): the sheeting manufacturer will cover the cost of restoring the sign surface to its original effectiveness at no cost to the using Agency for materials and labor.

312-3.7.4 Government Using Agency Obligation

The using Agency shall be responsible for requiring the dating of all signs at the time of application. That date constitutes the start of the field performance obligation period.

312-4 SUPER-HIGH EFFICIENCY, FULL CUBE RETROREFLECTIVE SHEETING

NOTICE: This specification contains a sheeting manufacturer's field performance obligation Section 312-4.7.2 which shall apply only when included and made part of a bid request, proposal, and/or purchase agreement of (Agency).

312.4.1 Scope

This provisional specification covers flexible white or colored, Super-High Efficiency Full Cube Retroreflective Sheeting (hereinafter called sheeting), tape and related processing materials designed to enhance nighttime visibility of traffic control signs and objects. The sheeting shall consist of full cube prismatic lens elements with a distinctive interlocking diamond seal pattern visible from the face of a smooth surface. The sheeting shall have a precoated adhesive protected by an easily removable liner.

The sheeting shall be part of a family of matched component products required for the manufacture and imaging of traffic control signs as described in Section 312-4.4. Only Section 312-4.2, Section 312-4.6.5, Section 312-4.6.4, and Section 312-4.7.2 cover printed colored areas of signs.

312.4.2 Prequalification

Materials (sheeting, process colors, overlay films) shall be considered for use only when, in the opinion of (Agency), sufficient evidence exists to ensure that the materials and services offered can reliably conform to this provisional specification.

312-4.3 Classification and Conformance

312-4.3.1 The sheeting shall conform to ASTM D 4956-05 as modified by this special provision.

312-4.4 Items to be Included in Bids

312-4.4.1 Process Colors

312-4.4.1A The manufacturer of the sheeting shall manufacture and offer process colors in standard traffic colors, clears and thinners recommended for the sheeting to meet the performance requirements of this specification.

312-4.4.1B The process colors shall be a single line of traffic colors which may be applied before and after sheeting is applied to a substrate, require no component premixing, and will air dry for packing with proper ventilation in 3 hours or less and require no clear coating.

312-4.4.2 Overlay Films

The sheeting manufacturer shall also manufacture colored acrylic imaging films and clear protective overlays, which are compatible with the sheetings, and when used in accordance with the sheeting manufacturer's instructions, shall not lessen the warranty term as described in Section 312-4.7.2.

312-4.5 Test Panels and Test Conditions

Unless otherwise specified herein, sheeting shall be applied to test panels in accordance with ASTM D 4956-05, Section 312-4.7.2 and test conditions shall conform to ASTM D 4956-05 Section 312-4.7.1.

312-4.6 Requirements

312-4.6.1 Color Requirements

312-4.6.1.1 Colors

Color shall be as specified and shall conform to the requirements of ASTM D 4956-05, Table 17. Luminance factors shall conform to Table 10 for ordinary colors and Table 14 for fluorescent colors.

312-4.6.1.2 Ordinary Colors

Conformance to standard chromaticity (x, y) and luminance factor (Y%) requirements shall be determined by instrumental method in accordance with ASTM E 1164 on sheeting applied to smooth aluminum test panels cut from Alloy

6061-T6 or 5052-H38. The values shall be determined on a HunterLab ColorFlex 45/0 spectrophotometer. Computations shall be done for CIE Illuminant D65 and the 2° standard observer.*

312-4.6.1.3 Fluorescent Colors

Conformance to standard chromaticity (x,y) and luminance factor (Y%) requirements shall be determined by instrumental method in accordance with ASTM E 991 on sheeting applied to smooth aluminum test panels cut from Alloy 6061-T6 or 5052-H38. The values shall be determined on a HunterLab ColorFlex 45/0 spectrophotometer. Computations shall be done for CIE Illuminant D65 and the 2° standard observer.*

* The instrumentally determined color values of ordinary and fluorescent colored retroreflective sheeting can vary significantly depending on the make and model of colorimetric spectrophotometer as well as the color and retroreflective optics of the sheeting (David M. Burns and Timothy J. Donahue, Measurement Issues in the Color Specification of Fluorescent-Retroreflective Materials for High Visibility Traffic Signing and Personal Safety Applications, Proceedings of SPIE: Fourth Oxford Conference on Spectroscopy, 4826, pp. 39-49, 2003). For the purposes of this document, the HunterLab ColorFlex 45/0 spectrophotometer shall be the referee instrument.

312-4.6.2 Coefficient of Retroreflection

312-4.6.2.1 Conformance to minimum requirements for Retroreflectance is determined as follows:

312-4.6.2.2 Three 8 in. x 8 in. samples spaced evenly across and down a representative piece of sheeting shall be taken. The Coefficient of Retroreflection (Ra) shall be determined for each of the three samples per ASTM E810. The average of the three values shall comply with the stated minimum table value and no single sample shall be less than 80% of the table value.

312-4.6.2.3 The observation angles shall be 0.2°, 0.5°, 1.0°.

312-4.6.2.4 The entrance angles shall be -4° and 30°.

312-4.6.2.5 For screen printed transparent colored areas or transparent colored overlay films on white sheeting, the coefficients of retroreflection shall not be less than 70% of the values for corresponding color in Table I.

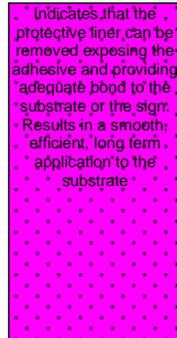
312-4.6.3 Fractional Retroreflectance

The optical design of the sheeting shall be such that when measured at an entrance angle of -4° the fractional retroreflectance within a 2° observation angle cone, as defined in ASTM E808 as R_T with $\alpha_{max} = 2^\circ$, is at least 55%.

Table I
Minimum Coefficient of Retroreflection
(cd/lux/m²)

White	-4	30
0.2	570	215
0.5	400	150
1.0	120	45

Blue	-4	30
0.2	26	10
0.5	18	6.8
1.0	5.4	2.0



Yellow	-4	30
0.2	425	160
0.5	300	112
1.0	90	34

FYG	-4	30
0.2	455	170
0.5	320	120
1.0	96	36

Red	-4	30
0.2	114	43
0.5	80	30
1.0	24	9

FY	-4	30
0.2	340	130
0.5	240	90
1.0	72	27

Green	-4	30
0.2	57	21
0.5	40	15
1.0	12	4.5

FO	-4	30
0.2	170	64
0.5	120	45
1.0	36	14

312-4.6.4 Color Processing

The retroreflective sheeting shall be designed to work in concert with recommended imaging systems. Color processing with compatible transparent and opaque process colors shall be possible in accordance with the sheeting manufacturer's recommendation at temperatures of 60° to 100°F (16° to 38°C) and relative humidity of 20% to 80%. The sheeting shall be heat resistant and permit force curing without staining of applied or unapplied sheeting at temperatures recommended by the sheeting manufacturer.

312-4.6.5 Shrinkage

The retroreflective sheeting shall comply with the shrinkage requirements contained in ASTM D 4956-05 Section 312-4.6.6.

312-4.6.6 Adhesive

The retroreflective sheeting shall comply with the liner removal and adhesion requirements contained in ASTM D 4956-05 Sections 312-4.6.8 and 312-4.6.9 respectively.

312-4.6.7 Optical Stability

Three samples of retroreflective sheeting applied to test panels and conditioned as in Section 312-4.5 shall each first have their photometric properties characterized by measuring the coefficients of retroreflection in accordance with ASTM E 810 at all test geometries shown in Table I. These panels shall then be exposed in an air circulating oven at $160 \pm 5^\circ\text{F}$ ($71 \pm 3^\circ\text{C}$) for a period of 24 hours. After exposure the panels shall be allowed to condition according to the provisions of Section 312-4.5. These panels will again be characterized for photometric properties by measuring the coefficients of retroreflection at all test geometries measured before exposure.

The coefficients of retroreflection measured after exposure shall be between 85% and 115% of the values measured before exposure for each of the three samples.

312-4.6.8 Fungus resistance

The retroreflective sheeting shall comply with the supplementary requirements contained in section S1 of ASTM D 4956-05.

312-4.6.9 General Characteristics and Packaging

The retroreflective sheeting as supplied shall be of good appearance, free from ragged edges, cracks and extraneous materials and shall be furnished in either rolls or sheets.

When furnished in continuous rolls, the number of splices shall not be more than two per 50 yards (45.7 m) of material, with a maximum of three pieces in any 50-yard (45.7 m) length. Splices shall be butted or overlapped and shall be suitable for continuous application as furnished.

The sheeting shall be packaged in accordance with commercially accepted standards. Each carton shall clearly stipulate the brand, quantity, size, lot or run number, color and type adhesive. Stored under normal conditions the retroreflective sheeting as furnished shall be suitable for use for a minimum period of one year.

312-4.7 Performance Requirements and Obligations

312-4.7.1 Certification

The sheeting manufacturer shall submit with each lot or shipment, a certification that states the material supplied will meet all the requirements listed herein.

312-4.7.2 Field Performance Requirements

312-4.7.2.1 For Permanent Signing – Ordinary Colors:

Sheeting manufactured of ordinary colors and processed and applied to sign blank materials in accordance with sheeting manufacturer's recommendations, shall perform effectively for at least 12 years. The retroreflective sheeting will be considered unsatisfactory if it has deteriorated due to natural causes to the extent that: (1) the sign is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night driving conditions; or (2) the

coefficient of retroreflection is less than the minimum specified for that sheeting during that period listed.

80% of values listed in Table I up to 7 years and
70% of values listed in Table I up to 12 years

Failure of process colors or overlay films provided and/or sold for use on recommended sheeting shall constitute a failure of the sign and shall be replaced under the manufacturer's replacement obligations (Section 312-4.7.3).

For screen printed transparent colored areas or transparent colored overlay films on white sheeting, the coefficients of retroreflection shall not be less than 70% of the values for the corresponding integral color.

All measurements shall be made after sign cleaning according to the sheeting manufacturer's recommendations.

312-4.7.2.2 For Permanent Signing – Fluorescent Colors:

Sheeting manufactured of fluorescent colors and processed and applied to sign blank materials in accordance with sheeting manufacturer's recommendations shall perform effectively for the number of years stated in this specification. The retroreflective sheeting will be considered unsatisfactory if it has deteriorated due to natural causes to the extent that: (1) the sign is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night driving conditions; or (2) the coefficient of retroreflection is less than the minimum specified for that sheeting during that period listed.

80% of values listed in Table I up to 7 years* and
70% of values listed in Table I up to 10* years

Failure of process colors or overlay films provided and/or sold for use on recommended sheeting shall constitute a failure of the entire sign and shall be replaced under the manufacturer's replacement obligations (Section 312-4.7.3).

All measurements shall be made after sign cleaning according to sheeting the manufacturer's recommendations.

- * 5 years in states listed in Table II
- * 7 years in states listed in Table II

Table II Minimum Total Luminance Factor (All measurements shall be made after cleaning according to manufacturer's recommendations)		
Color	Warranty Period	Minimum Total Luminance Factor Y _T %
Fluorescent Yellow	10 Years*	45%

Fluorescent Yellow Green	10 Years*	60%
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*Due to climatic conditions, the warranty in the following states will be a seven year warranty: Alabama, Arizona, Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, South Carolina, Texas

312-4.7.2.3 For Temporary Signing – Fluorescent Orange Colors

Sheeting manufactured of fluorescent orange and applied to sign blank material in accordance with the sheeting manufacturer’s recommendations, is expected to perform effectively for a minimum of three years. The retroreflective sheeting will be considered unsatisfactory if it has deteriorated due to natural causes to the extent that: (1) the sign is ineffective for its intended purpose or (2) retains less than 50% of the coefficient of retroreflection values listed in Table I at 0.2 degrees observation, -4 degrees entrance (measured in accordance with ASTM E810).

All measurements shall be made after sign cleaning according to the sheeting manufacturer’s recommendations.

Natural causes include effects of exposure to weather. Natural causes exclude (without limitation) damage from exposure to chemicals, abrasion and other mechanical damage (such as from fasteners used to mount the sign, collisions or mishandling), vandalism, or malicious mischief.

312-4.7.3 Sheeting Manufacturer’s Replacement Obligation

312-4.7.3.1 For ordinary colors where it can be shown that retroreflective signs, supplied and used according to the sheeting manufacturer’s recommendations, have not met the performance requirements of Section 312-4.7.2, the sheeting manufacturer shall cover restoration costs as follows for sheetings shown to be unsatisfactory during:

312-4.7.3.1A For the entire 12 years, the sheeting manufacturer will replace the sheeting required to restore the sign surface to its original effectiveness.

312-4.7.3.1B In addition, during the first seven years the sheeting manufacturer will cover the cost of restoration of the sign surface to its original effectiveness at no cost to (Agency) for materials and labor.

312-4.7.3.2 For fluorescent colors where it can be shown that retroreflective signs, supplied and used according to the sheeting manufacturer’s recommendations, have not met the performance requirements of Section 312-4.7.2, the sheeting manufacturer shall cover restoration costs as follows for sheetings shown to be unsatisfactory:

312-4.7.3.2A For those states with a 10 year warranty, if the failure occurs within the first 7 years from the date of fabrication, the sheeting manufacturer shall, at its expense, restore the sign surface to its original effectiveness.

312-4.7.3.2B If the failure occurs in the 8th through the 10th year from the date of fabrication, the sheeting manufacturer will furnish the necessary amount of sheeting to restore the sign surface to its original effectiveness.

312-4.7.3.2C Replacement sheeting shall carry the unexpired warranty of the sheeting it replaces.

312-4.7.3.2D For those states with a 7 year warranty, if the failure occurs within the first 5 years from the date of fabrication, the manufacturer will, at its expense, restore the sign surface to its original effectiveness.

312-4.7.3.2E If the failure occurs within the 6th or 7th year from the date of fabrication, the manufacturer will furnish the necessary amount of sheeting necessary to restore the sign surface to its original effectiveness.

312-4.7.3.2F Replacement sheeting shall carry the unexpired warranty of the sheeting it replaces.

312-4.7.3.3 For temporary signing, fluorescent orange, where it can be shown that the retroreflective sheeting fails to conform to the performance requirements of Section 312-4.7.2, the sheeting manufacturer's sole responsibility and purchaser's and user's exclusive remedy shall be:

312-4.7.3.3A Provide replacement sheeting. This sheeting shall carry the unexpired warranty of the sheeting it replaces

312-4.7.3.4 (Agency) Obligation

(Agency) shall be responsible for requiring the dating of all signs at the time of application. That date constitutes the start of the field performance obligation period.

312-4.8 Applicable Documents

The following documents, of the issues in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

312-4.8.1 ASTM Standards

D 4956 Standard Specification for Retroreflective Sheeting for Traffic Control.

312-4.8.2 E 810 Standard Test Method for Coefficient of Retroreflection of Retroreflective Sheeting.

312-5 PREMIUM PROTECTIVE OVERLAY FILM

312-5.1 Scope

This specification covers premium transparent protective overlay film designed for application to sign faces reflectorized with retroreflective sheeting to provide a superior barrier to staining by graffiti and other markings.

312-5.2 Description

The protective overlay film shall be a clear, non-chlorinated, colorless film which may be used in lieu of clear coating. It shall be durable, solvent resistant and shall be coated with a transparent, UV stabilized pressure sensitive adhesive protected by an easily removable paper liner.

312-5.3 Compatibility

The protective overlay film shall be compatible with reflective sheeting and inks used for signing. This compatibility shall be clearly designated by the manufacturers of each component or, alternately, each component shall be produced by a single manufacturer.

312-5.4 Performance Requirements

312-5.4.1 Tensile Strength. A 1" (25mm) wide sample of protective overlay film, with the liner removed shall have a minimum tensile strength of 4500 psi when tested at 72°F (23°C) using a jaw speed of 5 inches per minute.

312-5.4.2 Dimensional Stability. The protective overlay film, without adhesive, shall have a minimum melt point of 520°F (270°C).

312-5.4.3 Color. When protective overlay film is applied in accordance with the manufacturer's recommendation over retroreflective sheeting, the color of the film/sheeting composite shall conform to the color requirements of the screen processed colors for the type of sheeting material used.

312-5.4.4 Transparency. The overlay film, without adhesive, shall provide a minimum of 95% transmittance of light in the visible range (400 - 700 nanometers.) The overlay film shall remain transparent through the expected life of the sheeting to which it is applied.

312-5.4.5 Solvent Resistance. The protective overlay film, without adhesive shall show no swelling or crazing after immersion in any of the following solvents for 7 days:

- Methylene Chloride
- Toluene
- Ethyl Acetate
- Gasoline
- Mineral Spirits
- Naphtha

312-5.4.6 Cleanability. The overlay film manufacturer shall identify acceptable cleaning systems sufficient to clean paint and other surface contaminants without damaging the sign face.

312-5.4.7 Field Performance. The expected performance life of a sign face constructed of overlay film and reflective sheeting shall be equivalent to the expected performance life of the retroreflective material used.

312-5.4.8 Storage. The overlay film, when stored in accordance with the manufacturer's recommendations shall be suitable for use up to 1 year from date of purchase.

SECTION 11 – CONSTRUCTION OF WATER FACILITIES

11.01 GENERAL

1. **Description of Work:** The work consists of furnishing all labor, material, tools and equipment, and performing all operations to install 1 new fire hydrants, remove and salvage 1 fire hydrants, and abandon fire hydrant runs, remove water meter boxes, and install water meter valves. The work involves the installation of fire hydrant, replacing water meter boxes and valves in accordance with these Specifications, and Public Service (Glendale *Water & Power*) Standard Drawings Nos. 6772-A, 6854-A, 1590-A, 4946-A, as shown in Appendix G.

Unless otherwise indicated, all work shall be done in accordance with Standard Specifications for Public Works Construction (Latest Edition) and City of Glendale Additions and Amendments to Standard Specifications for Public Works Construction and City of Glendale Public Works Standard Plan No. 25-153.

2. **Maintaining Customer Water Service:** It is anticipated by the City that no temporary water lines will be required of the Contractor.
3. **Water Supply:** The Contractor shall furnish and install, at his own expense, all piping or other necessary apparatus required to make water available for the purpose of construction and field hydrostatic tests. The City will furnish water to the Contractor, at his own expense, at fire hydrant connections near the site of work and convenient to the City.
4. **Excavation:** Excavation for the fire hydrant and appurtenances shall be in open-cut trenches with vertical sides as shown on the drawings. If it becomes necessary to excavate below the established grade in order to remove rock, hardpan, shale or other interfering objects, the void shall be filled with fine granular material and compacted to not less than ninety-five percent (95%) of the maximum density as determined by test methods in accordance with Standard Specifications for Public Works Construction (Latest Edition) Section 211.

Wherever excavation is made below the required grade of the ditch bottom owing to an error, the excess excavation shall be refilled to proper grade with suitable selected excavated material, moistened and compacted in layers by means of power driven tampers of an approved type. The trench bottom shall then be prepared as required under Article (5).

Wherever excavation is in soft unstable soils that do not provide a satisfactory bedding for the pipe, sand shall be brought in and the trench bottom shall be prepared as required under Article (5) at no additional cost to the City.

Storage of excavated earth material will not be permitted within the street right-of-way. Hauling, storing and acquiring a temporary storage site for excavated earth material shall be the responsibility of and at the expense of the Contractor.

All earth work shall be done in accordance with City of Glendale Public Works Standard Plan 25-153.

5. **Pipe Bedding:** When determined necessary by the Engineer and as required under Article (4), the bottom of the trench shall be brought to finished grade with sand material compacted by tamping to ninety-five percent (95%) of the maximum density as determined by test methods in accordance with Standard Specifications for Public Works Construction (Latest Edition), Section 211.
6. **Backfill:** Unless otherwise indicated, backfill material shall be compacted to ninety percent (90%) with the

top six (6) inches to ninety-five percent (95%). All compaction percentages shall be of the maximum density as determined by test methods in accordance with Standard Specifications for Public Works Construction (Latest Edition), Section 211. Mechanical tamping, hand tamping or other similar approved methods shall be used. The material shall be placed in layers not exceeding eight (8) inches in thickness, and the depth of the compacted material on each side of the pipe shall be approximately the same during the entire backfilling operation. The moisture content of the soil as determined by the required soil density shall be uniformly distributed throughout each layer. Hand or mechanical tampers with suitably shaped tamping feet shall be provided to compact the material and insure that the specified soil density is obtained beneath the haunches of the pipe. Wedging or blocking of the pipe will not be permitted. Compaction of trench backfill by ponding or jetting will be permitted when, as determined by the Engineer, the backfill material is of such character that it will be self-draining water when compacted and that foundation materials will not soften or be otherwise damaged by the applied water and no damage from hydrostatic pressure will result. Ponding and jetting methods shall be supplemented by the use of vibratory compaction equipment when necessary to obtain the required compaction.

Where supports of any nature are used in the trench, said supports shall all be removed unless otherwise approved by the Engineer. Where tight sheeting is used, it shall be removed systematically as soon as practicable after backfilling by pulling alternate pieces along each side of the trench, alternating also from one side of the trench to the other. All backfill should be done in accordance with City of Glendale Public Works Standard Plan 25-153.

7. **Bracing of Excavation:** The manner of bracing excavations shall conform to the Construction Safety Orders of the Division of Industrial Safety. The Contractor shall submit to the Engineer, for approval, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during the excavation of trenches. If such plan varies from the shoring system standards established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer. The Contractor shall submit such plans prior to the beginning of excavation requiring shoring, and the Engineer shall have two (2) weeks to review said plans. No excavations requiring shoring shall begin prior to the review and acceptance of said plans by the Engineer.
8. **Cutting and Restoring Pavement and Miscellaneous Concrete Improvements:** In cutting or breaking up street, parking lot surfacing and other improvements, the Contractor shall not use equipment that will injure, damage, or endanger nearby surface or subsurface facilities or improvements of any type. For asphalt concrete pavement, permanent trench resurfacing shall be restored to the trench width plus a minimum of 12 inches on each side of the trench. The extra 12 inches in width of pavement shall be removed to a saw cut. The extra width shall be removed immediately after removing the temporary paving and immediately prior to placing base material or permanent paving.

Immediately after the completion of backfilling, a three (3) inch layer of temporary pavement, the mix thereof approved by the Engineer, shall be placed and rolled over the backfill. As soon as practicable after installation of the pipe and consolidation of backfill, the Contractor shall remove the temporary pavement and restore the permanent pavement in accordance with the Specifications and to the satisfaction of the Engineer. Repairs to Portland cement concrete pavement shall be made of Portland cement concrete equal to existing pavement thickness and type plus as undercut below the existing pavement of minimum 4 inches wide by 4 inches thick on each side of the trench and shall conform with the section "Concrete Construction" of these Specifications. Repairs to asphalt concrete pavement shall be made with asphalt concrete meeting the City of Glendale street specifications with every effort made to match the existing pavement of color and surface texture. Asphalt resurfacing over the pipelines shall be restored to a thickness of 1-inch plus existing thickness but in no case less than 4 inches. All permanent asphalt concrete resurfacing shall be placed in two courses.

In the event that a portion of Portland cement concrete curb, gutter, monolith-curb and gutter, sidewalks, sidewalk ramps or driving aprons is damaged by the Contractor's operation, restoration shall start from a joint or scoring line and shall end in a joint or scoring line with a minimum replacement of 5 feet. Scoring line shall be saw-cut prior to removal. All cutting and restoring pavement should be done in accordance with City of Glendale Public Works Standard Plan 25-153.

9. **Maintenance, Removal and Reconstruction of Utilities and Other Facilities:** No pipeline, conduit, sewer, culvert, storm drain, drainage channel, pole line, street lighting system, overhead wires or cables, or underground wires or cables, either main line structures or laterals and services, or any other structure or facility, shall be disturbed or removed without the approval of the Engineer as hereinafter provided, during the progress of the work. The Contractor shall be responsible for and make good all damage due to his operations, and the provisions of this section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of backfilling.

Where a pipe fitting or portion of pipe is to be removed near a valve, and the valve is to be left in place as a stop against main pressure, the valve shall be tied back by the Contractor to the satisfaction of the Engineer. Any damage which might result to the City's property as a result of a main break caused by inadequate restraint of the valve will be charged to the Contractor.

10. **Concrete Construction:** The Contractor shall perform all cement concrete work necessary to complete the project, including street, sidewalk and curb pavement replacement, thrust blocks and miscellaneous concrete work. Concrete shall conform to the City of Glendale Specifications and shall be Class 520-A-2500, 3-inch slump. Concrete shall be carefully deposited in such a manner as not to separate the ingredients. Concrete shall be placed in horizontal layers not exceeding twelve (12) inches in depth. Pours made in hot weather shall be given special protection to insure that concrete will not dry out too rapidly both during and after placing. Effective consolidation shall be obtained by vibration, agitation, spading and rodding until the concrete is free from voids, air bubbles or rock pockets. Vibrators shall not be used to transport concrete within the forms. All concrete shall be adequately protected from injurious action by sun, wind and freezing for a period of forty-eight (48) hours after pouring by applying a vapor-proof membrane coating to the concrete surface, or any approved method which will keep the concrete continuously wet. All concrete construction should be done in accordance with City of Glendale Public Works Standard Plan 25-153.

11. **Materials for Construction of Water Facilities**

- A. **Pipe:** Pipe shall be Tyton joint, Class 250, ductile iron pipe, manufactured in the U.S.A., as specified by ANSI/AWWA C151/A21.51 Specifications of the latest revision for method of design for a maximum depth of cover of 8 feet under laying condition 2. The bell and spigot joint shall be of a type which employs a single elongated rubber gasket to effect the joint seal. Pipe shall have standard asphalt coating on the exterior. Pipe shall be cement mortar lined on the interior per ANSI/AWWA C104/A21.4 of latest revision, and be furnished with all necessary accessories.
- B. **Pipe Fittings:** Pipe Fittings shall be Class 350 ductile iron, manufactured in the U.S.A., as specified by ANSI/AWWA C110/A21.1 or ANSI/AWWA C153/A21.53 Standard Specifications of latest revision. Fittings shall be cement mortar lined. Fittings shall have flanged ends or mechanical joint ends. Mechanical joints shall employ EBAA Iron "Mega Lug" glands, Ford Meter Box Company, Uni-Flange Series 1400 retainer glands or approved equal. Flanged end fittings shall employ EBAA Iron Megaflange adapters or approved equal.
- C. **Tapping Sleeves:** Tapping sleeves for tapping mains 12" and smaller shall be Smith-Blair 622, Romac FTS 420, Mueller or Kennedy Squareseal 920 or 921, or an approved equal, for

corresponding outside diameter of pipe, epoxy lined and coated with stainless steel bolts and nuts, with neoprene gaskets. For tapping mains 16" and larger, they shall be International Style 228 or Nappco Baker Series 428.

- D. Gate Valves:** Gate valves shall be designed for buried service and shall be the resilient wedge type and shall be manufactured by Clow, Kennedy, M & H, Mueller, U.S. Pipe or American Flow Control to meet all applicable requirements of AWWA Standard C509-80. The interior of the body shall be epoxy coated. The stem shall be non-rising O-ring, bronze with maximum 4% zinc content and shall have a 2" AWWA operating nut. The ends shall be mechanical joint or flanged.
- E. Flanged Coupling Adapters:** Flanged coupling adapters shall be Baker 601 or Smith-Blair 912 coupling adapters, or EBAA Megaflange restrained flange adapters with flat-faced flanges. The adapter shall be rated for 250 PSI working water pressure. The adapter shall be epoxy-lined and coated. Bolts and nuts shall be 316 stainless steel with track head bolts and hexagon nuts.
- F. Valve Boxes:** Valve boxes and valve box caps shall be provided on all buried valves and caps as shown on the drawings. Valve boxes and caps shall conform to the Public Service Department Standard Drawing Nos. 1588-A, 1589-A and 1590-A for adjustable valve box sleeve, valve box cover, and valve box, respectively.
- G. Fire Hydrants:** Fire hydrants shall be 6" wet barrel, Jones J-3700, Clow 2050 or Long Beach Iron Works B-125, with one 4" and one 2-1/2" outlet, or Jones J-3775, Clow 2065 or Long Beach Iron Works B-135, with two 4" and one 2-1/2" outlet as indicated on the plans. Hydrants shall be supplied with 1-3/4" pentagon nuts and bronze protective cap. Hydrants shall be painted with one primer coat of rust preventative paint and one finished coat of Rustoleum Federal Safety Yellow #7744. Old reconnected fire hydrant heads shall be painted with one finished coat of Rustoleum Federal Safety Yellow #7744.
- H. Fire Hydrant Bury Elbows:** Fire hydrant bury elbows shall be cast iron, and shall have one end mechanical joint and the other end flanged with six 3/4" bolt holes. Elbows shall be cement mortar lined. Fire hydrant elbows can be replaced by a 90° elbow (flanged end x mechanical joint end) and fire hydrant extensions with flanged ends.
- I. Fire Hydrant Extensions:** Fire hydrant extensions shall be non-break-off type, cast iron and flanged on both ends with six 3/4" bolt holes. Extensions shall be cement mortar lined.
- J. Fire Hydrant Bolts:** Fire hydrant bolts shall be steel, hollow break-off type, 5/8" diameter by 3" long with accompanying nuts.
- K. Fire Hydrant Gaskets:** Gaskets for hydrants, burys, and extensions shall be 1/16" thick rubber-cloth inserted type with 6" center hole and six bolt holes.
- L. Straight and Transition Cast Couplings:** Straight and transition cast couplings shall be cast iron, Smith-Blair 441.
- M. Service Clamps:** Service clamps for pipe taps shall be double strap, malleable iron, neoprene gasket cemented in place, Mueller Co. or Ford F202.
- N. Corporation Stops:** Corporation stops for pipe taps shall be plug type, bronze, for copper service pipe, flare outlet end, Mueller thread, CS, on inlet end, Mueller H-15000 or Jones J-1500 or McDonald 4701.

- O. **Ball Valves:** For ¾" and 1" service installations, relocations and replacements, ball valves shall be bronze, tee head, with lock wing, inlet female and outlet male iron pipe, Ford B-13W, with HB-34S lever handle, or Jones J-1905. For 1-1/2" and 2" service installations, relocations and replacements, ball valves shall be bronze, tee head, with lock wing, inlet female iron pipe, outlet meter flange, Ford BF-13W, with HB-67S lever handle, Mueller or Jones J-1913.
- P. **Copper Tube and Fittings:** Copper tube shall conform to the requirements of Seamless Copper Water Tube ASTM Standard B88 and shall be Type K, annealed. All fittings shall be soldered, sweated or flared as shown on the drawings, and shall be cast bronze or forged brass, containing not less than 85% copper.
- Q. **Meter Boxes:** Meter boxes shall be Armorcast Products Company, No. P6000485A-CG (Glendale No. 4) for ¾" and 1" services, and Armorcast Products Company, No. A6001640APC12CG (Glendale No. 6) 1-1/2" and 2" services. Each type shall be reinforced polymer concrete (RPC), with cover and reading lid, and marked "Water Meter".
- R. **Transition Couplings:** Transition couplings shall be Smith-Blair 413 or Engineer-approved equivalent.

11.02 WATER PIPE INSTALLATION

1. **Pipeline Alignment:** The pipeline alignment and typical depth are shown on the contract drawings. However, the Contractor shall make exploratory excavations in advance of trenching to determine the exact locations and depths of all utilities crossing the water mains. Pipe joints shall be deflected to clear interference with obstructions or other utilities unless otherwise directed by the Engineer.

The exact location of some fire hydrants will be determined by the Engineer to suit field conditions, and all adjustments shall be included in the bid price in the Proposal Schedule.

2. **System Shutdown:** Scheduling for required shutdown of the existing water system shall be approved by the Engineer. Shutdown may be required at times other than normal working hours to cause the least amount of inconvenience to customers and to avoid the use of temporary bypass piping; and, said timing shall be considered in determining the bid price for the work.

The City will perform the initial and subsequent gate operation to isolate the mains affected. However, the Contractor shall notify the City not less than three (3) working days in advance when such service is desired. During the course of system shutdown if a valve becomes inoperable, the Contractor shall allow the City time for the emergency repairs that may be necessary; the City will make a concerted effort to make the repairs. The City will recharge the system after completion of work.

3. **Notification of Customers:** The Contractor shall notify all consumers twenty-four (24) hours in advance of when their water service will be disrupted. The City will furnish the Contractor with doorknob handout cards for his distribution to customers affected by shutdowns. This disruption will occur when the temporary bypass piping is connected and disconnected or when water mains are shut down for cut-ins.
4. **Temporary Water Lines and Services (Not Applicable):** In accordance with the appropriate items in the Proposal Schedule, the Contractor shall furnish all plant, equipment, materials, transportation, superintendence, labor, and workmanship necessary to provide temporary service to water consumers, when determined necessary by the Engineer. The Contractor shall connect to fire hydrants as indicated by the Engineer. Connection to fire hydrants for water supply shall be Contractor furnished approved Siamese

fitting and eddy valve. When tapping 4", 6" and 8" mains with 1-1/2" or larger corporation stop, a malleable iron, double strap service clamp, as approved by the Engineer, shall be used.

The above work shall be done as follows:

- a. Ingress and egress to any property thus served shall not be blocked.
- b. At any pedestrian curb crossing, the hose must be installed to cause the least impediment to pedestrians.
- c. Temporary service hoses shall be placed to cause the least impediment to pedestrians and shall be marked with a barricade.
- d. All temporary hose shall be chlorinated and flushed to the satisfaction of the Engineer.
- e. It shall be the responsibility of the Contractor to maintain the temporary lines and service connections in good condition while in use. Leaking joints will not be permitted.
- f. The Contractor shall designate some member of his staff to be "on call" for making emergency repairs to the temporary lines and services at all times when the Contractor is not working, and this expense shall be included in the bid price.

5. **Pipe Laying:** Water pipe in trenches shall be laid on a prepared bed as specified in section on "Earthwork." Under ordinary conditions of laying, the work shall be so scheduled that the bell end of the pipe faces in the direction of laying. In placing pipe in the trench, the pipe shall be held by a sling, or other implements approved by the Engineer, at the balancing point of the section. It shall not be dragged on the bottom of the trench or bumped, but shall be supported by the sling, or other approved implements, while being fitted into the adjacent pipe section.

At all times when the work of installing pipe is not in progress, all openings into the pipe and the ends of the pipe in the trenches or structure shall be kept tightly closed to prevent entrance of animals and foreign materials. The Contractor shall take the necessary precautions to prevent the pipe from floating due to water entering the trench from any source, shall assume full responsibility for any damage due to this cause and shall, at his own expense, restore and replace the pipe to its specified condition and grade if it is displaced due to floating. The Contractor shall maintain the inside of the pipe free from foreign materials and in a clean and sanitary condition until its acceptance by the City.

Where closure sections are required by the Contractor's laying operations, the sections shall be installed in accordance with the applicable sections of these Specifications.

All pipe laying and pipe joining procedures shall be in accordance with AWWA Specifications C600, except as specified herein.

During the storage and installation of the pipes and fittings, preventive and corrective measures for disinfection shall be exercised in accordance with Section 4 of AWWA C651-92 for Disinfecting Water Mains.

6. **Joining of Push-on Joint Pipe:** The inside of the bell and the outside of the spigot end shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter. The circular rubber gasket shall be flexed inward and inserted in the gasket recess of the bell socket.

A thin film of gasket lubricant shall be applied to both the inside surface of the gasket and the spigot end of the pipe, or both. Gasket lubricant shall be as supplied by the pipe manufacturer and approved by the Engineer.

The spigot end of the pipe shall be entered into the socket, with care used to keep the joint from contacting the ground. The joint shall then be completed by forcing the plain end to the bottom of the socket with a forked tool, jack-type tool or other device approved by the Engineer. Pipe shall be depth marked before assembly to assure that the spigot end is inserted to the full depth of the joint. Field-cut pipe ends shall be filed or ground to resemble the spigot end of such pipe as manufactured.

7. **Joining of Mechanical-Joint End Valves and Fittings:** The last eight inches outside of the spigot end of the pipe and inside of the bell of the mechanical-joint shall be thoroughly cleaned to remove oil, grit, excess coating, and other foreign matter from the joint, and then painted with a soap solution made by dissolving one-half cup of granulated soap in one gallon of water. The cast iron gland shall then be slipped on the spigot end of the pipe with the lip extension of the gland toward the socket or bell end. The rubber gasket shall be painted with the soap solution and placed on the spigot end with the thick edge toward the gland.

The entire section of the pipe shall be pushed forward to seat the spigot end in the bell. The gasket shall then be pressed into place within the bell; care should be taken to locate the gasket evenly around the entire joint. The cast iron gland shall be moved along the pipe into position for bolting, all of the bolts inserted, and the nuts screwed up tightly with the fingers. All nuts shall be tightened with an approved torque-limiting wrench between 60 to 90 ft.-lb. Nuts spaced 180 degrees apart shall be tightened alternately in order to produce an equal pressure on all parts of the gland.

8. **Field Protective Coating:** When determined necessary by the Engineer, the Contractor shall furnish all material, labor and equipment required to field coat exposed buried valve bodies, flange and coupling bolts with Pipe Coating EC-244, as manufactured by the Minnesota Mining and Manufacturing Company, or approved equal. Areas to be coated shall be thoroughly cleaned with a wire brush or other approved methods.
9. **Concrete Thrust Blocks:** All tees, elbows, offsets, fire hydrants and plugged pipe ends shall have concrete thrust blocks or collars with a minimum of bearing area against undisturbed earth or as indicated on the plans.
10. **Flushing Water Main:** Prior to chlorination, the pipeline shall be thoroughly flushed. Following chlorination, all chlorinated water shall be thoroughly flushed from the pipeline.

All chlorinated wastewater from the pipeline shall be discharged into the nearest storm drain catch basin. Neutralization of heavy chlorinated water prior to disposal shall be provided by using a Pollard LPD-250 Combo Unit (Combo Kit SSDK-LPD01) diffuser or an Arden Industries bazooka dechlorination unit.

11. **Disinfection of Water Mains:** The Contractor shall furnish all equipment, labor and materials for the testing and proper disinfection of all piping. Chlorine dosages shall be computed by the Engineer, who will furnish the Contractor with detailed instructions for proper application of chlorine. All chlorinating and testing operations shall be done in the presence of the Engineer.

During the filling operation, a chlorine-water mixture shall be injected by means of a solution-feed chlorinating device. The dosage applied to the water shall be sufficient to give a chlorine residual of at least 50 PPM upon completion of the filling operation. Precaution shall be taken to prevent the strong chlorine solution from flowing back into the lines supplying the water.

Chlorinated water shall be retained in the pipeline long enough to destroy all non-spore-forming bacteria and, in any event, for at least twenty-four (24) hours. After the chlorine-treated water has been retained for the required time, the chlorine residual in the pipeline shall be at least 10 PPM. All valves shall be operated while the pipeline is filled with the heavily chlorinated water. The Contractor shall be responsible for any damage or contamination resulting from disinfection work including damage or contamination to the facilities constructed under this Contract or to facilities providing water for disinfection. The Contractor shall be responsible for any injuries or liabilities arising out of failure to properly perform disinfection work.

Following chlorination, the treated water shall be thoroughly flushed from the main and replaced with water from the City's mains. Bacteriologic tests will then be made by the City to demonstrate and record the sanitary condition of the pipeline. Both chlorine concentration tests and bacteriological tests will be at the expense of the City. However, if any given chlorine concentration fails to meet specified requirements, or if polluting material is evident as revealed as a result of bacteriologic tests, disinfection procedures shall be reinitiated and subsequent testing shall be performed as required, all at the expense of the Contractor. After successful completion of all disinfection procedures, including testing, the pipeline shall be placed in service, as directed by the Engineer.

12. **Joining New Main to Existing Main:** The new mains shall be joined to the existing mains as shown on the drawings. The existing water mains and all water services must remain in service during construction, and shutdown time will be limited to that period necessary to make the final connections to the existing water mains. The Contractor shall notify the Engineer not less than three (3) working days prior to making the connection to the existing mains. The time of making the connections shall be subject to approval of the Engineer, and in no event shall the existing pipeline be out of service for more than four hours.
13. **Traffic, Public Convenience and Safety:** Any excavation within street area subject to traffic loads shall be covered at all times with steel plating when not in use. The steel plating shall be of a thickness adequate to withstand the traffic loads that may be imposed and securely anchored at all times with temporary pavement to prevent to displacement of the plate by traffic vibration. Detours, lane closures, street closures, obstruction of public transportation stops, traffic channelization, barricading and lighting of all excavations shall conform to the Standard Specifications for Public Works Construction (Latest Edition), Sections 7-10.1, 7-10.3 and 310-5.6.9.

The Contractor shall maintain a safe operation to protect the public, City workmen and his workmen according to Title 8 of the Division of Industrial Safety.

14. **Water Pollution Control:** As part of the City's Storm Water Management Program, implementation of minimum Best Management Practices (BMPs) is required for this contract. The Contractor is directed to comply with applicable requirements of the BMPs that are specified in the General Conditions to reduce pollutants from entering the storm drain system.
15. **Guarantee:** The Contractor shall guarantee the entire work against defects in workmanship for a period of one year after the date of final acceptance by the Engineer and shall repair, at his own expense, any such defects.

SECTION 12 – IRRIGATION SPECIFICATIONS (SECTION 02810)

PART 1 - GENERAL

1.01 SCOPE OF WORK

Contractor shall furnish all labor, materials, equipment and services necessary to install the irrigation system indicated on the approved drawings and specified herein and shall perform all other incidental work necessary to carry out the intent of this Specification and drawings including the following:

- A. Furnish and install all pipe lines and fittings.
- C. Furnish, assemble, install material described in this specification and as indicated on the drawings, and final adjustments as determined by the Architect to insure efficient and uniform distribution of the irrigation system.
- D. Excavate and backfill trenches.
- E. Test and inspection of the irrigation system.
- F. One-year guarantee.

1.02 QUALITY ASSURANCE

A. General

1. Carefully check all grades and existing utilities to determine that work may safely proceed, keeping within the specified material depths with respect to finish grade and drainage.
2. Verify that irrigation systems shall be installed in strict accordance with all pertinent codes and regulations, the original design, the referenced standards, and the manufacturer's recommendations.
3. Inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

4. Water Service

Coordinate with the City of Glendale for connections to the water supply and/or installation of water meter(s) at the location(s) shown on the drawing(s). Minor changes caused by actual site conditions shall be made at no cost to the City. All changes to the plans shall be approved by the City.

5. Electrical Service

Coordinate with Southern California Edison for connections to electrical service and/or installations of conduit, electrical wiring and meter pedestal at the locations shown on the drawings. Minor changes caused by actual site conditions shall be made at no cost to the City. All changes to the plans shall be approved by the City and the Electrical Engineer.

6. Do not install the irrigation system as shown on the construction drawings when field conditions such as physical obstructions, grading discrepancies and field dimensions vary from those recorded on the construction drawings. Immediately bring any such discrepancies to the attention of the Architect prior to proceeding with work. If immediate notification is not given and such discrepancies exist, the Contractor shall assume full responsibility for necessary revisions, as determined by the City.
7. All central control system communication cable installation and splicing or radio communication shall be tested and certified in writing by the appropriate manufacturer's representative and shall also be tested on line with the central computer system prior to beginning the maintenance period.

B. Qualifications of Installers

The person present during execution of the work shall be thoroughly familiar with the type of materials being installed and the material manufacturer's recommended methods of installation and who shall direct all work performed.

C. Codes and Standards

In addition to complying with all current City of Glendale codes and regulations, comply with the latest rules of the National Electrical Code and the Electrical Safety Orders of the State of California, Division of Industrial Safety, for all electrical work and materials.

D. Physical Layout

1. The drawings are essentially diagrammatic. All scaled measurements are approximate. Before proceeding with the work, the Contractor shall ascertain all dimensions at the job site. Provide offsets in piping and changes in equipment locations as necessary to conform with structures and to avoid obstructions or conflicts with other work.
2. Prior to installation, the Contractor shall stake out all pressure supply lines, routing and location of sprinkler heads, make minor adjustments required due to differences between site and drawings. Where piping is shown on drawings under paved areas but running parallel and adjacent to planted areas, install the piping in planted areas. All layout shall be certified by the irrigation system designer and approved by the City prior to installation.
3. Contractor shall coordinate the installation of all irrigation material with the landscape drawings to avoid interfering with existing or new plants.
4. Irrigation head spacing as shown on the drawings shall not be exceeded.

E. Existing Field Conditions

1. Preserve and protect all existing trees, plants, monuments, structures, hardscape and architectural elements from damage due to work in this section. In the event that damage does occur to inanimate object and structures, the Contractor will repair or replace such damage to the satisfaction of the City or City's representative. Damage or injury to living plant material will be replaced by the Contractor at the Contractor's expense.
2. Trenching or other work required in this section under the limb spread of existing trees shall be done by hand or by other methods so as to prevent damage or harm to limbs, branches and roots.

3. Trenching in areas where root diameter exceeds two (2) inches shall be done by hand. Exposed roots of this size shall be heavily wrapped with moistened burlap to avoid scarring or excessive drying. Where a trenching machine is operated in proximity to roots that are less than two (2) inches, the wall of the trench shall be hand trimmed, making clean cuts through roots.
4. Trenches adjacent to or under existing trees shall be closed within 24 hours, and when this is not possible, the side of trench closest to the tree or trees affected shall be covered with moistened burlap.
5. Protect, maintain and coordinate work with other contracts, specifications, trades and utilities. Extreme care shall be exercised in excavating and working in the area due to existing utilities. Contractor shall be responsible for damages caused by their operations. In the event that damage does occur, the costs of such repairs shall be paid by the Contractor unless other arrangements have been made with the City.
6. Use caution where trenches and piping cross existing roadways, sidewalks, hardscape, paths or curbs. In the event that damage does occur, the Contractor will repair such damage at the Contractor's expense.

F. Required Documents

1. Submittals

Submit four (4) sets of submittal books that include all irrigation equipment to be used, manufacturer's brochures, service manuals, guarantees, and operating instructions for approval to the Landscape Architect prior to beginning of work. Submittals should be in a bound form complete with table of contents. The Contractor shall not proceed with work in the field until this submittal is approved in its entirety by the Landscape Architect's irrigation designer.

2. Service Manuals

- a. The Contractor shall furnish four (4) service manuals to the City prior to scheduling a walk through for substantial completion. Manuals shall be submitted in a bound form complete with a table of contents, copy of Contractor's warranty, and workmanship form on company letterhead and shall contain complete enlarged drawings of all equipment installed showing component warranties and catalog numbers together with the manufacture's name and address. Manuals shall include operation instructions. Manuals shall be subject to approval by the City or City's representative as to completeness.
- b. The service manual will be incorporated into the maintenance manual prepared by the Contractor. Contractor shall provide City with three (3) manuals for distribution and one (1) to the Landscape Architect for its records.

1.03 SUBMITTALS

A. Prior to Performing Any Work

The following items shall be submitted to the City, two (2) weeks prior to performing any work. In addition to Section 1.02, G., 1., the following information shall be listed after the Table of Contents but prior to any of the manufacturer's information, etc.

1. Materials List

Complete materials list that shall include the manufacturer, model number, and description of all materials and equipment to be used and shall use the following format (double space between each item).

Item No.	Description	Manufacturer	Model
1.	PVC Lateral Fittings	Spears	Schedule 40
2.	Turf spray heads	Rain Bird	1800 SAM/PRS Series

2. Notarized Certificates

Notarized certificates for plastic pipe and fittings manufacturer indicating that material complies with the specifications unless material has been previously approved.

3. The Contractor shall furnish the articles, equipment, materials or processes specified by name in the drawings and specifications. No substitution will be allowed without prior written approval by the City.

- a. The Contractor shall submit to the Landscape Architect catalog data and full descriptive literature for approval of all items specified.
- b. Submit shop drawings and specifications for controller enclosure assembly(s), including electrical wiring schematic(s). Submit shop drawings and specifications for all special assemblies, e.g. booster pump(s), fertilizer injection, controller enclosure, central control computer system, flow sensing equipment, etc., if shown on the drawings.
- c. Equipment or materials installed or furnished without the prior approval of the Landscape Architect may be rejected and the Contractor required to remove such materials from the site at Contractor's own expense.
- d. Approval of any item, alternate or substitute, indicates only that the product(s) apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted.
- e. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranty shall only supplement the guarantee.
- f. Material shall be of the best quality obtainable, of American manufacture, and shall comply strictly with the drawings and specifications. All equipment shall be new and unused prior to installation.

B. Prior to Substantial Completion

The following items shall be submitted to the Landscape Architect no later than 10 days prior to substantial completion. Once approved by the Landscape Architect these items shall be forwarded to the City for distribution.

1. Two Controller Charts for Each Controller

- a. Provide two (2) sets of controller drawings for each controller unit installed on the project. The controller drawings shall be an actual AutoCadd Release 2000i reduction of the area covered by that controller unit and shall be at the maximum allowable scale that will fit inside the controller door without folding the drawing.
- b. After final approval from the architect, each controller drawing shall be hermetically sealed between two (2) pieces of minimum 20 mils thick plastic.
- c. Contractor shall supply a RW-CD of the AutoCADD Release 2000i controller charts to be turned over to the City prior to substantial completion.

2. The Contractor will permanently fix one (1) controller drawing to the inside of each controller unit and bind one complete set of controller drawings in a loose leaf binder and submit to City or City's representative prior to scheduling a final walk through.

3. Two Operation and Maintenance Manuals

Contractor to prepare two (2) individually hardbound copies of operation and maintenance manuals. The manuals shall describe the material installed. Each complete manual shall include the following information:

- a. Index sheet stating Contractor's address and telephone number, list of equipment including names and addresses of local manufacturer representatives.
- b. Complete operating and maintenance instruction for all equipment.
- c. Spare parts lists and related manufacturer information for all equipment.
- d. A guarantee for the sprinkler irrigation system. This guarantee form shall be retyped onto the Contractor's letterhead.
- e. Contractor's performance bond information, including bonding company, bond number, agent and phone number.
- f. Listing of all required warranties and guarantees with effective dates and expiration date.
- g. Current watering schedule requirements.

4. Equipment

As part of the contract, the Contractor shall supply the following items:

- a. Two (2) keys for controller, controller enclosure.
- b. 10% or ten, which ever is greater, of each type of sprinkler head used.

1.04 PRODUCT HANDLING

A. Protection

Use all means necessary to protect irrigation system materials before, during and after installation and to protect the installed work and materials of all other trades.

B. Replacements

In the event of damage and all discrepancies or unsatisfactory work, immediately make all repairs and replacements necessary to the approval of the City and at no additional cost to the City.

1. Exercise care in handling, loading, unloading and storing PVC pipe and fittings. Store PVC pipe and fittings under cover until ready to install and return any portion of the unused PVC pipe back under cover after that day's work; transport PVC pipe only on a vehicle with a bed long enough to allow the pipe to lay flat to avoid undue bending and concentrated external load.
2. Repair all dented and damaged pipe by cutting out the dented or damaged section and rejoining with couplings.

C. Connections to Existing Main Lines

1. Source of water supply: the Contractor shall verify and be familiar with the location, size and detail of stub-outs provided as the source of water supply to the sprinkler system, as shown on the plans. Source of supply and point of connection shall be as shown on plan.
2. Existing utilities and conditions: Prior to cutting into the soil, the Contractor shall locate all cables, conduits, sewers, septic tanks and other utilities as are commonly encountered underground and he shall take proper precautions not to damage or disturb such improvements. If a conflict exists between such obstacles and the proposed work, the Contractor will proceed in the same manner if rock layer or any other conditions encountered underground make changes advisable.

Where investigation of subsurface conditions have been made by a qualified body in areas in which local materials may be obtained, the Contractor may request the use of such information but will be directly responsible for it's verification and accuracy.

D. Observation

The Contractor shall at all times permit the City and its authorized agents to visit and observe the work or any part thereof. The Contractor shall maintain proper facilities and provide safe access for such observations to all parts of the work. Where the specifications require work to be tested by the Contractor, it shall not be covered up until tested or approved by the City and the Contractor shall be solely responsible for notifying the proper governmental agencies where and when such work is in readiness for testing. Should any such work be covered without such test or approval, it shall, if so ordered, be uncovered at the Contractor's expense.

E. Standard of Installation

Material and workmanship shall be in accordance with local codes and ordinances of legally constituted authorities, except that where provisions of these specifications and details exceed such requirements.

F. General Requirements

1. Code requirements shall be those of State and Municipal Codes and Regulations locally governing this work, providing that any requirements of the drawings and specifications, not conflicting therewith but exceeding the code requirements shall govern, unless written permission to the contrary is granted by the Landscape Architect.
2. Conform to the requirements of the reference information listed below except where more stringent requirements are shown or specified in the most current set of construction documents:
 - a. American Society for Testing Material (ASTM), for test methods specifically referenced in this section.
 - b. Underwriter's Laboratories (UL), for UL wires and cables.
3. Work involving substantial plumbing for installation of copper piping, backflow prevention devices and other related work shall be executed by a licensed and bonded plumbing Contractor. Any necessary permits shall be obtain prior to beginning work.
4. Specified depths of pressure supply lines, laterals and pitch of pipes as stated in this section are minimums. Settlement of trenches lower than grades specified on the final grading plans is cause for removal of finish grade treatment, refilling trenches, recompacting and repairing of finish grade treatment.
5. Pre-planting requirements: The Contractor shall have installed all the irrigation per each meter per the irrigation plans and specifications. Prior to planting any plant material the irrigation system shall be 100 percent operational per the irrigation plans and specifications.

G. Preservation and Cleaning

The Contractor shall clean up the work as it progresses. At frequent intervals, and at all times when directed by the City or Landscape Architect the Contractor shall remove and dispose of accumulations of rubbish and debris of all kinds. At the time of completion the entire site shall be cleaned of tools, equipment, rubbish, etc., all of which shall be removed from the site, and the entire project, including surrounding premises, shall be left in proper, clean condition ready for acceptance.

H. Completion

The work will be considered for acceptance in writing when the entire scope of work has been completed satisfactorily to the City and Landscape Architect. In judging the work, no allowance for deviation from the original plans and specifications will be made unless already approved at proper times by the irrigation designer.

1. When any item appears on the plan and not in the specifications, or in the specifications and not on the plan, it shall be considered in both.
2. The City shall have final authorization on all items of the project.

I. Loose Equipment to Furnish

Loose operating keys and spare parts shall be furnished to the City by the Contractor in quantities as specified herein.

J. Irrigation Guarantee

1. The entire sprinkler system shall be unconditionally guaranteed by the Contractor as to material and workmanship, including settling of backfilled areas below grade for a period of one (1) year following the date of final acceptance of the work.
2. If, within one (1) year from the date of final acceptance of the work, settlement occurs and adjustments in pipes, valves and sprinkler heads, sod or paving is necessary to bring the system, sod or paving to the proper level of the permanent grades, the Contractor, as part of the work under his contract, shall make all adjustments without extra cost to the City, including the complete restoration of all damaged planting, paving or other improvements of any kind.
3. Should any operational difficulties in connection with the sprinkler system develop within the specified guarantee period which in the opinion of the City may be due to the inferior material or workmanship, said difficulties shall be immediately repaired at no additional cost to the City, including any and all other damage caused by such defects.

K. Licenses and Permits

The Contractor shall secure the required licenses and permits including payments of charges and fees and give required notices to public authorities and verify permits secured or arrangements made by others affecting the work of this section.

1.05 MEASUREMENT AND PAYMENT

Full compensation for conforming with the requirements of Irrigation including all labor, tools, equipment, and material necessary to perform the work shall be included in the related bid items and no additional compensation will be allowed therefore.

PART 2 - PRODUCTS

2.01 GENERAL

Materials or equipment installed or furnished shall be new. Any that do not meet the City standards shall be rejected and shall be removed from the site at no expense to the City.

A. Pipe

1. Pressure supply line from point of connection through the basket strainer assembly on reclaimed water systems shall be brass, copper, or other materials approved by the City.
2. Above-ground installation shall be UVR-PVC Schedule 40 pipe per section 2.01, D., 1-4.
3. All threaded pipe shall be threaded by the manufacturer of the pipe.

B. PVC Pipe and Fittings

1. Solvent weld pressure supply lines 2" – 2-1/2" downstream of the basket strainer assembly on reclaimed water systems shall be Purple Class 315 PVC.
2. Pressure supply lines 1" - 1-1/2" downstream of the basket strainer assembly on reclaimed water systems shall be Schedule 40 Purple PVC.
3. Rubber gasket PVC pipe – refer to Section 2.01 item G.
4. Plastic pipe shall bear the following marking: manufacturer's name, nominal pipe size, schedule or class, type of material, pressure rating in psi, NSF seal of approval, and the date of extrusion.
5. All pressurized PVC solvent weld fitting shall be Spears Schedule 80.
6. Threaded nipples shall be standard weight Schedule 80 with molded threads.
7. Separate primer and solvent cement applications shall be required for all plastic pipe joints per manufacturer's recommendations.
8. Each pressurized supply line from 1" to 2-1/2" shall be installed within a separate trench only and each trench shall have a minimum width of 1'.
9. There shall be four (4) inches of sand between both, the mainline and the remote control valve wiring and below the entire length the mainline.

C. PVC Non-Pressure Lateral Line Piping

1. Non-pressure buried lateral line piping shall be Purple PVC Schedule 40 with solvent welded joints.
2. Purple PVC Schedule 40 BE pipe shall be made from NSF approved Type 1, Grade 1 PVC compound conforming to ASTM Resin Specification 1785. All pipe must meet requirement as set forth in Federal Specification PS-21-70 with an appropriate standard dimension ratio.
3. Except as noted in paragraphs 1 and 2, all requirements for non-pressure lateral line pipe and fittings shall be the same as for solvent-weld pressure mainline pipe and fittings as set forth in Section 2.01-B of these specifications.
4. All non-pressure lateral fittings shall be Schedule 40 PVC as manufactured by Spears.

D. Ultra-violet resistant plastic pipe (solvent weld).

Pipe shall meet manufacturer's tolerance specified, in addition to commercial standards. All pipe shall be NSF approved.

1. Specified lateral on slopes shall be a UVR-PVC on grade, Schedule 40, PVC pipe.
2. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other defects.

3. Pipe shall be continuously and permanently marked with manufacturer's name, material designation UVR-PVC 1120, Schedule NSF and manufacturing code approval.
4. UVR plastic fittings shall be Schedule 40 PVC 1120, Type I, Grade I, manufactured by SUN-STOP or approved equal.

E. Brass Pipe and Fittings

1. Where indicated on the drawings, use 85% red brass, ANSI, Schedule 40, screwed pipe conforming to Federal Specification #WW-P-351.
2. Fittings shall be medium brass, screwed 125-pound class, con-forming to Federal specification #WW-P-460.

F. Copper Pipe and Fittings

1. Pressure supply line (from point of connection through backflow prevention device): Type K copper hard tempered, in accordance with ASTM B4284.
2. Fittings: Wrought copper, solder joint type.
3. Joints: Solder shall be made up of 45% silver, 15% copper, 16% zinc and 24% cadmium and solids at 1125 degrees Fahrenheit and liquefies at 1145 degrees Fahrenheit.

G. Gasket-End Pressure Supply Line and Fittings

1. Lay pipe and make pipe to fitting or pipe to pipe joints following OR70 recommendations (Johns-Manville Guide for Installation of Ring-Tite Pipe), or pipe manufacturer's recommendations.
2. Pipe shall be snaked from side-to-side of trench bottom to allow for expansion and contractions.
3. All changes of direction over 15 degrees shall be made with fittings.
4. For thrust blocking use and refer to Leemco joint restraint system. See manufacturer's recommendations for installation.
5. When pipe laying is not in progress and at the end of each working day, close pipe ends with tight plug or cap.
6. Install pressure supply line locating tape along the entire length of pressure supply line to identify pressurized reclaimed irrigation mainline.
7. Center load pipe with small amount of backfill to prevent arching and slipping under pressure. Leave joints exposed for inspection during testing.
8. Coordinate pressure supply line with sand bedding operations.
9. No water shall be permitted in the pipe until inspections have been completed and a period of at least 24 hours has elapsed for solvent weld setting and curing to have occurred.

10. All fittings shall be deep bell, manufactured of ductile iron, Grade 65-45-12 in accordance with ASTM A-536. Reducers and plugs shall be made available with four lugs to accommodate joint restraints in any orientation. Fittings shall be manufactured by Leemco, Inc., Corona, CA.
11. All gasketed end pressure supply line shall be installed within a separate trench only and each trench shall be a minimum width of 1', or shall be a minimum of 3 times the diameter of the gasketed pipe whichever ever one is greater.
12. All bolts shall be stainless steel only.
13. There shall be four (4) inches of sand between both, the mainline and the remote control valve wiring and below the entire length the mainline.

H. Drip Supply Tubing

1. Manufactured of flexible vinyl chloride compound conforming to ASTM D2955M, D380 and D1599.
2. Drip supply tubing fittings: type and make as recommended by tubing manufacturer.

I. Drip Emitters/Emitter Stakes

1. Drip Emitters: Emitters as specified on the irrigation legend.
2. Emitter Stakes: Stakes as specified on the irrigation legend.

2.02 ISOLATION VALVES

Isolation Valves shall be as follows, as specified on the drawings.

- A. NIBCO 595-Y-66 ball valves for 1" – 2" pipe Brass construction; solid wedge, ISC threads, non-rising stem with brass cross-top handle.
- B. All isolation valves shall have a T. Christy's ID-MAX-P2-RC1P2 attached to each isolation valve stem. Each valve box lid shall have an Applied Engineering Product #999 reclaimed nameplate and shall be attached with stainless steel sheet metal screws.

The above specified valve shall be installed with a green lockable 10" round valve box manufactured by Applied Engineering Products Model #910L-IG-T-2G.

- C. NIBCO F-619 gate valves for 3" and larger pipe: Iron body, brass or bronze mounted AWWA gate valves with a clear waterway equal to full nominal diameter of valve; rubber gasket or mechanical joint-type only. Valve shall be able to withstand a continuous working pressure of 150 psi and be equipped with a square operating nut. The valve shall be supported by a Pipe Line Products valve support and a 12"x12"x6" concrete pad.

The above specified valve shall be installed within a green lockable heavy duty 12" rectangle valve box manufactured by Applied Engineering Products Model #1015T-1G1G HD. Any applicable valve box extensions shall be manufactured by Applied Engineering Products Model #1015-KG body.

All flanged gate valves shall have a T. Christy's ID-MAC-P2-RC1P2 attached to each isolation valve stem. Each valve box lid shall have an Applied Engineering Product #999 reclaimed nameplate attached to each lid with stainless steel sheet metal screws.

2.03 QUICK COUPLING VALVES

- A. Quick coupling valves shall be brass or bronze with built-in flow control and self-closing valve and supplied in three-quarter (3/4) inch size unless otherwise specified. When a quick-coupler assembly is specified, it shall consist of the valve, quick coupler connection and hose swivel.
- B. All quick coupler(s) shall have a T. Christy's ID-MAX-P2-RC1P2 attached to each quick coupler. Each valve box lid shall have an Applied Engineering Product #999 reclaimed nameplate and shall be attached with stainless steel sheet metal screws.

The above specified quick coupler(s) shall be installed with a green lockable 10" round valve box manufactured by Applied Engineering Products Model #910L-IG-T-2G.

2.04 BASKET STRAINER

- A. Basket strainer shall have a threaded or flanged bronze body, tee handle as specified in the irrigation legend. Each basket strainer shall have a mesh stainless steel basket per the irrigation legend.
- B. The flanged assembly shall be bolted together using stainless steel nuts and bolts.
- C. The above specified basket strainer shall be installed within a metal lid at a depth of 48" for the box.
- D. All basket strainers shall have a T. Christy's ID-MAC-P2-RC1P2 attached to them.

2.05 FLOW SENSOR

Flow Sensors shall be provided as specified on drawings and details, and as follows:

- A. Contractor shall install one (1) 1-1/4" Schedule 40 conduit for each flow sensor to each controller with pull box locations at every 200' o.c.
- B. The above specified flow sensor shall be installed within a green lockable heavy duty 12" rectangle valve box manufactured by Applied Engineering Products Model #1015T-1G2G HD. Any applicable valve box extensions shall be manufactured by Applied Engineering Products Model #1015-KG body.
- C. All flow sensors shall have a T. Christy's ID-MAC-P2-RC1P2 attached to each isolation valve stem. Each valve box lid shall have an Applied Engineering Product #999 reclaimed nameplate attached to each lid with stainless steel sheet metal screws.

2.06 MASTER VALVES

- A. Master Valves: See irrigation legend for the model number, type and size as specified on drawings.
- B. The above specified master valves shall be installed within a green lockable heavy duty 12" rectangle valve box manufactured by Carson Industries, Model #3636-48 with a steel cover.

- C. All master valves shall have a T. Christy's ID-MAC-P2-RC1P2 attached to each isolation valve stem. Each valve box lid shall have an Applied Engineering Product #999 reclaimed nameplate attached to each lid with stainless steel sheet metal screws.

2.07 WARNING TAPE FOR POTABLE WATER SYSTEMS

- A. Warning tapes shall be used on all constant pressure main line piping carrying potable water. Blue labeled pipe permitted on potable water.
- B. Warning tapes shall be a minimum of three (3) inches wide and shall run continuously for the entire length of all constant pressure mainline piping. The tape shall be attached to the top of the pipe with plastic tape banded around the tape and pipe every five (5) feet on-center.
- C. Warning tape for constant pressure potable water piping shall be blue in color with the words "CAUTION BURIED WATER LINE BELOW" imprinted in minimum one (1) inch high letters black in color.

2.08 CONTROL WIRING

- A. Control wires shall be direct burial, Type UF, 600 volt, AWG UF UL copper wire specified per the irrigation legend. Control wires shall be a different color for each automatic controller. Common wires shall be white with a different color stripe for each automatic controller.
- B. Connections shall be epoxy-sealed packet type connectors. They shall be a Spears DS-500 DRI-Splice Wire connector sealing packs. Use one DRI splice wire connector per connection.
- C. Install three (3) spare control wires that shall be blue in color, and one (1) common wire spare wire to be white in color in a 10" round plastic lockable valve box.
- D. Master control wires shall be green in color.
- E. Control wires for moisture sensing stations shall be orange in color.
- F. Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines wherever possible. Minimum 24 inches below finish grade or six (6) inches below mainline whichever distance is greater.
- G. Where one (1) wire or more is placed in a trench, the wiring shall be taped together with electrical tape with five (5) wraps around the RCV wires at intervals of ten (10) feet.
- H. An expansion curl shall be provided within three (3) feet of each wire connection and at each change of direction of a wire run. Expansion curls shall be formed by wrapping at least five (5) turns of wire around a one (1) inch diameter pipe, then withdrawing the pipe.
- I. When the control wiring or tubing is installed in a pipe trench, it shall be installed a minimum of 24 inches below finish grade. Continuous caution tape with suitable markings shall be installed in the trench six (6) inches above the wire or tubing.

When the electric valve remote control wires or hydraulic tubing is installed in a pipe trench, it shall be installed a minimum of 24" below finish grade. Contractor shall install a four-inch (4") wide continuous caution tape with suitable markings six inches (6") above the remote control wires or hydraulic tubing.

- J. Control wiring or hydraulic control tubing shall be housed in conduit between the controller and a concrete pull box installed at least two (2) feet outside the limits of the controller foundation, or the structure foundation where the controller is housed.

2.09 AUTOMATIC CONTROLLER

- A. Automatic Controllers shall be as specified on drawings and consist of a 120 volt single-phase, electric clock unit and shall be capable of being operated manually.
- B. The automatic controller shall have the minimum number of stations as indicated on the drawings and shall feature automatic, semi-automatic or manual operation.
- C. Each station shall have variable timing from two to sixty minutes and shall be equipped with on-off position to eliminate operation from any of the watering schedules.
- D. All controllers shall be pedestal mounted type in a heavy duty stainless steel, weather tight, lockable enclosure with stainless steel piano hinges per the irrigation legend.
- E. Each station shall have a repeat switch allowing selected schedules to be repeated after completion of the initial watering schedule.
- F. All controller components shall be fused and have a chassis ground.
- G. All controllers shall be equipped with a four by four (4x4) inch electrical junction box. with an on/off G.F.I. switch, and a grounded duplex receptacle mounted inside the enclosure.

2.10 ELECTRIC REMOTE CONTROL VALVES

- A. Electric remote control valve shall be as specified on drawings.
- B. The valve must have an automatic mechanical self-cleaning internal control system and must be slow closing to ensure smooth and shock free operation.
- C. The electric remote control valve shall be equipped with a corrosion proof solenoid constructed of stainless steel and molded in epoxy resin to form one integral unit which is suitable for 24 volt operation.
- D. The electric remote control valve shall be internal diaphragm and disassembly guided by a stainless steel stem in all positions.
- E. All electric remote control valves shall be equipped with a control stem capable of reducing a higher inlet flow to a constant lower flow regardless of supply fluctuations.
- F. All electric remote control valves shall be serviceable from the top without removing the valve body from system.
- G. All electrical remote control valves shall have the capability of manual operation.
- H. If electric remote control valves are specified with a pressure regulator, the Contractor shall provide the type specified on the plans.

- I. Contractor shall install one (1) T. Christy's I.D. tag to each valve type as follows: non-potable water conditions ID-MAX-P2-RC2P2 and for potable water conditions IC-MAX-B2-PW2B2 with a ID-MAX-G2-PW1G1 with the valve number.
- J. The above specified electric control valve shall be installed within a green lockable heavy duty 12" rectangle valve box manufactured by Applied Engineering Products Model #1015T-1G2G HD. Valve box lid shall have an Applied Engineering Product #999 reclaimed name plate attached to each lid with stainless steel sheet metal screws.

2.11 ELECTRIC DRIP REMOTE CONTROL VALVE

- A. Electric remote control valve shall be as specified on drawings.
- B. The valve must have an automatic mechanical self-cleaning internal control system and must be slow closing to ensure smooth and shock free operation.
- C. The electric remote control valve shall be equipped with a corrosion proof solenoid constructed of stainless steel and molded in epoxy resin to form one integral unit which is suitable for 24 volt operation.
- D. The electric remote control valve shall be internal diaphragm and disassembly guided by a stainless steel stem in all positions.
- E. All electric remote control valves shall be equipped with a control stem capable of reducing a higher inlet flow to a constant lower flow regardless of supply fluctuations.
- F. All electric remote control valves shall be serviceable from the top without removing the valve body from system.
- G. All electrical remote control valves shall have the capability of manual operation.
- H. If electric remote control valves are specified with a pressure regulator, the Contractor shall provide the type specified on the plans.
- I. Contractor shall install one (1) T. Christy's I.D. tag to each valve type as follows: non-potable water conditions ID-MAX-P2-RC2P2 and for potable water conditions IC-MAX-B2-PW2B2 with a ID-MAX-G2-PW1G1 with the valve number.
- J. Flush valve assemblies: Isolation Spears Schedule 80 PVC ball valve.
- K. The above specified electric drip control valve shall be installed within a green lockable heavy duty 12" rectangle valve box manufactured by Applied Engineering Products Model #1015T-1G2G HD. Valve box lid shall have an Applied Engineering Product #999 reclaimed name plate attached to each lid with stainless steel sheet metal screws.

2.12 VALVE BOX

Valve boxes shall be fabricated from a durable plastic material resistant to weather, sunlight and chemical action of soils. They shall be green in color. The cover shall be capable of sustaining a load of 1,500 psi. Valve box

extensions shall be by the same manufacturer as the valve box. All valve boxes shall be as manufactured by Applied Engineering Products.

- A. Install valve boxes with each type of irrigation equipment so that of valve box is above finish grade as specified on the detail drawings. Valve box extensions are not acceptable except for master valves, flow sensor and large gate valves.
- B. Place gravel sump below and around each valve box prior to installing valve box as specified on the drawings. Place remaining portion of gravel inside valve box allowing full access in and around all fittings. Valve box shall be fully supported by gravel sump. No brick or wood supports are allowed except for the large basket strainer assembly and the master valve assembly that will need to be supported with concrete blocks.
- C. Brand valve box lid of associated equipment as follows:
 - 1. Electric control valve box lid with "Controller Letter and Station Number".
 - 2. Drip valve assembly box lid with "Controller Letter and Station Number".
 - 3. Flush valve assembly box lid with "Controller Letter and Station Number" and the letters "F.V.".
 - 4. Quick coupling valve box lid with "Controller Letter" and the letters "QC".
 - 5. Isolation gate valve box lid with "Controller Letter" and the letters "GV".
 - 6. Air relief valve box lid with "Controller Letter" and the letters "AR".
 - 7. Wire splice box lid with "Controller Letter" and the letters "WS".
 - 8. Manual drain valve box lid with "Controller Letter" and the letters "MDV".
 - 9. Communication cable splice box lid with "Controller Letter" and the letters "IRR-COMM".
- D. Letter and number size of brand shall be 2" in height and shall be 1/8" maximum in depth. Provide sample branding to the City or City's representative prior to commencement of work.
- E. Walk though for establishment and/or substantial completion will not be allowed until all branding is complete.
- F. All valve boxes shall be installed within shrub planting areas only.

2.13 SPRINKLER HEADS

- A. All sprinkler heads shall be of the same size, type and deliver the same rate of precipitation with the diameter (or radius) of the throw, pressure and discharge as shown on the plans and/or specified in these special provisions.
- B. Equipment of one type and flow characteristic shall be from the same manufacturer and all equipment shall bear the manufacturer's name and identification code in a position where they can be identified in the installed position.

- C. Rotary heads shall be impact-type drive rotary, pop-up type and designed with an integral check valve for control of line drainage. The sprinkler shall be capable of delivering spray radius and volume (gallons) indicated on drawings. Retraction shall be accomplished by means of a heavy duty stainless steel spring. The sprinkler shall have a riser seal and wiper.
- D. Pop-up spray heads shall be constructed of impact-resistant Cylolac material. Heads shall be retracted by means of a stainless steel retraction spring and shall have a combination piston/wiper seal. All heads shall be a minimum six (6) inch pop-up.
- E. Pop-up sprinklers shall rise at least to minimum operative height per manufacturer's specifications during operation.
- F. Full or part circle sprinklers shall be interchangeable in the same housing.
- G. Shrubbery and bubbler heads shall be adjustable from full flow to shut-off.
- H. Sprinkler heads for small turf, small shrub, and ground cover areas shall be as specified in the irrigation legend. All nozzles shall be per the irrigation legend.
- I. Sprinkler heads for large turf and ground cover areas shall be gear driven rotary type pop-up. The body shall be constructed with 3/4-inch or one (1) inch N.P.T. bottom inlet. Sprinkler nozzle shall pop up a minimum of 2-1/2 inches with positive spring retraction. Sprinkler heads shall be Hunter (Institutional Series only), or approved equal.
- J. Angled nipples on swing joints below spray heads and rotors shall not exceed 45 degrees nor be less than 10 degrees.
- K. After installation adjust nozzle sizes, arcs and radius of throw to allow head to head uniform distribution. Adjust all spray head and rotors to correct height above sod as detailed. No over spray will be allowed on paving, hardscape, sidewalks and paths.
- L. Adjust adjacent plant material so that it does not interfere with uniform distribution of each spray head or rotor.
- M. Landscape Architect may request nozzle changes and/or adjustments without additional cost to the City.
- N. All spray heads and rotor heads shall be installed per the details.

2.14 ELECTRICAL HIGH VOLTAGE

- A. All electrical equipment shall be NEMA Type 3, waterproofed for exterior installations.
- B. All high voltage electrical work shall require separate electrical permit and inspection.

2.15 EQUIPMENT ENCLOSURES

- A. All equipment enclosures for pumps and controllers shall be vandal-resistant, stainless steel, have stainless steel piano hinges and be UL listed. Stainless steel enclosures shall be "The Strong Box" and shall not be painted.

- B. Automatic controller enclosures shall be louvered vents covered by a brass or stainless steel mounted inside the enclosure.
- C. All backflow preventers shall have a "Strong Box" vandal resistant smooth touch backflow enclosure installed. See the irrigation legend for model number and color.

2.16 CONDUIT

- A. Conduit and conduit fittings shall be galvanized by the hot-dip, electrode positing, or metallizing process in accordance with subsection 210-3 of the Standard Specifications for Public Works Construction 2000 Edition. Galvanized conduit shall conform to standards for rigid steel conduit as specified by Underwriter's Laboratories, Inc., and shall bear the underwriter's label on each length.
- B. Conduit shall be of the size indicated on the plans. It shall be the option of the Contractor to use larger conduit than that specified, provided that where such substitution is made, it shall be for the length of the conduit run. No reducing fittings will be permitted.
- C. The ends of the conduit shall be free of burrs and rough edges.
- D. The maximum bend of a conduit shall be 90 degrees and the minimum radius of a bend shall be not less than six (6) times the inside diameter of the conduit.
- E. All threads shall be treated with approved joint compound before fittings are placed thereon. Where the galvanized coating of conduit or fittings has been injured in handling or installing, such damaged areas shall be thoroughly painted with a rust preventative paint.
- F. Ends of conduit shall be properly coupled. Running threads, thread-less connectors or threadless couplings will not be permitted.

2.17 CONDUCTORS

- A. Line voltage conductors shall be supplied in the sizes and types shown on the plans and shall be THW or THWN, 600-volt insulation rating, conforming to the applicable provisions of ASTM D 2219 and D 2220.
- B. Control System Interconnect Conductors
 - 1. All irrigation interconnect conductors shall be pulled by hand.
 - 2. A total of two feet of slack shall be left at each field satellite unit and within each pull box. Sufficient slack shall be left to allow the wire to extend 18" above the top of the pull box grade.
 - 3. Small, permanent, identification bands shall be marked "irrigation interconnect" or as specified and securely attached to irrigation interconnect wires in each pull box near the termination of each wire. Permanent identification bands shall be embossed 6-mil oil-resistant PVC tape with pressure sensitive backing.
 - 4. The irrigation interconnect wire shall be continuous from satellite to satellite. All splices shall occur within the satellite enclosure unless specifically authorized by the Architect. All splices shall be made using approved connectors only. All splices shall be capable of satisfactory operation under continuous submersion in water.

2.18 PULL BOXES

- A. Pull boxes shall be installed at intervals not to exceed two hundred feet and at each location where the installation of the conduit is to be phased, and at each point where the conduit crosses a roadway, bridge, or major utility easement.
- B. Pull boxes shall be installed in shrub planted areas only.
- C. The bottom of box shall be bedded in pea gravel six inches deep and one-half inch of grout prior to installation of the irrigation interconnect. A layer of 15# roofing paper shall be placed between the grout and the pea gravel. A one-inch diameter drain hole shall be provided through the center of the pull box grout and roofing paper.
- D. Contractor shall install communication cable, flow sensor wires, master valve wires, or spare RCV wires within a gray 12" rectangular, lockable valve box at each pull box location. Contractor shall heat brand each lid to reflect the type of wire and use of said wire, i.e. IRR COMM for communication cable.

2.19 OTHER MATERIALS

All other materials, not specifically described but required for a complete and proper irrigation system installation, shall be new, first quality of their respective kinds and subject to the approval of the City & Landscape Architect.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection

Prior to all work of this section, carefully inspect the original design, the referenced standard and the manufacturer's recommendations. System to be installed in accordance with all pertinent City codes and regulations, the original design and the referenced standards.

B. Discrepancies

1. In the event of discrepancy, immediately notify the City.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved to the satisfaction of the City.

3.02 FIELD MEASUREMENTS

Make all necessary measurements in the field to ensure precise fit of items in accordance with the original design.

3.03 TRENCHING AND BACKFILLING

A. Trenching

1. Pulling in of pipe and control wires shall not be permitted.

2. Mechanical trenching machines shall be of an approved type to cut trenches with straight sides. Pipes shall be supported continuously on the bottom of the trench and shall be laid to an even grade. Trenching excavation shall follow layout indicated on drawings to the depths below finish grade as noted.
3. When two (2) lateral pipes are to be placed in the same trench, it is required to maintain a twelve (12) inch space between pipes as is minimum. No pipe shall be installed directly over another.
4. Where it is necessary to excavate adjacent to existing trees, the Contractor shall avoid injury to trees and tree roots. Excavation in areas where two (2) inch and larger roots occur shall be done by hand. All roots two (2) inches and larger in diameter shall be tunneled under and shall be heavily wrapped with wet burlap. Trenches within the drip line of trees shall be closed within 24 hours.
5. All pressurized mainline shall be installed in a twelve-inch (12") wide trench minimum. Each mainline shall be installed in a separate trench, as described in previous sections of the irrigation specifications.

B. Backfilling

1. Backfill material shall be per the irrigation details. Unsuitable material, including clods and rocks over one-half (1/2) inches in size, shall be removed from the premises and disposed of legally at no cost to the City.
2. Trenches and excavations shall be backfilled so that the specified thickness of topsoil is restored to the upper part of the trench. Backfill shall be flooded in accordance with subsection 306-1.3.3 of the Standard Specifications of Public Works Construction, 2000 Edition.
3. Depth of trenches shall be sufficient to provide a minimum cover above the top of the pipe per details.
 - a. Provide minimum cover of 24 inches for 24 volt control wires (36 inches under hardscape areas).
 - b. Provide minimum cover of 24 inches on pressure supply 2-1/2 inches and smaller (36 inches under hardscape areas).
 - c. Provide minimum cover of 24 inches on pressure supply lines three (3) inches and larger (36 inches under hardscape areas).
 - d. Eighteen-inch (18") cover over lateral lines crossing (24 inches under hardscape items).
 - e. Electrical conduit - 24 inches cover (36 inches under roadways).
 - f. Where it is necessary to excavate adjacent to existing trees, the Contractor shall avoid injury to trees and roots. Excavation in areas where two (2) inch and larger roots occur shall be done by hand. All roots two (2) inches and larger in diameter shall be tunneled under and shall be heavily wrapped with burlap, to prevent scarring or excessive drying. Where a ditching machine is run close to trees having roots smaller than two (2) inches in diameter, the wall of the trench adjacent to the tree shall be hand trimmed, making clean cuts through roots. Roots one (1) inch and larger in diameter shall be painted with two (2)

coast of Tree Seal, or equal. Trenches adjacent to trees should be closed within 24 hours; and where this is not possible, the side of the trench adjacent to the tree shall be kept shaded with burlap or canvas.

- g. All mainline, lateral and RCV wires shall have a minimum clearance of twelve (12) inches from each other and twelve (12) inches from lines of other trades.
- h. Parallel lines shall not be installed directly over one another.
- i. Surplus earth remaining after backfilling shall be disposed of on the premises as directed by the City.
- j. For minimum clearance to domestic lines per Health Code please review IRWD Note #J.

3.04 INSTALLATION OF PIPING

A. General

- 1. Lay out the piping system in strict accordance with the drawings and to the depth as specified in Section 3.03.
- 2. Unless otherwise provided, irrigation system layout shown on the plans shall be considered schematic. With the City's approval, the Contractor may make adjustments where necessary to conform to actual field conditions. The irrigation system shall be operational, with uniform and adequate coverage of the areas to be irrigated prior to planting.

B. Under Existing Pavement

- 1. Piping under existing pavement may be installed by jacking, boring or hydraulic driving except that no hydraulic driving will be permitted under asphalt concrete pavement, or at depth less than 36 inches.
- 2. Where cutting or breaking of existing pavement is necessary secure permission from the City of Glendale before cutting or breaking the pavement. Contractor shall make and be financially responsible for all necessary repairs as required by the City of Glendale or City at no additional cost to the City of Glendale.

C. Inspection of Pipe and Fittings

Carefully inspect all pipe and fittings before installation, removing all dirt, scale, burrs and reaming as required; install all pipe with all markings up for visual inspection and verification.

D. Gasket-End Pressure Supply Line and Fittings

- 1. Gasket-End Pressure Supply Line: (downstream of backflow prevention device) PVC Class 200RT (3" and larger).
 - a. Manufactured from virgin polyvinyl chloride (PVC) compound in accordance with ASTM D2241 and ASTM D1784; cell classification 12454-B
 - b. Type 1, Grade 1

2. All fittings shall be Leemco deep bell, manufactured of ductile iron, Grade 65-45-12 in accordance with ASTM A-536. Reducers and plugs shall be made available with four lugs to accommodate joint restraints in any orientation. Fittings shall be manufactured by Leemco, Inc., Corona, CA.
3. Gaskets: factory installed in pipe and fittings, having a metal or plastic support within the gasket or a plastic retainer ring for gasket.
4. Lubricant: as recommended by manufacturer of pipe fittings.
5. Leemco joint restraint system shall be used per manufacturer's recommendations for any PVC Class 200RT (3" and larger).

E. PVC Pipe

1. PVC pipe shall be installed in a manner which will provide for expansion and contraction as recommended by the pipe manufacturer. When requested by the City, the Contractor shall furnish the manufacturer's printed installation instructions before pipe installation.
2. In jointing, use only the specified solvent and make all joints in strict accordance with the manufacturer's recommended methods, give solvent welds at least 15 minutes setup time before moving or handling and 24 hours curing time before filling with water.
3. For plastic-to-metal connections, work the metal connections first, use a non-hardening pipe dope on all threaded plastic-to-metal connections and use only light wrench pressure. All plastic-to-metal connections shall be made with plastic male adapters. All non-hardening pipe dope to be used per PVC fittings manufacturer's recommendations.
4. During installation of pipe, fittings, valves, and other pipeline components, foreign matter shall be prevented from entering the system. All open ends shall be temporarily capped or plugged during cessation of installation operations.
5. Changes in pipeline size shall be accomplished with reducer fittings.
6. Plastic pipe shall be jointed by socket type solvent welded fittings, threaded fittings, rubber ring fittings or by other means specified. When plastic pipe is joined to steel pipe, the steel pipe shall be installed first.
7. Plastic pipe shall be cut square, externally chamfered approximately 10-15 degrees, and all burrs and fins removed.
8. Solvent welded joints shall be made in accordance with ASTM D 2855. The solvent recommended by the manufacturer shall be used.
9. Plastic pipe installation shall be in accordance with ASTM D 2774 and the requirements herein.
10. Care shall be exercised in assembling a pipeline with solvent welded joints so that stress on previously made joints is avoided. Handling of the pipe following jointing, such as lowering the assembled pipeline into the trench, shall not occur prior to the set times specified in ASTM D 2855.

11. Solvent shall be applied to pipe ends in such a manner that no material is deposited on the interior surface of the pipe or extruded into the interior of the pipe during jointing. Excess cement on the exterior of the joint shall be wiped clean immediately after assembly.
12. Threads for plastic pipe shall be as specified in Subsection 308-5.2.2. A plug shall be installed in the bore of the pipe to prevent distortion prior to threading.
13. Threaded pipe joints shall be made using Teflon tape or other approved jointing material. Solvent shall not be used with threaded joints.
14. Pipe shall be protected from tool damage during assembly. Vises shall have pleated jaws and strap wrenches shall be used for installations of fittings and nipples.
15. Plastic pipe which has been nicked, scarred or otherwise damaged shall be removed and replaced. Plastic pipe shall be snaked from side to side in the trench to allow one (1) foot of expansion and contraction per 100 feet of straight run.
16. The pipeline shall not be exposed to water for 24 hours after the last solvent welded joint is made.
17. Center-load all plastic pipe prior to pressure testing to resist displacement.
18. All threaded PVC to PVC connections shall be assembled using Permatex #51 pipe joint compound, a non-hardening sealant or approved equal.
19. Threaded PVC female fittings shall not be used with brass or copper pipe. Use a non-hardening pipe dope on all threaded plastic-to-metal connections, except where noted otherwise.

3.05 INSTALLATION OF EQUIPMENT

A. Automatic Controller Location and Installation

1. Automatic controller shall be installed outside of the coverage pattern of the irrigation system at location shown on the plans. The control components in the controller shall be fused and the chassis shall be grounded.
2. The controller location is essentially diagrammatic, and shall be specifically located and approved by the City.
3. All local and applicable codes shall take precedence in the furnishing and/or connecting of 120 volt electrical service to the controller.
4. All service wiring shall be installed at the minimum depth specified in Subsection 308-2.8 shall govern the locations of service points. A separate disconnect switch or combination meter socket, as required, shall be installed between the source of power and the controller. The minimum service wire shall be No. 12 AWG copper 600 volt type TW, THW or THWN or larger as required by the Specification or controller manufacturer. Wire splices shall be located only in specified pull boxes and shall be made with a packaged kit approved for underground use, or as specified in Subsection 307-2.5. Pull boxes shall be concrete, set to grade on a 12-inch layer or one (1) inch crushed rock.

5. Controller shall be located behind shrubs and/or adjacent to hardscape with an 18 inch planting space between the face of the concrete assembly base and for back of turf mow curb or other hardscape areas. Overspray onto controller shall not be accepted. Maintenance access shall be provided.
6. The location of the controller shall be as shown on the drawings and shall be approved by the City before installation. The electrical service shall be coordinated with this location.
7. City-maintained controllers shall have the irrigation interconnect terminating inside the controller enclosure. All conduits and wiring shall enter the enclosure from the bottom.

B. Control Wiring

1. Control wires shall be installed in accordance with valve manufacturer's specifications and wire chart.
2. Control wiring located beneath paved areas shall be installed in a separate schedule 40 PVC sleeve.
3. Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines wherever possible lay below the mainline. Control wires shall be laid loosely in trench without stress or stretching to allow for contraction of wires. Where more than one (1) wire is placed in a trench, the wiring shall be taped together at intervals of ten (10) feet.
4. An expansion curl shall be provided within three (3) feet of each wire connection. Expansion curl shall be of sufficient length at each splice connection at each electric control valve, so that in case of repair, the valve bonnet maybe brought to the surface without disconnecting the control wires.
5. An expansion curl shall be provided every 100 feet on runs of more than 100 feet in length. Provide looped slack at valves and changes in direction of 90 degrees.
6. Field splices between the automatic controller and electrical control valves shall not be allowed without prior approval of the City. Splices in control wire shall be made in accordance with the requirements of service wire. Splices shall be vaulted and noted on as-built drawings. An expansion curl of two (2) feet shall be provided at each field splice and point of connection in pull boxes and valve boxes.

C. Electrical Work

All electrical work shall be installed per code requirements.

D. Quick Coupling Valves

1. Quick coupling valves shall be set approximately 12 inches from walks, curbs, header boards or paved areas where applicable. Vertical positioning of quick coupling valves shall be such that sleeve top will be four (4) inches above settled finish grade in ground cover areas and at grade in turf areas.
2. Quick coupler valve boxes shall be located 12" from paved surfaces.

E. Valves and Valve Boxes

1. All valves shall be installed as shown in details and in accordance with manufacturer's recommendations.
2. All valves shall be the full size of the line in which they are installed unless otherwise indicated.
3. All valves shall be set at sufficient depth to provide clearance between the cover and the cap, valve handle, or key with the valve is in the fully open position.
4. Valves and valve boxes shall be installed as shown on the drawings and details. The top of valve boxes shall be one (1) inch above finish grade in ground cover and shrub areas. Install each remote control valve and quick coupling valve in a separate valve box and allow at least 12 inches between valve boxes.
5. Place four (4) cubic feet of pea gravel prior to installation of any valve box 12" in length and smaller. Any valve box larger than 12" in length shall receive twelve (12) cubic feet of pea gravel.

F. Drip Supply Tubing/Emitter Supply Tubing

1. Install fitting connections according to manufacturer's specifications.
2. Use manufacturer's recommended hole punch for all penetrations to drip supply tubing.
3. Install all flush valve assemblies at each and every end of the drip supply tubing as specified on the irrigation drawings.
4. Install drip supply tubing stakes as specified on drawings.

G. Closing of Trenches and Flushing of Pipes

1. Main Lines

Mains shall be flushed before installing remote control valves, quick-coupler valves, hose bibbs or pressure-relief valves and with pipe center-loaded. All water being discharged shall be temporarily piped up and out of the trenches. Trenches are to be kept dry for pressure tests to follow. Install all valves after approval of flushing procedure by the City's representative. Contractor shall notify City and submit in writing a description of the proposed flushing operation five (5) working days prior to flushing operation commencing.

2. Lateral Lines

Prior to installation of sprinkler heads and after all new lateral lines and risers are connected, the valves shall be opened and a full head of water used to flush out the lines and risers. Flushing shall be performed in the presence of the City's representative until flow is clean and free of all foreign material. Contractor shall notify City and submit in writing a description of the proposed flushing operation five (5) working days prior to flushing operation commencing.

3.06 TESTING AND INSPECTION

A. General

1. Furnish all necessary testing equipment and personnel.

2. Correct all leaks and retest until accepted by the City.
3. Contractor shall notify City's representative and deliver required submittal items at least 48 hours in advance of the time installation is required.
4. Contractor shall review, and make the necessary coordination calls to the landscape architect per the site observation schedule on the irrigation legend and notes.
5. Contractor shall coordinate a pre-installation meeting with the controller assembly manufacturer and the Landscape Architect to discuss project constraints, goals and manufacturer's required schedule of site certification milestones. This is to certify that each controller assembly meets the manufacturer's requirements as well as the Technical Specifications and Irrigation Plans.

B. Closing in Uninspected Work

Do not allow or cause any of the work of this section to be covered up or enclosed until it has been inspected, tested and approved by the City or governing agencies.

C. Flushing

Before backfilling the mainline and with all control valves in place but before lateral pipes are connected, completely flush and test the drain line and repair all leaks, flush out each section of lateral pipe before sprinkler heads are attached. Contractor shall notify City and submit in writing a description of the proposed flushing operation five (5) working days prior to flushing operation commencing.

D. Testing

1. Make all necessary provisions for thoroughly bleeding the line of air and debris.
2. Before testing, fill the line with water for a period of at least 24 hours.
3. Irrigation mainlines shall be center-loaded prior to conducting hydrostatic pressure test.
4. All hydrostatic tests shall be made in the presence of the City. No pressure line shall be backfilled until it has been inspected, tested, and approved in writing.
5. All gate valves along mainline shall be fully open for testing.
6. Testing of pressure mainlines shall occur prior to installation of remote control valves.
7. All pressure lines shall be tested under a hydrostatic pressure of 150 psi for a period of not less than four (4) hours. If leaks develop, joints shall be replaced, and test repeated until entire system is proven watertight.

E. Adjustment of the System

1. The Contractor shall adjust all irrigation components for optimum performance, and to prevent overspray onto walks, roadways, buildings, and equipment as much as possible.

2. If it is determined that adjustments in the irrigation equipment will provide more uniform performance the Contractor shall make such adjustments prior to planting. Adjustments may also include changes in nozzle sizes and degrees of arc as required.
3. Lowering raised sprinkler heads and valve boxes by the Contractor shall be accomplished within ten (10) days after notification by City.
4. All sprinkler heads and valve boxes shall be set perpendicular to finished grades unless otherwise designated on the plans.

F. Coverage Test

1. When the sprinkler irrigation system is completed and prior to any planting a coverage test shall be performed in the presence of the City's representative to determine if the water coverage for planting areas is complete and adequate. If coverage is inadequate, corrections shall be made and another coverage test performed. Prior to the cover test to commence the irrigation system shall be operated by "radio remotes".
2. Contractor, at the time of the irrigation coverage, shall perform a pressure test at the last head for each irrigation RCV. The Contractor shall perform the test in the presence of the City's representative. Prior to performing this test the Contractor shall adjust each valve to reflect the pressures set for each type of spray, bubbler, and rotor head in the irrigation legend.
3. The entire sprinkler irrigation system shall be under full automatic operation for a period of seven (7) days prior to any planting.

END IRRIGATION SPECIFICATIONS (SECTION 02810)

SECTION 13 - PLANTING SPECIFICATIONS (SECTION 02910)

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Contractor to furnish all labor, material, equipment, and services required to install all landscape planting, as indicated on the approved drawings and as specified herein, and shall perform all other incidental work necessary to carry out the intent of this specification and drawings including the following:
1. Fine grading, soil preparation, planting of nursery and city trees, ground covers and lawn, guying and staking trees, and weed abatement.
 2. 90-day Establishment/90-day Maintenance Period.
 3. Provide guarantee.
- B. All irrigation work shall be approved by the City prior to any work in this section being performed.
- C. The above provisions do not alleviate Contractor from the cost responsibility for, but not limited to the following: (i) coordination, (ii) delivery, (iii) special handling, (iv) off loading, (v) storage, (vi) protection, and (vii) maintenance; nor do the above provisions alleviate Contractor from all warranty responsibility of the trees as set forth in the Contract documents; nor do the above provisions alleviate Contractor from any other requirements or terms, or conditions set forth in the Contract documents. Contractor is responsible to purchase sodded turf, flatted ground cover and trees.

1.02 AGRONOMIC SOILS REPORT

- A. Soil tests shall be performed by the Contractor at his own expense after soil preparation at locations selected by the City equal to the quantity of locations originally sampled for testing. Soil tests results shall be provided to the City to confirm that soil preparation was performed in compliance with preplant soils report and specifications.

1.03 SUBSTITUTIONS

- A. Specific reference to manufacturers' names and products specified in this section are used as standards; this implies no right to substitute other materials or methods without written approval from the City.
- B. Installation and warranty of any approved substitution shall be Contractor's responsibility. Any changes required for installation or any approved substitution must be made to the satisfaction of the City without additional cost to the City. Approval by the City of substituted equipment and/or dimension drawings does not waive these requirements.

1.04 SUBMITTALS

- A. Prior to installation, the Contractor shall submit to the City and Landscape Architect two copies of manufacturers' literature, receipts of sale, and laboratory analytical data for the following items:
1. Organic Amendments
 2. Topsoil
 3. Commercial Fertilizer

4. Mulch
5. Erosion Control Fabric
6. Plant Material
7. Hydroseeding Work Sheets

- B. Prior to hydroseeding, the Contractor shall submit to the Landscape Architect a six (6) ounce sample of the certified seed mix and bill of lading for materials.
- C. Refer to irrigation specifications for additional submittal requirements.

1.05 PRODUCT HANDLING

- A. Contractor shall furnish standard products in manufacturer's standard containers bearing original labels showing quantity, analysis, and name of manufacturer. All containers, bags, etc., shall remain on site until work is completed.
- B. Contractor shall notify Landscape Architect seven (7) days prior to delivery of plant material and submit itemization of plants in each delivery.

1.06 CLEAN-UP

Upon completion of each phase of work under this section, the Contractor shall clean up and remove from the area all unused materials and debris resulting from the performance of the work. The site shall be left in a broom-clean conditions, and wash down all paved areas within the project site. Leave walks in a clean and safe condition.

1.07 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of Textile Canopy System including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Shrub Planting", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

2.01 PLANT MATERIAL

- A. All plants shall be of the size, variety, age and condition as shown on the drawings and as specified here.
- B. Quality - Plants shall be in accordance with the California State Department of Agriculture's regulation for nursery inspections, rules, and grading. All plants shall have a normal habit of growth and shall be sound, healthy, vigorous, and free of insect infestations, plant diseases, sun scales, fresh abrasions of the bark, or other objectionable disfigurements. Tree trunks shall be sturdy and well 'hardened' off. All plants shall have normally well-developed branch structure, and vigorous and fibrous root systems which are not root or pot bound. In the event of disagreement as to condition of root system, the root condition of the plants furnished by the Contractor in containers will be determined by removal or earth from the roots of not less than two (2) plants of each species or variety. Where container grown plants are from several sources, the roots of not less than two (2) plants of each species or variety from each source will be inspected. In case the sample plants inspected are found to be defective, the Landscape Architect reserves the right to reject the entire lot or lots of plants represented by the defective samples.

- C. Plants shall be measured when branches are in their normal upright position. Height and spread dimensions specified refer to main body of plant and not branch tip to tip. Caliper measurement shall be taken at a point on the trunk three (3) feet above natural ground line. If a range of size is given, no plant shall be less than the minimum size and not less than 40 percent of the plants shall be as large as the maximum size specified. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required. Plants that meet the measurements specified, but do not possess a normal balance between height and spread, shall be rejected.
- D. Plants shall be nursery grown in accordance with good horticultural practices under climatic conditions similar to those of project for at least two (2) years unless otherwise specifically authorized by the Landscape Architect. All plants shall be heavy, symmetrical, tightly knit, so trained or favored in development and appearance as to be in form, number of branches, compactness and symmetry.
- E. All plants shall meet the specifications of federal, state, and county laws requiring inspection for plant diseases and insect control. All inspection certificates required by law shall accompany each shipment, invoice, or order for stock; and when such plants arrive at the site, the certificates shall be delivered to the Landscape Architect.
- F. Plants shall be true to species and variety in accordance with the American Association of Nurserymen Standards. Each group of plant materials delivered to the site shall be clearly labeled as to species and variety and nursery source.
- G. Plants shall not be pruned before delivery. Trees which have damaged or crooked leaders, or multiple leaders, unless specified, will be rejected. Trees with abrasions of the bark, sun scalds, disfiguring knots, or fresh cuts of limbs over 3/4 inch which have not completely callused will be rejected.
- H. Plants not conforming to the requirements herein specified will be considered defective and such plants, whether in place or not, will be marked as rejected. Contractor shall immediately remove rejected plants from the premises and replace with new acceptable plants at his expense.
- I. There shall be no substitutions of plants or sizes for those listed on the accompanying plans except with the approval of the Landscape Architect.
- J. Container stock shall have grown in the containers in which delivered for at least six months, but not over two (2) years. Samples shall show no root-bound conditions. Container plants that have cracked or broken balls of earth when taken from container will be rejected by the Landscape Architect.

2.02 TOPSOIL

- A. Soil to be used as planting medium for the project shall be fertile, well-drained, or uniform quality, free of stones or one (1) inch in diameter, sticks, oils, chemicals, plaster, concrete, and other deleterious materials.
- B. Imported topsoil shall be from sources approved by the Landscape Architect which meet the standards specified above. Topsoil shall be determined by Agronomic Soils Report.
- C. The Contractor shall provide for the testing of proposed topsoil by a certified agronomic soils testing laboratory and shall submit soils analysis, recommendations and topsoil sample to the Landscape Architect for approval. Import topsoil shall not be delivered to the site prior to Landscape Architect's approval. The

Landscape Architect may request additional testing of imported topsoil at the site to determine conformance to the approved report. Rejected topsoil shall be removed at no cost to the City.

- D. If stockpiling is requested, locations and amounts of stockpile shall be approved by the City.

2.03 SOIL AMENDMENTS AND FERTILIZER

A. Materials

Provide standard, approved and first-grade quality materials, in prime condition when installed and accepted. Deliver commercially processed and packaged material and manufacturer's guaranteed analysis. Supply a sample of all supplied materials accompanied by analytical data from an approved laboratory source illustrating compliance, or bearing the manufacturer's guaranteed analysis to the Landscape Architect.

B. Organic Amendments

All organic amendments shall be as specified in the Agronomic Soils report prepared by and is included in the Project Appendices, Section "E".

C. Soil Amendments

All soil amendments shall be as specified in the Agronomic Soils report prepared by and is included in the Project Appendices, Section "E".

D. Fertilizer

1. Fertilizer shall be pellet or granular form consisting of the percentage by weight of nitrogen, phosphoric acid and potash as recommended by the approved agronomic report. Planting fertilizer shall be mixed by the commercial fertilizer supplier.
2. Plant tablets shall be slow release type with potential acidity of not more than five (5) percent by weight.

2.04 PESTICIDES AND HERBICIDES

- A. All chemicals used for weed control shall be registered by the State of California Department of Food and Agriculture and the Environmental Protection Agency with registration identification on the label. Label shall be at job site at all times.
- B. All chemicals shall be applied as per registered label instruction and manufacturer's recommendations.
- C. Chemicals requiring a licensed applicator must be applied by persons registered with the County of Los Angeles Department of Agriculture's Commissioner's Office as possessing a current, valid, qualified pest control applicator's license.
- D. The use of any restricted materials is forbidden unless a special use permit is obtained from the County of Los Angeles Department of Agriculture.
- E. The non-selective, translocative herbicide shall be "Round-Up" or approved equal.

2.07 STAKING MATERIALS

- A. Tree stakes shall be straight grained lodge pole pine free of knots, splits, checks, or disfigurements. Stakes shall be two (2) inch minimum nominal size in diameter and 10 feet in length, or as required by tree height. Stakes shall have a tapered driving point and chamfered top and shall be treated with copper naphthanate or pentachlorophenol to heartwood.
- B. Supports for double staking shall be Steel Twist Brace as manufactured by V.I.T. Company, Inc., Huntington Beach, or approved equal. Supports for single staking shall be a 10 gauge minimum steel wire tie completely covered by a new rubber hose.

2.08 GUYING MATERIALS

- A. Guy wire shall be zinc coated iron, 10-gauge minimum, and solid core.
- B. Turnbuckles shall be galvanized or dip-painted and weldless.
- C. Cable clamps shall be galvanized or copper, size as required.
- D. Plastic guy covers shall be white class 200 PVC 1/2-inch diameter and shall be six (6) feet in length or provide 90 percent cover of guy wire.
- E. Guying collar shall be 1/2-inch diameter new two (2) ply garden hose (reinforced rubber). The collar shall completely cover the wire and loop around tree limbs. It shall be long enough to permit tree movement within the loop.
- F. Deadmen shall be Steel Rapid Anchors as manufactured by V.I.T. Company, Inc. or approved equal. Size of anchor shall be per manufacturer's recommendations.

2.09 TRUNK PROTECTORS

Trees within turf areas shall be installed with trunk protection devices. Trunk protectors shall be Arbor Gard as manufactured by Deep Root Corp., Westminster, CA.

Where two or more segments of root protection devices are installed. One joint shall be left unattached to prevent girdeling.

2.10 ROOT CONTROL BARRIERS

- A. Root control barriers shall be provided as indicated on the plans, as required by the City of, and as specified herein.
- B. Barriers shall be construction of prefabricated high impact polyethylene as manufactured by Deep Root Corp., Westminster, CA.
- C. Barriers shall be a minimum of 16-inch depth when installed adjacent to sidewalk, 26-inch depth when installed adjacent to curb. Barriers may be linear or a box, according to the approved plan and per City of Glendale requirements.

2.11 TRANSPLANTING

- 2 Transplanting non-nursery-grown trees by tree spade in accordance with ANSI A300 (Part 6) and in ANSI Z60.1 pertaining to field-grown trees.
- 3 Caliper: Diameter of a trunk as measured by the average of the smallest and largest diameters at a height 6 inches (150 mm) above the root flair for trees up to, and including, 4-inch (100-mm) size at this height; and as measured at a height of 12 inches (300 mm) above the root flair for trees larger than 4-inch (100-mm) size.
- 4 Lay out individual transplant locations and areas for multiple plantings, and obtain Architect's acceptance of layout before transplanting.

PART 3 - EXECUTION

3.01 GENERAL

- A. Perform actual planting only during those periods when weather and soil conditions are suitable and in accordance with locally accepted practice.
- B. Confirm location and depth of underground utilities and obstructions. If underground structures or utility lines are encountered in the excavation of planting areas, other locations for planting shall be approved by the Landscape Architect.
- C. All planting layout and staking shall be accurately made in accordance with the plans.
- D. Plant locations shall be approved by the Landscape Architect prior to excavation and may be subject to spacing and distances required by City standards.

3.02 FINISH GRADING

- A. All grading and mounding with the exception of final planting shall be completed prior to soil preparation.
- B. Planting areas shall be free of all weeds (plants not specified in planting areas), stones, stumps, roots, or other debris one (1) inch in diameter and greater.
- C. Soil shall be graded to a smooth and even surface conforming to required finish grade. Finish grade adjacent to walks, paved areas, curbs, manholes, clean-outs, valve boxes, and similar features shall be one (1) inch below the surface in turf and two (2) inches below in ground cover/shrub areas. Grades between such features shall be carefully sustained and blended to eliminate abrupt changes.
- D. Planting areas to receive hydroseed turf shall sustain a finish grade of such depth that the top of installed sod shall be flush with finish surfaces (walks, paved areas, etc.).
- E. Contractor shall allow for soil amendments when establishing subgrade elevations. All planting areas shall have a finish grade conforming to approved plans and specifications after full settlement has occurred.
- F. All planting areas adjacent to buildings shall be graded to drain away from the building at a minimum of two (2) percent slope, for a minimum of five (5) feet horizontal distance.

3.03 SOIL PREPARATION

- A. Planting areas with slopes 2:1 and steeper shall not be soil prepared unless directed by Landscape Architect.

- B. Contractor shall not work under muddy conditions.
- C. Should 30 calendar days elapse between completion of soil preparation and commencement of planting, all areas shall be prepared again.

3.04 WEED ERADICATION

- A. The Contractor shall eradicate all weeds within the planting areas to be revegetated as shown on the planting plans prior to the start of any grading or construction.
- B. At the beginning of work, spray all existing perennial weeds with an approved systemic herbicide (Roundup Pro or Rodeo) as recommended and applied by an approved licensed pest control adviser and applicator. Leave sprayed plants intact for at least seven (7) days. Clear these existing weeds with a flail mower weed whip or equivalent equipment, at least one-quarter (1/4") inch below the surface of the soil. Areas that are too steep for heavy equipment shall be cleared with weed whips or equivalent devices prior to planting or seeding. All flower heads and seed heads shall be bagged, and all cleared weeds shall be removed and legally disposed of off-site.

3.05 PLANTING OF TREES, SHRUBS AND VINES

A. Excavation

Planting holes shall have irregular, non-glazed sides, and shall be as described in the attached agronomic soils report.

B. Planting procedure for container grown material

1. Backfill plant pit with well-tilled on-site soil without amending to the depth of the rootball. Water thoroughly and compact backfill in such a manner so that after settling, the crown of the plant stem is one (1) inch above adjacent grade. Center plant in pit.
2. Uniformly blend amended backfill at a centralized location in minimum one (1) cubic yard lots. Backfill amendments shall be as indicated on the approved agronomic soils report. Mixing in plant pits or beds will not be permitted. Make available for inspection, all delivery slips and analytical data from approved laboratories for specified organic amendments. For bidding purposes use the following mixture:
3. Backfill remainder of plant pit around the rootball with amended backfill. Firm down, eliminating air pickets. Do not pack. Form a shallow basin around the plant to hold enough water to saturate the rootball and backfill.
4. Plant tablets shall be required for all tree, shrub, and vine plantings. Plant tablets shall be placed from one (1) to three (3) inches below the finish surface within three (3) inches of the rootball. Application rate an nutrients shall be per the manufacturer's recommendation.
5. Immediately after planting, apply water to each tree and shrub by means of a hose. Apply water in a moderate stream in the planting hole until the material about the roots is completely saturated from the bottom of the hole to the top of the ground. Add additional amended backfill material as necessary to correct any settlement around rootball. Apply water in sufficient quantities and as

often as seasonal conditions require to keep the plant areas moist at all times, well below the root system of grass and plants.

C. Planting procedure for field grown material

Plant in accordance with the above specification; however, do not use nitrogen stabilized organic amendment in the backfill mix.

3.06 GROUND COVERS

- A. Ground cover plants shall not be allowed to dry out before or while being planted. Roots shall not be exposed to the air except while actually being placed in the ground. Wilted plants will not be accepted.
- B. Plant ground covers in straight rows evenly spaced, and at intervals required by drawings, use triangular spacing.
- C. Plant each rooted plant with its proportionate amount of flat soil. Immediately water after planting until entire area is soaked to full depth of each hole.
- D. Protect plants from damage and trampling at all times.
- C. Top-dress all ground cover and shrub areas with 2-inch layer of approved bark mulch, and all areas planted with 6-inch plant/flats with 1-inch layer. The bark mulch shall be ground, aged and screened to a consistent 3-inch minus sizing. Bark Mulch shall be 3-inch minus by Recycled Wood Products (877) 476-9797.

3.09 INSPECTION

- A. All inspections herein specified shall be made by the Landscape Architect or the City. The Contractor shall request inspection at least two (2) working days in advance of the time inspection is required.
- B. Inspection will be required for the following parts of the work:
 - 1. During the preliminary fine finish grading and soil preparation.
 - 2. When fine finish grading and soil preparation are completed.
 - 3. Plants after delivery to site (prior to planting), when shrubs and trees are spotted for planting, but before planting holes are excavated.
 - 4. Specimen trees at source before delivery.
 - 5. Planting areas prior to planting.
 - 6. All landscape construction items, prior to the start of the maintenance period.
 - 7. Final inspection at the end of the maintenance period, provided that all previous deficiencies have been corrected.

3.10 WATERING

- A. Watering to commence immediately after completion of job and to continue at a rate necessary to keep area moist without drying out or puddling. Normally, irrigating ONCE AN HOUR for a short duration, and continuing this procedure each and every day light hour, seven (7) days a week will be sufficient. This continual moist condition shall prevail each and every day until seeds are well rooted. After the rooting stage is completed, irrigation should still continue on the basis of at least once or twice a day until turf is well established.
- B. Immediately after planting, apply water to each tree, shrub and ground cover by means of a hose. Apply water in a moderate stream in the planting hole until the material about the roots is completely saturated from the bottom of the hole to the top of the ground.
- C. Water plants which cannot be watered efficiently with the existing water system by means of a hose.
- D. Apply water in sufficient quantities, and as often as seasonal conditions require, and keep the ground wet at all times, well below the root system of grass and planting. Do not cause erosion damage in watering slopes.

3.11 ESTABLISHMENT/MAINTENANCE PERIOD

A. General: All areas landscaped by the Contractor under this contract shall be established and maintained for a duration of no less than one hundred and twenty (120) days.

B. Start of Establishment/Maintenance criteria

- 1. Establishment period shall not commence until all elements of the project are completed in accordance with the approved plans. Upon satisfactory completion of the improvements and acceptance by the City of Glendale the Contractor will start the 60-Day Establishment period.
- 2. Power, either temporary or permanent, to remote controllers shall be established prior to the beginning of the Establishment period.
- 3. Written approval by the City must be obtained prior to the beginning of the Establishment period.
- 4. If the project Establishment fails to continuously meet standards required for start of Establishment the Establishment period shall be suspended. An additional Establishment period of up to 60 days shall begin when the Contractor has corrected all deficiencies.
- 5. Upon satisfactory completion of the plant Establishment period and acceptance by City, the Contractor shall commence a 60-Day Maintenance Period. The 60-Day Establishment period will not be accepted by the City unless growth has achieved a minimum of 75% coverage of the appropriate project areas.

C. End of Maintenance

- 1. The Contractor shall be responsible to coordinate and arrange a preliminary final inspection of the landscape improvements to be held approximately thirty (30) calendar days prior to completion of the period. This meeting shall include the Contractor, City and Landscape Architect. If applicable, the City will arrange attendance of the future Property Manager or city. The purpose of this meeting is to inspect the improvements in advance of City's final acceptance while allowing sufficient time for Contractor to make corrections of noted deficiencies.

Contractor's failure to schedule the preliminary final inspection in a timely manner shall not alleviate Contractor of the responsibility to maintain the landscape improvements beyond the establishment/maintenance period at its sole expense.

2. Deficiencies noted during inspection shall extend the maintenance period.
3. End of maintenance shall occur only upon written acceptance by City.
4. The duration for Establishment and Maintenance of the improvements as stated above (i.e., 60 calendar days for establishment and 60 calendar days for maintenance shall hereinafter be referred to as the "Establishment/Maintenance Period," and shall have a combined duration of 120 calendar days.

D. During the Establishment/Maintenance period the Contractor shall provide all watering, weeding, fertilizing, cultivating, spraying, and mowing necessary to keep the plants and turf in a healthy, weed free, growing condition and to keep the planted areas neat, edged, and attractive. All shrubs shall be pinched-pruned as necessary to encourage new growth and to eliminate rank sucker growth. Old wilted flowers and dead foliage shall be immediately pinched or cut off. All trees shall be pruned for structural form and health. Limbs shall be removed to the growth collar per good arboricultural practices.

E. During the Establishment/Maintenance Period, should the appearance of any plant indicate weakness, that plant or cutting shall be replaced immediately with a new healthy plant. Any trees or shrubs with damaged cambium shall be replaced immediately. At the end of the maintenance period, all plant material shall be in a healthy growing condition and spaced as indicated on the plans.

F. Post plant maintenance for the first year shall consist of a nitrogen-only fertilizer program. Apply 5 lbs./1000 sq. ft. ammonium sulfate at 30-day intervals beginning 30 days after planting. In the event that ground cover, trees, or shrubs exhibit iron chlorosis symptoms, necessary action shall be taken to correct the deficiency.

I. Irrigation

1. Contractor shall properly and completely maintain all irrigation systems, automatic and manual. A balanced watering program shall be maintained to ensure proper germination. Contractor shall be responsible for the irrigation system for the entire maintenance period.
2. All controllers are to have each station individually adjusted on a weekly basis. System shall be set considering the application rate each area is capable of receiving. The system shall operate on short intervals, with the cycle repeating at a later time to reduce runoff.
3. Maintain all valve boxes and controllers free of debris. Boxes shall remain locked at times.

J. Site Maintenance

1. All planted areas shall be kept neat and clean and free of all clippings, debris and trash.
2. All subsurface drains shall be periodically flushed with clear water to avoid build up of silt and debris. Keep all drain inlets clear of leaves, trash and other debris.
3. All paved areas shall be cleaned weekly of trash, debris and silt.

4. The Contractor shall be responsible for the elimination of vertebrate pests determined by the Landscape Architect to be detrimental and damaging to the area of development. Elimination shall be performed by safe, approved methods.

K. Utilities

All utility costs incurred during the maintenance period shall be the responsibility of the Contractor.

END PLANTING SPECIFICATION (SECTION 02910)

SECTION 14 – SELECTIVE STRUCTURE DEMOLITION (SECTION 024119)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building(s) or structure(s).
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

1.2 SCOPE:

A. The extent of work shall be as shown on Drawings and called for in these Specifications. Performance shall meet the requirements of the Specifications.

B. All work shall comply with the requirements of the local Building Code and accident and fire prevention regulations.

C. Provide all labor, materials, equipment, hauling and services required to complete all Demolition work including, but not necessarily limited to:

1. Obtain all permits and pay all fees required or incurred by the work of this Section.
2. The Contractor shall provide all measures necessary to protect the existing structure to remain during construction. Such measures shall include, but not be limited to, bracing and shoring for loads due to construction or removal of structures which are part of the work.
3. The demolition, removal and disposal of the existing structures as shown on the plans and described in these Specifications.
4. The demolition, removal and disposal of all asphalt paving and disposal of all asphalt paving and concrete as shown on the plans and described in these Specifications.
5. Remove all existing utility services as shown on Plans and uncovered by demolition to the extent and manner satisfactory to the utility companies and local building regulations and authorities.
6. Remove all demolition materials and debris from the construction site as it accumulates and provide hauling to an approved refuse disposal area or dump.
7. Remove all other obstructions not herein called for, but encountered in the process demolition.
8. Provide adequate protection and safety for all persons and property affected and adjacent to this work.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 PREINSTALLATION MEETINGS

- A. Predemolition Conference: When requested by Owner, conduct conference at project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Schedule of building demolition with starting and ending dates for each activity.
- B. Inventory of items to be removed and salvaged.
- C. Predemolition photographs or video: Submit before work begins.
- D. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

1.6 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

1.7 PROJECT CONDITIONS

- A. Owner may occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

1.9 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of Selective Structure Demolition including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Veneer at Water feature Wall and Column Scones Removal", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.1 GENERAL

- A. Protection:
 1. Do not begin demolition until temporary partitions, barricades, warning signs, temporary bracing and shoring, and other forms of protection are installed.
 2. Protect existing improvements that are not to be removed from injury or damage resulting from the Contractor's operation. Replace damaged improvements in kind.
 3. During demolition provide safeguards, including warning signs and lights, barricades, and the like, for protection of the public, Contractor's employees and existing improvements to remain.
- B. Noise control: Refer to Division 1.
 1. Exercise caution and care to prevent generation of unnecessary noise.
 2. Keep noise levels to the minimum possible.
 3. Discontinue noise producing operations, when requested by the Owner's Representative and reschedule at a mutually acceptable time.
- C. Dust control: Control dust at all times.
 1. Provide dust-tight partitions to prevent dust escaping into other parts of the building where demolition is not in progress.
 2. Assume liability for claims related to flying dust caused by this work.
- D. Water control:

1. Control the use of water to prevent damage to the existing facility and improvements to remain.
2. Assume liability for claims related to water seepage and leakage caused by this work.

E. Security: Coordinate security with Owner's Representative.

1. Take necessary precautions to keep trespassers out of demolition areas.
2. Properly secure demolition areas from entry when demolition is not in progress but do not block required exit ways.

F. Safety: If at any time the safety of existing construction appears to be endangered, take immediate measures to support such endangered construction; cease operations and immediately notify the Owner's Representative.

3.2 EXAMINATION

- A. Inspection of Site: The Contractor shall visit the site and determine for himself the existing condition, nature of materials to be encountered and all other facts concerning or affecting the work to be done under this Section.
- B. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- C. Inventory and record the condition of items to be removed and salvaged.
- D. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict.
1. Submit report to the Architect in written, accurate detail.
 2. Pending receipt of directive from the Architect, rearrange demolition-schedule as necessary to continue overall job progress without delay.
- F. Survey existing condition of building(s) to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
- G. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs and/or videotapes.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary of Work."

- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
1. Contractor shall coordinate with Owner to arrange shut off of indicated services/systems when required by Contractor.
 2. Arrange to shut off indicated utilities with utility companies.
 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.
- C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to regulations of authorities having jurisdiction.

3.4 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, alleys, walks, walkways, and other adjacent occupied and used facilities.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- C. Temporary Shoring: Contractor shall be fully responsible for the adequacy and installation of temporary shoring and bracing systems used during demolition. Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Cut back finished surfaces to straight, plumb or level lines as required. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 5. Properly dispose of demolished items and materials promptly.
- B. Coordinate demolition to assure the proper sequence, limits, methods and time of performance. Schedule demolition so as to impose a minimum of hardship on the present operation of the facilities and the performance of the work.
- C. Whenever possible use small hand or small power tools designed for sawing or grinding; whenever possible avoid the use of tools with a hammering and chopping motion. Cut through finished surfaces from the exposed or finished side into concealed surfaces.
- D. In general remove materials as follows:
1. Modular materials: Remove to a natural breaking point in whole units to a joint line with no damaged or defective unit remaining where joining new construction. After removing flooring materials, clean substrates of old cement and adhesive.
 2. Gypsum board: Remove to a joint line on a support.
- E. Materials not mentioned to be removed that interfere with new construction, except where structural integrity of the assembly is at risk, shall be cut to clean cut lines to provide for proper interface with new construction, or patching and repair, as required.
- F. Reuse of Building Elements: Project has been designed to result in end-of-Project rates for reuse of building elements as follows. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.
- G. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area as designated by Owner.
 5. Protect items from damage during transport and storage.

6. Material and equipment shall not be viewed or sold on the site.

H. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

I. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Remove demolished materials from Project Site and legally dispose of them in an EPA approved landfill.

3.7 PATCHING

A. Patch materials to remain when damaged by demolition. Refer to architectural and structural drawings. Finish material and appearance of the patch or repair shall match the existing contiguous materials and finishes in all respects, as approved by the Architect.

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119 – SELECTIVE STRUCTURE DEMOLITION

SECTION 15 – CAST-IN-PLACE CONCRETE (033000)

PART 1 - GENERAL

1.1 SCOPE:

- A. Provide all labor, materials and equipment for the concrete work complete as shown and specified. The principal items of work included in the Section are:
 - 1. Furnishing and placing of concrete.
 - 2. Finishing and curing.
 - 3. Standard and special finishes.
 - 4. Forms, screeds and preparatory work.
 - 5. Furnishing and placing of reinforcement.
 - 6. Control joint and tooled joint patterns where indicated.
 - 7. Setting of all items to be embedded in concrete.

1.2 QUALITY ASSURANCE

- A. Codes and standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:
 - 1. ACI 301, "Specifications for Structural Concrete for Buildings".
 - 2. Concrete Reinforcing Steel Institute, "Manual of Standard Practice".
 - 3. AWS D1.4, "Structural Welding Code – Reinforcing Steel."
- B. Concrete testing service: Contractor shall coordinate with Owner's testing laboratory to perform material evaluation tests and to design concrete mixes.
 - 1. Materials and installed work may require testing and retesting, as directed by Architect, at any time during progress of work. Allow free access to material stockpiles and facilities. Tests, not specifically indicated to be done at Owner's expense, including retesting of rejected materials and installed work, shall be done at Contractor's expense.
- C. Admixtures:
 - 1. Provide admixtures produced and serviced by established, reputable manufacturers and used in compliance with manufacturer's recommendations and in accordance with ASTM C494.

1.3 SUBMITTALS REQUIRED

- A. Submit mix design for each separate class of concrete on ready-mix supplier letterhead to the Engineer of Record for approval ten (10) days before concrete placement. Submit copies of batch tickets for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity and amount of water introduced, within ten (10) days after placement.

B. Proprietary Product data:

1. Submit from the cement manufacturer Certificates of Compliance delivered directly to the Concrete producer to positively identify the cement as to production lot, bin or silo number, dating and routing of shipment, and compliance with the specified standards.
2. Submit manufacturer's admixture and product data with application and installation instructions for materials and items included in mix design and also including reinforcement and forming accessories, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as specified and/or requested by Architect.

C. Shop drawings, reinforcement: Provide shop drawings for fabrication, bending and placing of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required and openings through concrete structures. The reinforcing shop drawings are for contractor's review purpose only; do not submit reinforcing shop drawings to engineer and architect of record for approval. **PLEASE PROVIDE REBAR SHOP DRAWINGS FOR ENGINEER'S APPROVAL.**

D. Laboratory test reports: Submit laboratory test reports for concrete materials and mix design test as specified.

E. Sustainable Design Submittals:

1. Environmentally Preferable Products for foundation aggregate and foundation cement.

1.4 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of Cast-in-Place Concrete including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Cast-in-Place Concrete", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

- 2.1 Storage of materials: Cement and aggregates shall be stored at the work in such manner as to prevent deterioration or intrusion of any foreign matter. Cement shall be kept dry and any material which has deteriorated or which has been damaged shall not be used.

2.2 FORM MATERIALS:

- A. Forms for exposed finish concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection.

1. Plywood, metal or other approved panel materials

2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1 and as follows:
 - a. High-density overlay, Class 1 or better.
 - b. Medium-density overlay, Class 1 or better, mill-release agent treated and edge sealed.
 - c. Structural1, B-B, or better, mill oiled and edge sealed.
 - d. B-B (Concrete Form), Class 1, or better, mill oiled and edge sealed.

- B. Forms for unexposed finish concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumbers, metal or other acceptable materials. Provide lumber dressed on at least 2 edges and one side for tight fit.
- C. Form coatings: Provide commercial formulation form-coating compounds that will not bond with, stain or adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

2.3 REINFORCING MATERIALS:

- A. Reinforcing bars: ASTM A615, Grade 60, deformed for #5 or larger.
ASTM A615, Grade 40, deformed for #4 or smaller.
- B. Supports for reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI recommendations, unless otherwise acceptable.
- C. Reinforcing bars requiring welding and all grade beam reinforcing: ASTM A706, Grade 60.

2.4 CONCRETE MATERIALS:

- A. Portland cement: ASTM C150, Type I, II or V unless otherwise acceptable to Architect and Engineer. (See Soils Report and/or Structural Drawings for Type V cement requirement.)
- B. Use one brand of cement throughout project, unless otherwise acceptable to Architect.
- C. Normal weight aggregates: Conform to ASTM C33, Standard Specification for Concrete Aggregates and as herein specified. Provide aggregates from a single source for exposed concrete.
 1. Local aggregates not complying with ASTM C-33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Architect.
- D. Lightweight Aggregates: Conform to ASTM C-330, Lightweight Aggregates for Structural Concrete.
 1. Local aggregates not complying with ASTM C-330 but which have shown by special test or actual service to produce concrete of required weight, adequate strength and durability may be used when acceptable to the Architect.
- E. Water: Potable.
- F. Air-entraining admixture: ASTM C260.
- G. Water-reducing admixture: ASTM C494, Type A.

H. Set control admixtures: ASTM C494, as follows:

1. Type B: Retarding.
2. Type C: Accelerating.
3. Type D: Water reducing and retarding.
4. Type E: Water reducing and accelerating.

I. Concrete Color Admixture: Color admixture for integral color as manufactured by L.M. Scofield Co., Q.C. Construction Products, Inc., Admixtures, Inc., Solomon Colors, Davis Colors or approved equal. Color concrete curing sealer by same manufacturer. See Drawings for location and color as applicable.

2.5 RELATING MATERIALS:

A. Moisture barrier: Provide moisture barrier cover over prepared base material where instructed. Use only materials which are resistant to decay when tested in accordance with ASTM E154, as follows:

1. Polyethylene sheet not less than 15 mils thick, see Soils Report and Drawings.

B. Moisture-retaining cover: One of the following, complying with ASTM C171:

1. Waterproof paper.
2. Polyethylene film.
3. Polyethylene-coated burlap.

C. Cure and Seal Compound: Basis-of-Design Product: Subject to compliance with requirements, provide Super Diamond Clear Vox by the Euclid Chemical Company or comparable product approved by Architect.

1. VOC compliant and conforming to ASTM C 309, Type 1, Class A and ASTM C 1315, Type 1, Class A.

D. Curing compound: VOC compliant and conforming to ASTM C 309, Type 1 and ASTM C 156, "Shur-Cure", "Dress & Seal WB", "Spartan-Cote WB", "Kure-Seal-Hardener", unless other product or type acceptable to Architect.

2.6 SAND SUB-BASE FOR BUILDING ON-GRADE SLABS (As Noted on Plans):

A. Sub-base shall be 4" Class 2 aggregate with 15 mil Stego Wrap vapor barrier in the middle as per Structural drawings.

B. Compacted soil under the Class 2 aggregate.

C. Sub-base shall be a layer of sand of thickness as indicated and being clean, natural washed sand of hard and durable particles from fine to passing thru a 1/8" screen, of which 12% shall pass 50 mesh screen.

D. Gravel sub-base as required by Soils Report.

2.7 PROPORTIONING AND DESIGN OF MIXES:

- A. Prepare design mixes for each type and strength of concrete in accordance with applicable provisions of ASTM C94. Use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs.
- B. Submit written reports to Architect of each proposed mix for each class of concrete at least 10 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Architect.
- C. Adjustment to concrete mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.
- D. Admixtures: Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement, having air content within following limits:
 - 1. Concrete structures and slabs exposed to freezing and thawing or subject to hydraulic pressure:
 - a. 4% for maximum 2" aggregate
 - b. 6% for maximum 3/4" aggregate
 - c. 7% for maximum 1/2" aggregate
 - 2. Other concrete: 2% to 4% air.
 - 3. Use admixtures for water-reducing and set-control in strict compliance with manufacturer's directions.

2.8 CONCRETE MIXING:

- A. Concrete characteristics:
 - 1. Minimum compressive strength of 4000 p.s.i. unless otherwise specified on the plans.
 - 2. Building slabs shall have a minimum compressive strength of 4000 p.s.i. at 28 days, unless otherwise specified on the plans.
 - 3. Maximum slump of 4 inches, unless otherwise specified on the plans.
 - 4. Minimum cement content = 564#, unless otherwise specified on the plans.
 - 5. Concrete shall not exceed the maximum water/cement ratio of 0.50 non-air entrained/0.45 air entrained, unless otherwise specified on the plans.
- B. Proportion of mixes: Proportions of aggregate to cement for concrete shall be such as to produce a mixture which will work readily into the corners and angles of forms and around reinforcement without permitting segregation of materials or an excess of free water collecting on the surface. The methods for measuring concrete materials shall be such that the proportions can be accurately controlled and easily checked during the progress of work.
- C. Ready-mix concrete: Mixed and delivered in accordance with the requirements of ASTM C94 "and Section 501 of the Uniform Standard Specifications." In no case shall concrete be mixed for a period of less than ten minutes at peripheral drum speeds of approximately 200 r.p.m. and mixing shall be continued until the concrete is completely discharged.

1. Ready-Mix delivery shall provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity and amount of water introduced. General Contractor shall retain "batch tickets" as part of project record and forward copies to Architect within ten (10) days of final delivery.
 2. Delete references for allowing additional water to be added to batch for material with insufficient slump. Addition of water to the batch will not be permitted.
- D. At least three minutes of mixing period shall be at job site. Concrete may be rejected if not placed in final position within 1-1/2 hours after water is first added to the batch, or if not in such condition that it can be properly placed. Each mixer truck shall be accompanied by a Public Weighmaster's Certificate, with a copy furnished to Architect.
1. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.
 2. When air temperature is between 85 degrees F. and 90 degrees F., reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 degrees F., reduce mixing and delivery time to 60 minutes.
- E. Slab thicknesses shall be as indicated on plans.

2.9 SEALERS

- A. All surfaces to be sealed with three coats of water based acrylic sealer, which has graffiti-resistant qualities. Must be non-sacrificial so most graffiti can be cleaned with lacquer thinner and not require resealing.
- B. Sealer shall be Matte finish.

PART 3 - EXECUTION

3.1 FORMS:

- A. Design, erect, support, brace and maintain formwork, according to ACI 301, to support vertical, lateral, static and dynamic loads, and construction loads that might be applied until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position indicated, within tolerance limits of ACI 117.
- C. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
- D. Construct forms complying with ACI 347, to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorage and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up joints to prevent leakage of cement paste.

- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.
- F. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.
- G. Chamfer exposed corners and edges permanently exposed concrete as indicated, using wood, metal, PVC or rubber chamfer strip fabricated to produce uniform smooth lines and tight edge joints.
- H. Form ties: Factory-fabricated, adjustable-length, removable or snap off metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal.
 - 1. Unless otherwise indicated, provide ties so portion remaining within concrete after removal is at least 1-1/2" inside concrete.
 - 2. Unless otherwise shown, provide form ties which will not leave holes larger than 1" diameter in concrete surface.
- I. Provisions for other trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items. Accurately place and securely support items built into forms.
- J. Cleaning and tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms and bracing after concrete placement if required to eliminate mortar leaks and maintain proper alignment.

3.2 PLACING REINFORCEMENT:

- A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.
- B. Clean reinforcement of loose rust and mill scale, earth, ice and other materials which reduce or destroy bond with concrete.
- C. Accurately position, support and secure reinforcement against displacement by formwork, construction or concrete placement operations. Locate and support reinforcing metal chairs, runners, bolsters, spacers and hangers, as required.
- D. Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

3.3 JOINTS:

- A. Construction joints: Locate and install construction joints, which are not shown on drawings, so as not to impair strength and appearance of the structure, as acceptable to Architect.
 - 1. Provide keyways at least 1-1/2" deep in construction joints in walls, slabs and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.
 - 2. Place construction joints perpendicular to the main reinforcement. Continue reinforcement across construction joints.
 - 3. Joint filler and sealant material are specified in Division 7 section of these specifications.
- B. Control joints in slabs-on-ground: Building slabs shall have expansion and contraction joints properly placed to minimize cracking and stress. Construct contraction joints for a depth equal to at least one fourth of concrete thickness.
 - 1. Joint sealant material is specified in Division 7 section of these specifications.
- C. Exterior Sidewalk Joints in Concrete: Locate as indicated on the plans.
 - 1. Exterior Construction Joints general: Clean of laitance and roughen concrete, exposing clean aggregate solidly embedded in mortar-matrix. Wet hardened concrete and keep wet for twenty-four hours before placing concrete.
 - 2. Exterior expansion joints: Locate where indicated, filled to full depth with expansion joint material. In curb, sidewalk, exposed slabs and paving, hold down one-half inch and seal exposed joints with joint sealant.
 - 3. Exterior weakened plane joint: Cast in place, as shown on drawings. Do not saw-cut. In gutters, fill with joint sealer.
 - 4. Unless specifically noted otherwise on hardscape plans, all continuous curbs and planter curbs shall be provided with weakened plane joints at top and face of curbs spaced equally at 15'-0" o.c. maximum and at inflection points of radius. Provide expansion joints spaced equally at 40'-0" lineal feet o.c. maximum and at all 90 degree or lesser corners.

3.4 INSTALLATION OF EMBEDDED ITEMS:

- A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.
- B. Edge forms and screed strips for slabs: Set edge forms and bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strip by use of strike-off templates or accepted compacting type screeds.
- C. Conduit: Do not embed piping, other than electrical conduit, in structural concrete. Locate conduit to maintain strength of the structure at a maximum. Increase the thickness of the concrete if the outside diameter of the conduit exceeds 25% of the concrete thickness.
- D. Anchors and rough hardware: Bolts, inserts and other items embedded in the concrete, accurately secured so that they shall not be displaced during the placing and compacting of the concrete. Set

embedded bolts for light poles, and sleeves for pipe standards and other equipment on concrete, to template, in accordance with layouts or shop drawings of the manufacturer. Verify size, length and location of electric conduit with respect to equipment supports.

3.5 PREPARATION OF FORM SURFACES:

- A. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.
- B. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

3.6 CONCRETE PLACEMENT:

- A. Pre-placement inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.
- B. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel.
- C. General: Comply with ACI 304, and as herein specified.
- D. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be deposited continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.
- E. Placing concrete in forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
- F. Consolidate placing concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.
- G. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate and complete embedment of reinforcement and other embedded items without causing segregation of mix.
- H. Placing concrete slabs: Deposit and consolidate concrete slabs in continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
- I. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

- J. Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning of finishing operations. Maximum floor slab variation shall be 1/8" in 10'-0".
 - K. Maintain reinforcement in proper position during concrete placement operations.
 - L. Cold weather placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions or low temperatures, in compliance with ACI 306 and as herein specified.
 - 1. Cover concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.
 - M. Provide moisture-cover curing as follows:
 - 1. Cover concrete surfaces with moisture retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - N. Provide membrane curing to slabs as follows;
 - 1. Apply membrane-forming curing compound to concrete surfaces as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - 2. Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing, flooring, painting and other coatings and finish materials, unless otherwise acceptable to Architect.
 - O. Curing formed surfaces: Cure formed concrete surfaces including undersides of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
 - P. Curing unformed surfaces: Cure unformed surfaces, such as slabs, floor topping and other flat surfaces by application of appropriate curing compound.
 - Q. Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.
- 3.7 REMOVAL OF FORMS:
- A. Formwork not supporting weight of concrete, such as sides of beams, walls, columns and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees F. for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

3.8 RE-USE OF FORMS:

- A. Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated or otherwise damaged from facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.
- B. When air temperature has fallen to or is expected to fall below 40 degrees F., uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F., and not more than 80 degrees F., at point of placement.
- C. Do not use frozen material or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
- D. Do not use calcium chloride, salt and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.
- E. Hot weather placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
- F. Cool ingredients before mixing to maintain concrete temperature at a time of placement below 90 degrees F. Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing.
- G. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
- H. Wet forms thoroughly before placing concrete.
- I. Do not use retarding admixtures unless otherwise accepted in mix design.

3.9 MONOLITHIC SLAB FINISHES:

- A. Scratch finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, Portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated.
 - 1. After placing slabs, plane surface to a tolerance not exceeding 1/4" in 2' when tested with a 2' straightedge. Slope surfaces uniformly to drain where required. After leveling, roughen surface before final set, with steel brushes, brooms or rakes.
- B. Float finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sanded terrazzo, and as otherwise indicated.
 - 1. After screening and consolidating concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to a tolerance not exceeding 1/4" in 10' when tested with a 10' straightedge. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surfaces to a uniform, smooth, granular texture.

- C. Trowel finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, paint or other thin film finish coating system.
1. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 1/8" in 10' when tested with a 10' straightedge. Grind smooth surface defects which would telegraph through applied floor covering system.
- D. No-slip broom finish: Apply non-slip broom finish to exterior concrete platforms, steps and ramps, and elsewhere as indicated.
1. Immediately after trowel finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
- E. Exposed aggregate finish: Apply exposed aggregate finish to concrete stairs, sidewalks, ramps and elsewhere as indicated.
1. After completion of float finishing, and before starting trowel finish, uniformly spread 25 lbs. of dampened aggregate per 100 sq. ft. of surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as herein specified.
 2. After curing, lightly work surface with a steel brush, or an abrasive stone, and water to expose non-slip aggregate.
- F. Washed aggregate finish: After completion of float finishing apply set retarding admixture to concrete surface indicated on drawings. Remove surface paste with water spray after one day.
- G. Rock salt finish: Apply rock salt finish where indicated on drawings. After completion of first float finish broadcast rock salt over concrete at the rate 1/2 lb/100 square feet. After broadcasting and tamping, apply final trowel finishing as herein specified.
- H. Floor sealer: Only where shown on drawings, apply sealer per manufacturer's standard application requirements and procedures. Apply a minimum two (2) coats of sealer to floors where indicated. Surfaces shall be prepared to accept sealer by cleaning as recommended by product manufacturer including use of "Shot-Blast" process if required. See Section 09972 when required.
1. Use V.O.C. compliant "SHUR-SEAL" floor seal by Paul M. Wolff Co., Inc., (714) 974-0630 or equal product by Euclid Chemical Co., W.R. Meadows or Sonneborn.

3.10 CONCRETE CURING AND PROTECTION:

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
1. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting; keep continuously moist for not less than 72 hours.
 2. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

3. Curing method: Perform curing of concrete by moist curing, by moisture-retaining cover curing, by membrane curing, and by combinations thereof, as herein specified.
4. Provide moisture curing by following methods:
 - a. Keep concrete surface continuously wet by covering with water. Continuous water-fog spray.
5. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms to exposed concrete surfaces, except as acceptable to Architect.

3.11 MISCELLANEOUS CONCRETE ITEMS:

- A. Filling-in: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. Curbs: Provide monolithic finishes to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.
- C. Equipment bases and foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.
- D. Steel pan stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp and finish concrete surfaces as scheduled.
- E. Pipe bumper posts: Provide concrete fill as required.

3.12 CONCRETE SURFACE REPAIRS:

- A. Patching defective areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.
 1. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case, to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Before placing cement mortar or proprietary patching compound, thoroughly clean, dampen with water and brush-coat the area to be patched with neat cement grout, or proprietary bonding agent.
 2. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets and other objectionable conditions.
- B. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.

3.13 FOOTING SOILS:

- A. Shall not be spread on the compacted building pad. Contractor shall remove soil from the site or receive written approval from the Owner for distribution on site.

END OF SECTION 033000 – CAST-IN-PLACE CONCRETE

SECTION 16 – AESS FRAMING (SECTION 051213)

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes requirements regarding the appearance and surface preparation of Architecturally Exposed Structural Steel (AESS).
- B. This Section applies to any members noted on Architectural and Structural drawings as AESS 1, AESS 2, AESS 3, AESS 4 and AESS C; and in the areas defined as AESS below.

1.2 DEFINITIONS

- A. Architecturally Exposed Structural Steel: Structural Steel conforming to one of the categories of Architecturally Exposed Structural Steel or AESS Refer to ANSI/AISC 303-16 Code of Standard Practice for Steel Buildings and Bridges.
- B. AESS 3: Structural Steel designated as AESS 3 in the contract documents and conforming to ANSI/AISC 303-16, Chapter 10 definition of AESS 3. These are feature elements viewed at a distance less than 20 feet. The art of metalworking is intended to be visible to the viewer.

1.3 ACTION SUBMITTALS

- A. General: Submit each item below according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of product specified. Submit "Special Coatings" under Division 9.
- C. Shop Drawings (Fabrication Documents): Detailing for fabrication of AESS components.
 - 1. Provide erection documents clearly indicating which members are AESS members and the AESS category of each part.
 - 2. Include details that clearly identify all the requirements listed in Sections 2.3 "Fabrication" and 3.3 "Erection" of this specification for each part. Provide connections for exposed AESS consistent with concepts shown on the architectural or structural drawings.
 - 3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length and type of each weld. Identify grinding, finish and profile of welds as defined herein.
 - 4. Indicate orientation of HSS seams and mill marks (where applicable).
 - 5. Indicate type, size, finish and length of bolts, distinguishing between shop and field bolts. Identify high-strength bolted slip-critical, direct-tensioned shear/ bearing connections. [Indicate which direction bolt heads should be oriented.]
 - 6. Clearly indicate which surfaces or edges are exposed and what class of surface preparation is being used.
 - 7. Indicate special tolerances and erection requirements as noted on the drawings or defined herein.
 - 8. Indicate vent or drainage holes for HSS members.

D. Samples: Provide samples of specific AESS characteristics. Samples may be small size samples or components of conventional structural steel demonstrating the following specific AESS characteristics.

1. Continuous weld appearance
2. Sharp edges ground smooth
3. Surface preparation
4. Fabrication mark removal
5. Weld show through.

E. Mock Ups: Provide mock up for AESS welds in field. All welds to be ground smooth.

1. Locate mockups on-site or in the fabricator's shop as directed by Architect. Mockups shall be full size unless the Architect approves smaller models. Alternatively, when a mockup is not practical, the first piece of an element or connection can be used to determine acceptability.
2. Notify the Architect one week in advance of the dates and times when mockups will be available for review.
3. Demonstrate all applicable AESS characteristics for the specified category of AESS on the elements and joints in the mock up.
4. Build mockups using member sizes and materials indicated for final Work.
5. The mock up shall demonstrate weld quality and contouring of the welds at the aligned walls of the members.
6. The mock up shall demonstrate the specified surface preparation and finish coating.
7. HSS members shall extend at least 6 in. from the joint in the mock-up.
8. Obtain Architect's written approval of mockups before starting fabrication
9. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.
 - a. Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed work.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: In addition to those qualifications listed in Division 5 Section "Structural Steel", engage an AISC Certified Fabricator, experienced in fabricating AESS similar to that indicated for this Project with a record of successful in-service performance, as well as sufficient production capacity to fabricate AESS without delaying the Work.
- B. Erector Qualifications: In addition to those qualifications listed in Division 5 Section "Structural Steel", engage an AISC Certified Erector, experienced in erecting AESS work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- C. Comply with applicable provisions of the following specifications and documents:
 1. ANSI/AISC 303-16, Code of Standard Practice for Steel Buildings and Bridges, Section 10.
- D. Pre-installation Conference: The General Contractor shall schedule and conduct conference at the project site to comply with requirements of Division 1 Section "Project Meetings." As a minimum, the meeting shall include the General Contractor, Fabricator, Erector, the finish-painting subcontractor, and the Architect. Coordinate requirements for shipping, special handling, storage, attachment of safety cables and

temporary erection bracing, final coating, touch up painting, mock up coordination, architect's observations, and other requirements for AESS.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver AESS to Project site in such quantities and at such times to ensure continuity of installation. All tie downs on loads shall be nylon straps or shall use softeners when using chains or wire rope slings to avoid damage to edges and surfaces of members. The standard for acceptance of delivered and erected members shall be equivalent to the standard employed at fabrication.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration. Use special care in handling to prevent twisting or warping of AESS members.
- C. Handle finish pieces using nylon type slings, or chains with softeners, or wire ropes with softeners such that they are not damaged. Conform to ANSI/AISC 303-16 Sections 10.4, 10.5, and 10.6.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Where AESS is indicated to fit against walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on Fabrication Documents. Coordinate fabrication schedule with construction progress to avoid delaying the work.

1.7 COORDINATION

- A. Coordinate installation of anchors for AESS members that connect to the work of other trades. Furnish setting drawings, templates, and directions for installing anchors, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to the project site in time for installation. Anchorage concepts shall be as indicated on drawings and approved on final Fabrication Documents.

1.8 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of AESS Framing including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Steel Cabana" and "Shade Structure", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. High-Strength Bolts, Nuts, and Washers: Provide Heavy Hex bolt heads with standard bolts. Provide standard carbon steel finish. To be reviewed with structural engineer for summary.

2.2 FILLER

- A. Polyester filler intended for use in repairing dents in automobile bodies.

2.3 BOLTS, CONNECTORS, AND ANCHORS

- A. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, round-head assemblies.
 - 1. Finish: Mechanically deposited zinc coating.
- B. Corrosion-Resisting (Weathering Steel), Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 3, round-head assemblies.

2.4 PRIMER

- A. Compatibility: All components/procedures of the AESS paint system shall conform to the coating system specified, submitted, and approved per Division 9. As a minimum identify required surface preparation, primer, intermediate coat (if applicable), and finish coat. Primer, intermediate coating and finish coating shall be from a single manufacturer combined in a system documented by the manufacturer with adequate guidance for the fabricator to procure and execute.
- B. Primer: PCI DTM 1300V100 High Build Modified Epoxy Primer, DFT 2.0 to 6.0 mils.
- C. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- D. Galvanizing Repair Paint: ASTM A 780.

2.5 FABRICATION AESS 3

- A. Category AESS 3: In addition to requirements for Category AESS 1 and AESS 2, comply with the following:
- B. Cut out mill marks from mill material or hide these markings from view in the completed structure. Where neither method is possible, remove mill marks by grinding and filling surfaces as approved by Architect.
- C. Grind butt and plug welds smooth or fill, removing weld splatter exposed to view.
- D. Orient HSS seams as indicated or away from view.

- E. Align and match abutting member cross sections.
- F. At visible open joints of copes, miters, and cuts, maintain uniform clear gaps of 1/8 inch. At closed joints, maintain uniform contact within 1/16 inch.
- G. Fabricate with exposed surfaces smooth, square, and of surface quality approved by Architect.

2.6 SHOP PRIMING

- A. Provide surface preparations to SSPC-SP6. Coordinate the required surface profile with the approved paint submittal prior to beginning surface preparation. Prior to blasting remove any grease and oil using solvent cleaning to meet SSPC-SP 1. Weld spatter, slivers and similar surface discontinuities shall be removed. Sharp corners resulting from shearing, flame cutting or grinding shall be eased.

2.7 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Pretensioned.
- B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work, and comply with the following:
 - 1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding specified tolerances.
 - 2. Use weld sizes, fabrication sequence, and equipment that limit distortions to allowable tolerances.
 - 3. Provide continuous, sealed welds at angle to gusset-plate connections and similar locations where AESS is exposed to weather.
 - 4. Provide continuous welds of uniform size and profile where AESS is welded.
 - 5. Grind butt and groove welds flush to adjacent surfaces within tolerance of plus or minus 1/16 inch.
 - 6. Make butt and groove welds flush to adjacent surfaces within tolerance of plus or minus 1/16 inch. Do not grind unless required for clearances or for fitting other components, or unless directed to correct unacceptable work.
 - 7. Remove backing bars or runoff tabs; back-gouge and grind steel smooth.
 - 8. At locations where welding on the far side of an exposed connection of AESS occurs, grind distortions and marking of the steel to a smooth profile aligned with adjacent material.
 - 9. Make fillet welds oversize and grind to uniform profile with smooth face and transition.
 - 10. Make fillet welds of uniform size and profile with exposed face smooth and slightly concave. Do not grind unless directed to correct unacceptable work.

2.8 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
 - 1. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.

2. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
3. Required for all exterior steel framing.

2.9 SHOP PRIMING AND SEALING

- A. Shop prime steel surfaces except the following:
 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 2. Surfaces to be field welded.
 3. Surfaces to be high-strength bolted with slip-critical connections.
 4. Surfaces to receive sprayed fire-resistive materials.
 5. Galvanized surfaces.
- B. Surface Preparation:
 1. Surface Preparation: SSPC-SP6 Commercial Blast Clean with a 2 mil angular anchor profile
- C. Preparing Galvanized Steel for Shop Priming: After galvanizing, thoroughly clean steel of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
- D. Prime Coat: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC. Organic Urethane Zinc Rich conforms to SSPC Paint 20 type II and with the requirements of AISC "Allowable Stress Design Specification for Structural Joints using ASTM A325 or A490 Bolts" for a Class B Coating by testing method to determine the slip coefficient for coatings used in bolted connections. Products known to comply include the following.
 1. Tnemec Company: 90-97 Tneme-Zinc @ 2.5 to 3.5 mils DFT.
- E. Apply two coats of matte finish clear UV polyurethane coating to protect.

2.10 FABRICATION QUALITY CONTROL AND QUALITY ASSURANCE AESS 1 AND 2

- A. Structural requirements:
 1. Conform to Quality Control requirements per ANSI/AISC 360-16 Specification for Structural Steel Buildings Chapter N and ANSI/AISC 303-16, Code of Standard Practice for Steel Buildings and Bridges, Section 10. Refer to Section 05 12 00 "Structural Steel" for additional requirements.
 2. Owner will engage a Quality Assurance agency per the requirements of ANSI/AISC 360-16 Specification for Structural Steel Buildings Chapter N and ANSI/AISC 303-16, Code of Standard Practice for Steel Buildings and Bridges, Section 10.
- B. AESS acceptance: The Architect shall observe the AESS steel in the shop at a viewing distance consistent with the final installation and determine acceptability based on the qualification data and submittals. The Quality Assurance agency shall have no responsibility for enforcing the requirements of this Section.

2.11 FABRICATION QUALITY CONTROL AND QUALITY ASSURANCE AESS 3

- A. Conform to 2.10 and as follows.
- B. AESS acceptance: The Architect shall observe the AESS steel in the shop at a viewing distance consistent with the final installation and determine acceptability based on the approved mock up. The Quality Assurance Agency shall have no responsibility for enforcing the requirements of this Section.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide connections for temporary shoring, bracing and supports only where noted on the approved Shop Drawings (Fabrication Documents). Temporary connections not shown shall be made at locations not exposed to view in the final structure or as approved by the Architect. Handle, lift and align pieces using nylon straps or chains with softeners required to maintain the appearance of the AESS through the process of erection.

3.2 EXAMINATION

- A. The erector shall check all AESS members upon delivery for twist, kinks, gouges or other imperfections which may result in rejection of the appearance of the member. Coordinate remedial action with fabricator prior to erecting steel.
- B. Verify, with steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 - 1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 ERECTION AESS 3

- A. Erect to the requirements of 3.4 and as follows.
- B. Field Welding: Weld profile, quality, and finish shall be consistent with mock-ups approved prior to fabrication.
- C. Provide a continuous appearance to all welded joints including tack welds. Provide joint filler at intermittent welds.

3.4 FIELD QUALITY CONTROL AESS 3

- A. Conform to 3.7 and as follows.

- B. AESS acceptance: The Architect shall observe the AESS steel in place and determine acceptability based on the approved mock up. The Quality Assurance Agency shall have no responsibility for enforcing the requirements of this Section.

3.5 ADJUSTING AND CLEANING

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint shall be completed to blend with the adjacent surfaces of AESS. Such touch up work shall be done in accordance with manufacturer's instructions and as specified in Division 9, Section "Painting."
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded area. Any repairs to galvanized surfaces shall comply with ASTM A780/A780M – 2015 Standard Practice for Repair of Damaged and Uncoated Areas of Hot Dip Galvanized Coatings.

3.6 REPAIRS AND PROTECTION

- A. Remove welded tabs that were used for attaching temporary bracing and safety cabling and that are exposed to view in the completed Work. Grind steel smooth.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and touchup galvanizing to comply with ASTM A780/A780M.

END OF SECTION 051213 – AESS Framing

SECTION 17 – DECORATIVE METAL (SECTION 057000)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Laser-cut metal panels. Custom Pattern.
 - 2. Finish metal on built-in bench.
 - 3. Finish metal on cabanas.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated, including finishing materials.
- B. Shop Drawings: Show fabrication and installation details. Indicate materials, finishes, fasteners, anchorages, and accessory items.
- C. Patterns, Models, or Plaster Castings: For each custom casting required.
- D. Samples: For each type of exposed finish required.
- E. Mockups: Obtain Owner's and/or Architect's acceptance of finish color, texture, pattern and workmanship of grilles and screens. Show integration of railings, trellis and awnings/storefront. Contact Owner and/or Architect for approval and location of in-place sample in lieu of mockup.

1.3 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of Decorative Metal including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Counter with Steel frame and Panels", "Curved Bench" and Steel Shade Structure where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

2.1 STEEL

- A. Bars: Hot-rolled, carbon steel complying with ASTM A 29, Grade 1010.
- B. Plates, Shapes, and Bars: ASTM A 36.

- C. Steel Sheet, Cold Rolled: ASTM A 1008, either commercial steel or structural steel, exposed.

2.2 FASTENERS

- A. Fastener Materials: Unless otherwise indicated, provide the following:
 - 1. Steel Items: Plated steel fasteners with ASTM B 633, Class Fe/Zn 25 electrodeposited zinc coating unless otherwise indicated.
 - 2. Dissimilar Metals: Stainless-steel fasteners.
- B. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.
- C. Post-Installed Anchors: Torque-controlled expansion type.
 - 1. Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 unless otherwise indicated.

2.3 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Shop Primers: Provide primers that comply with Division 09 painting Sections or Division 09 Section "High-Performance Coatings."
- E. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- F. All paints and coatings must comply with Green Seal standard GS-03 and South Coast Air Quality Management District Rule #1113.

2.4 FABRICATION, GENERAL

- A. Form decorative metal to required shapes and sizes, true to line and level with true curves and accurate angles and surfaces. Finish exposed surfaces to smooth, sharp, well-defined lines and corners.
- B. Mill joints to a tight, hairline fit. Cope or miter corner joints. Fabricate connections that will be exposed to weather in a manner to exclude water.
- C. Comply with AWS for recommended practices in shop welding. Weld behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded joints of flux, and dress exposed and contact surfaces.
 - 1. Where welding cannot be concealed behind finished surfaces, finish joints to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 Welds: no evidence of a welded joint

2.5 DECORATIVE METAL SCREENS AND GRILLES

- A. Fabricate decorative screens from perforated steel sheet or plate of thickness, size, and pattern indicated. Fabricate screens with steel channel edges. Provide steel tube supports as detailed.
- B. Fabricate decorative grilles from welded wire mesh and steel shapes as detailed.

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

2.7 STEEL FINISHES

- A. Galvanizing: Hot-dip galvanize products made from rolled, pressed, and forged steel shapes, castings, plates, bars, and strips indicated to be galvanized to comply with ASTM A 123/A 123M.
 - 1. Hot-dip galvanized steel and iron hardware indicated to be galvanized to comply with ASTM A 153/A 153M.
- B. Preparing Galvanized Items for Shop Priming: After galvanizing, thoroughly clean decorative metal of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
- C. Preparing Non-galvanized Items for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- D. Primer Application: Apply shop primer to prepared surfaces of items unless otherwise indicated. Primer need not be applied to surfaces to be embedded in concrete or masonry.
 - 1. Shop prime uncoated ferrous-metal surfaces with primers specified in Division 09 Painting Section or "High-Performance Coatings" Section.
 - 2. Do not apply primer to galvanized surfaces.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide anchorage devices and fasteners where needed to secure decorative metal to in-place construction.
- B. Set products accurately in location, alignment, and elevation, measured from established lines and levels.
- C. Fit exposed connections accurately together to form tight, hairline joints or, where indicated, uniform reveals and spaces for sealants and joint fillers.
- D. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.

- E. Install concealed gaskets, joint fillers, insulation, and flashings as work progresses.
- F. Restore protective coverings that have been damaged during shipment or installation. Remove protective coverings only when there is no possibility of damage from other work.

END OF SECTION 057000 – Decorative Metal

SECTION 18 – EXTERIOR FINISH CARPENTRY (SECTION 062013)

SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Exterior wood seating.

1.2 SUSTAINABILITY

- ###### A.
- As required in the current California Green Building Standards Code, Chapter 5, Hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.), by or before the dates specified in those sections, as shown in Table 5.504.4.5.

1.3 ACTION SUBMITTALS ACTION SUBMITTALS

- ###### A. Samples:
- For each type of product involving selection of colors, profiles, or textures.

1.4 INFORMATIONAL SUBMITTALS

A. Compliance Certificates:

1. For lumber that is not marked with grade stamp.

1.5 MEASUREMENT AND PAYMENT

- ###### A.
- Full compensation for conforming with the requirements of Exterior Finish Carpentry including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Steel Curved Bench with Wood Accent", where applicable, and no additional compensation will be allowed therefore.
- ###### B.
- All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Certified Wood: The following wood products shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":
 - 1. Exterior lumber.
- B. Lumber: DOC PS 20.
 - 1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.
 - a. For exposed lumber, mark grade stamp on end of each piece or omit grade stamp and provide certificates of grade compliance issued by inspection agency.

2.2 EXTERIOR SEATING

- A. Lumber Boards:
 - 1. Species and Grade: as noted on Drawings, Premium Select – Clear
 - 2. Face Surface: Surfaced (smooth) – all sides

2.3 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Provide stainless steel screws, in sufficient length to penetrate into wood substrate.
 - 1. For applications not otherwise indicated on drawings, provide stainless-steel fasteners.
 - 2. Wood Sealants: Contractor shall provide 5'x5' mock-up board panel for each of the following Manufacturer products to be submitted a minimum of 90 days prior to application for architect approval.

Acceptable Manufacturers:

 - a. PPG Architectural Finishes, 800-321-3444, www.flood.com Product: FLOOD CWF-UV5
 - b. Benjamin Moore 855-724-6802 www.benjaminmoore.ca Product: ARBORCOAT Transparent Deck and Siding Stain
 - c. Duckback Products, 800-825-5382, www.superdeck.com Product: SUPERDECK Clear Wood Finish

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prime lumber and moldings to be painted, including both faces and edges, unless factory primed. Cut to required lengths and prime ends. Comply with requirements in Section 099113 "Painting."

3.2 INSTALLATION, GENERAL

- A. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
 - 1. Scribe and cut exterior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.

3.3 BOARD INSTALLATION

- A. Install boards with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 18 inches (610 mm) long except where necessary. There shall be no stagger joints used.

END OF SECTION 062013 – Exterior Finish Carpentry

SECTION 19 – EXTERIOR PAINTS AND COATINGS (SECTION 099000)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
1. Exterior paint and coating systems including surface preparation.

1.2 REFERENCES

- A. Steel Structures Painting Council (SSPC):
1. SSPC-SP 1 - Solvent Cleaning.
 2. SSPC-SP 2 - Hand Tool Cleaning.
 3. SSPC-SP 3 - Power Tool Cleaning.
 4. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete.
- B. Material Safety Data Sheets / Environmental Data Sheets: Per manufacturer's MSDS/EDS for specific VOCs (calculated per 40 CFR 59.406). VOCs may vary by base and sheen.

1.3 SUBMITTALS

- A. Product Data: For each paint system indicated, including.
1. Product characteristics.
 2. Surface preparation instructions and recommendations.
 3. Primer requirements and finish specification.
 4. Storage and handling requirements and recommendations.
 5. Application methods.
 6. Cautions for storage, handling and installation.
- B. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's products, colors and sheens available.
- C. Verification Samples: For each finish product specified, submit samples that represent actual product, color, and sheen.
- D. Only submit complying products based on project requirements. One must also comply with the regulations regarding VOCs (CARB, OTC, SCAQMD, LADCO). To ensure compliance with district regulations and other rules, businesses that perform coating activities should contact the local district in each area where the coating will be used.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, Architect will select from standard products, colors and sheens available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.
- D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish surfaces for verification of products, colors and sheens.
 - 2. Finish area designated by Architect.
 - 3. Provide samples that designate primer and finish coats.
 - 4. Do not proceed with remaining work until the Architect approves the mock-up.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.
 - 1. Product name, and type (description).
 - 2. Application and use instructions.
 - 3. Surface preparation.
 - 4. VOC content.
 - 5. Environmental handling.
 - 6. Batch date.
 - 7. Color number.
- B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.7 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
- B. Furnish Owner with an additional one percent of each material and color, but not less than 1 gal (3.8 l) or 1 case, as appropriate.

1.8 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of Exterior Paints and Coatings including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Exterior Paints and Coatings", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements. Acceptable Manufacturer (or equal): Sherwin-Williams, which is located at: 101 Prospect Ave.; Cleveland, OH 44115; ASD Toll Free Tel: 800-524-5979; Tel: 216-566-2000; Fax: 440-826-1989; Email: request_infospecifications@sherwin.com; Web:www.swspecs.com.
- B. Type and color as shown on Drawings.

2.2 PAINT MATERIALS - GENERAL

- A. Paints and Coatings:
 - 1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
 - 2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufactures product instructions for optimal color conformance.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.

- D. Color: Refer to Finish Schedule for paint colors, and as selected.

2.3 EXTERIOR PAINT AND COATING SYSTEMS

- A. Concrete: Non-Vehicular Concrete.
 - 1. Acrylic System Water-Based: Satin or Gloss Finish
 - a. Floor Finish:
 - 1) 1st Coat: S-W Armorseal Tread-Plex 100% Acrylic Water Based Floor Coating, B90 series, <100 g/L VOC.
 - 2) 2nd Coat: S-W Armorseal Tread-Plex 100% Acrylic Water Based Floor Coating, B90 series, <100 g/L VOC.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.
- C. Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify Architect immediately if lead based paints are encountered.

3.2 SURFACE PREPARATION

- A. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
 - 1. Prior to attempting to remove mildew, it is recommended to test any cleaner on a small, inconspicuous area prior to use. Bleach and bleaching type cleaners may damage or discolor existing paint films. Bleach alternative cleaning solutions are advised.
 - 2. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply solution and scrub the mildewed area. Allow solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow surface to dry before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
 - 3. Remove items including but not limited to thermostats, electrical outlets, switch covers and similar items prior to painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
 - 4. No exterior painting should be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50 degrees F (10 degrees C), unless products are designed specifically for these conditions. On large expanses of metal siding, the air, surface and material temperatures must be 50 degrees F (10 degrees F) or higher to use low temperature products.

- B. Concrete, SSPC-SP13 or NACE 6: This standard gives requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls, and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete, and dust, and should provide a sound, uniform substrate suitable for the application of protective coating or lining systems.

3.3 INSTALLATION

- A. Apply all coatings and materials with the manufacturer's specifications in mind. Mix and thin coatings according to manufacturer's recommendations.
- B. Do not apply to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days. Test new concrete for moisture content. Wait until wood is fully dry after rain or morning fog or dew.
- C. Apply coatings using methods recommended by manufacturer.
- D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.
- F. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.
- G. Inspection: The coated surface must be inspected and approved by the Architect just prior to the application of each coat.

3.4 PROTECTION

- A. Protect finished coatings from damage until completion of project.
- B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION 099000 – Exterior Paints and Coatings

SECTION 20 – HIGH PERFORMANCE COATINGS (SECTION 099600)

PART 1 - GENERAL

1.1 SUMMARY

- A. The work includes furnishing of materials and equipment, preparation of surfaces and completion of the painting and finishing in-field for high abuse exterior (Canopies, finish metals, built-in exposed metals, metal on the garage and as shown on drawings), as required by the drawings and specified herein. This includes surface preparation and application of high-performance coating systems.

1.2 SUSTAINABILITY

- A. As required in current California Green Building Standards Code, Chapter 5, Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply.

1.3 ACTION SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each coating, including generic description, complete technical data, surface preparation, and application instructions.
- B. Manufacturer's Quality Assurance: Submit manufacturer's certification that coatings comply with specified requirements and are suitable for intended application.
- C. Warranty: Submit manufacturer's standard warranty.
- D. Samples: For each type of coating system and in each color and gloss of topcoat indicated.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver paint materials in sealed original labeled containers bearing manufacturer's name, type of paint, stock number, color and instructions for reducing or mixing where applicable.
- B. Paint materials and equipment:
 - 1. Store only acceptable project materials on site.
 - 2. Store in a suitable location.
 - 3. Restrict storage to paint materials and related materials
 - 4. Comply with health and fire regulations.
- C. Ventilation: Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturer's instructions.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Coatings: 5 percent, but not less than one gallon of each material and color applied.

1.6 PROJECT CONDITIONS

- A. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied. Do not apply when temperature is below 50 degrees F, unless as specified by the manufacturer's directions. The surface temperature must be at least 5 degrees F above the dew point before painting.
- B. Do not apply exterior paint in damp or rainy weather; ensure that the surface has dried thoroughly before proceeding.
- C. Do not apply finish in areas where dust is being generated.

1.7 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Manufacture of coatings shall demonstrate a minimum of 10 years successful experience.
 - 2. Manufacture shall supply a list of successful performance on comparable projects.
 - 3. Source Responsibility: Coatings and coating application accessories shall be products of a single supplier.
- B. Applicator's Qualifications:
 - 1. Experienced in application of specified coatings for a minimum of 2 years on projects of similar size and complexity to this Work.
 - 2. Applicator's Personnel: Supervisory personnel shall be trained in the successful application of the specified coatings.
- C. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each coating system specified in Part 3.
 - 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

1.8 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of High-Performance Coatings including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "High-Performance Coatings", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide PC3 System and products by Precision Coatings Incorporated (PCI), Springfield, MO and supplied by Sherwin Williams. (Contact: Tom Brummett, (714) 634-5770). Or comparable product approved by Architect.

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.
 - 3. Provide products of same manufacturer for each coat in a coating system.
- B. Accessory materials shall be of the highest quality and approved by manufacturer.
- C. All paints shall be ready-mixed except field-catalyzed coatings.
- D. Finish coats shall not be thinned without Architect's approval.
- E. Unsuitability of specified products: Claims concerning unsuitability of any material specified (or the inability to satisfactorily produce the work) will not be entertained, unless such claim is made in writing to the Architect before the work is started.
- F. Numbers of coats scheduled are the minimum amount. Additional coats shall be applied at no additional cost if necessary to complete hide base materials, product uniform color and provide satisfactory finish result.
- G. All submitted paint products shall be in compliance with all current, local, state and federal air quality regulations.

2.3 ACCESSORIES

- A. Coating Application Accessories:

1. Accessories required for application of specified coatings in accordance with manufacturer's instructions, including thinners.
2. Products of coating manufacturer:
 - a. [PCI 12030 Urethane Accelerator]
 - b. [PCI 15000 Surface Tension Eliminator]
 - c. [PCI 16050 VOC Exempt Reducer]
 - d. [PCI 17000 VOC Exempt Gun Cleaner]
 - e. [PCI 02150 Metal Conditioner]

2.4 IN-FIELD COATING SYSTEM - EXTERIOR

- A. Acrylic Urethane Finish – Solid Color, Pearl or Metallic: For high abuse exterior (Canopies, Storefront, Doors and Columns): Less than 250 grams per liter.
- B. System Type: Direct to metal epoxy-ketamine primer / aliphatic acrylic polyurethane topcoat.
- C. Clean the surface of all foreign material according to SSPC-SP1 Solvent Cleaning standards.
- D. Primer:
 1. DTM 1300V100 High Build Modified Epoxy Primer DFT 2.0 to 6.0 mils
- E. Intermediate Coat:
 1. DTM 1300V100 High Build Modified Epoxy Primer DFT 2.0 to 6.0 mils
- F. Finish Coat:
 1. PCI PC3V100 Satin Finish. DFT 1.0 to 3.0 mils
- G. Total DFT: 5.0 to 15 mils
- H. Finish Color: As indicated by the Architect.

2.5 APPROVED IN-FIELD APPLICATORS

- A. Application of the coating system shall be performed under specifications issued by the licensed formulator and by an applicator specifically approved by one (or more) of the formulators. Applicator shall provide written notification of approval by a formulator to the Architect prior to application of any coating specified under this section.
 1. Basis-of-Design: Precision Coatings Incorporated (PCI), Springfield, MO and supplied by The Sherwin-Williams Paint Company, Orange, CA. 92868 (Contact: Tom Brummett, (714) 634-5770. Or equal approved by architect.

2.6 COLORS

- A. All colors are to be selected or approved by the Architect and actual color chips shall be supplied to the Contractor for matching. All undercoats shall be tinted to approximately half the color or the finish coat.

- B. Approval of final colors: Final color of paint shall not be applied until colors have been approved by the Architect.
- C. The number of colors to be used shall be as determined by the Architect. Architect reserves the right to vary colors throughout the project.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PROTECTION OF SURFACES NOT SCHEDULED TO BE COATED

- A. Protect surrounding areas and surfaces not scheduled to be coated from damage during surface preparation and application of coatings.
- B. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.

3.3 PREPARATION, GENERAL

- A. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants. Prepare surface as follows:
 - 1. Clean the surface of all oils, passivators and foreign matter by SSPC-SP 1, SSPC-SP 2 or SSPC-SP 3. Pre-treat with phosphoric acid etching solution such as PCI 02150 Metal Conditioner. Apply specified primer the same day as pretreatment is applied. Comply with manufacturer's surface preparation requirements.
- B. Surfaces which cannot be prepared or painted as specified, shall be immediately brought to the attention of the Architect in writing.
 - 1. Starting of work without such notification will be considered acceptance by the Contractor of surfaces involved.
- C. The Contractor shall replace unsatisfactory work caused by improper or defective surfaces as directed by the Architect at no additional cost to the Owner.

3.4 SURFACE PREPARATION OF STEEL

- A. Prepare steel surfaces in accordance with manufacturer's instructions.
- B. Fabrication Defects:
 - 1. Correct steel and fabrication defects revealed by surface preparation.
 - 2. Remove weld spatter and slag.
 - 3. Round sharp edges and corners of welds to a smooth contour.
 - 4. Smooth weld undercuts and recesses.
 - 5. Grind down porous welds to pinhole-free metal.
 - 6. Remove weld flux from surface
- C. Ensure surfaces are dry.
- D. Remove visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter in accordance with SSPC-SP 6/NACE 3, unless otherwise specified.
- E. Abrasive Blast-Cleaned Surfaces: Coat abrasive blast-cleaned surfaces with primer before visible rust forms on surface. Do not leave blast-cleaned surfaces uncoated for more than 8 hours.
- F. Shop Primer: Prepare shop primer to receive field coat in accordance with manufacturer's instructions.

3.5 SURFACE PREPARATION OF CONCRETE AND MASONRY

- A. Prepare concrete and masonry surfaces in accordance with manufacturer's instructions, SSPC-SP 13/NACE 6, and ICRI 03732.
- B. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and other contaminants.
- C. Test concrete for moisture in accordance with ASTM D 4263 and F 1869.
- D. Allow concrete and mortar to cure for a minimum of 28 days before coating and determine that concrete is dry enough to coat.
- E. Level protrusions and mortar spatter.

3.6 SURFACE PREPARATION OF GALVANIZED STEEL AND NONFERROUS METAL

- A. Prepare galvanized steel and nonferrous metal surfaces in accordance with manufacturer's instructions. Surface preparation recommendations will vary depending on substrate and exposure conditions.

3.7 SURFACE PREPARATION OF GYPSUM BOARD

- A. Prepare gypsum board surfaces in accordance with Level 5 Drywall Finish.
- B. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and other contaminants.
- C. Sand joint compound smooth and feather the edge to match.

- D. Avoid heavy sanding of adjacent gypsum board surfaces, which will raise nap of paper covering.
- E. Do not apply putty, patching pencils, caulking, or masking tape to gypsum board surfaces to be painted.
- F. Lightly scuff-sand tape joints after priming to remove raised paper nap. Do not sand through primer.

3.8 APPLICATION

- A. Apply coatings in accordance with manufacturer's instructions.
- B. Mix and thin coatings, including multi-component materials, in accordance with manufacturer's instructions.
- C. Keep containers closed when not in use to avoid contamination.
- D. Do not use mixed coatings beyond pot life limits.
- E. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.
- F. Uniformly apply coatings at spreading rate required to achieve specified DFT.
- G. Apply coatings to be free of film characteristics or defects that would adversely affect performance or appearance of coating systems.
- H. Stripe paint with brush critical locations on steel such as welds, corners, and edges using specified primer.
- I. Do not apply initial coating unless moisture content of surface is within limitations recommended by the paint manufacturer.
- J. Apply high-performance coatings with suitable brushes, rollers or spraying equipment and according to manufacturer's written instructions.
- K. Rate of application shall not exceed that as recommended by the paint manufacturer for surface involved.
- L. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks. Properly correct all non-complying work to the satisfaction of the Owner's representative, the Architect and the representative of the Frazee Paint Company.
- M. Comply with recommendations of product manufacturer for drying time between succeeding coats.
- N. Make edges of paint adjoining other material or color clean and sharp with no overlapping.
- O. Refinish whole area where portion of finish is not acceptable.
- P. All materials shall be applied evenly with proper film thickness and free of runs, sags, skips and other defects. Coatings shall be prepared between coats, dusted and cleaned before recoating.

3.9 REPAIR

- A. Materials and Surfaces Not Scheduled To Be Coated: Repair or replace damaged materials and surfaces not scheduled to be coated.
- B. Damaged Coatings: Touch-up or repair damaged coatings. Touch-up of minor damage shall be acceptable where result is not visibly different from adjacent surfaces. Recoat entire surface where touch-up result is visibly different, either in sheen, texture, or color.
- C. Coating Defects: Repair in accordance with manufacturer's instructions coatings that exhibit film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.10 CLEANING AND PROTECTION

- A. Remove temporary coverings and protection of surrounding areas and surfaces.
- B. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.
- C. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.11 PROTECTION

- A. Protect work of other trades, whether to be painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.
- B. Provide "wet paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.
 - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION 099600 – High-Performance Coatings

SECTION 21 – SITE FURNISHINGS (SECTION 129300)

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, material, equipment and services necessary to provide all concrete, complete in place, as shown on the drawings or specified herein.
- B. Work included:
 - 1. Benches.
 - 2. Trash Receptacle.
 - 3. Bicycle Rack.
 - 4. Cluster Seating.
 - 5. Tables and chairs.
 - 6. Ping Pong and Foosball Tables.
 - 7. Trench Drain Grate.
 - 8. Bollards.
 - 9. Planter-Pots.

1.02 SUBMITTALS

- A. Submit for acceptance manufacturer's catalogue information or shop drawings indicating size, materials, finishes and quantities of items being supplied. Submit one material sample and one color sample of each item specified.

1.03 COORDINATION

- A. The Contractor shall notify all other Contractors, such as plumbers, electricians, etc., in ample time to install work including sleeves, before concrete is placed.

1.04 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of Site Furnishings including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Site Furnishings", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 – PRODUCTS

2.01 MANUFACTURER

- A. **BENCHES**
As indicated on Drawings.
- B. **TRASH RECEPTACLES**
As indicated on Drawings.

- C. CLUSTER SEATING
As indicated on Drawings.
- D. TABLES AND CHAIRS
As indicated on Drawings.
- E. PING PONG & FOOSBALL TABLES
As indicated on Drawings.
- F. PLANTER-POTS
As indicated on Drawings.

2.02 MATERIALS

- A. Benches:
 - 1. As indicated on Drawings.
- B. Trash receptacles:
 - 1. As indicated on Drawings.
- C. Cluster Seating:
 - 1. As indicated on Drawings.
- D. Tables and Chairs:
 - 1. As indicated on Drawings.
- E. Ping Pong and Foosball Table:
 - 1. As indicated on Drawings.
- F. Planter-Pots:
 - 1. As indicated on Drawings.

PART 3 - EXECUTION

- 3.01 Furnish all labor, material, equipment and services necessary to provide all concrete, complete in place, as shown on the drawings or specified herein.
- 3.02 Work shall be set plumb level, and true to line and shall present a neat and finished appearance. Include setting each item in its correct place, fastening it, connecting it, or incorporating it into other portions of the work, as each item may require; and testing and operating equipment to assure proper functioning.
- 3.03 The work of this Section shall include the furnishing of anchors and adhesives required for installing and attaching the equipment specified herein. All furnishings shall be installed per manufacturer's recommendations unless noted in drawing or herein.
- 3.04 Adequately protect all work from damage by subsequent construction operations. Damaged work shall be replaced.

3.05 The Contractor shall at all times keep the premises free from accumulation of waste materials and rubbish caused by his employees. Upon completion of work, rubbish and excess materials are to be removed from the site, leaving the areas acceptably clean.

END OF SECTION 129300 – Site Furnishings

SECTION 22 – TEXTILE CANOPY SYSTEM (133130)

PART 1 - GENERAL

a. SUMMARY

i. Section Includes:

1. Textile Canopy System as shown on drawings and specified in this section.
 2. Architect's drawings indicate design intent with respect to sizes, shapes, and configurations of the Textile Canopy System. Textile Canopy System manufacturer to provide all components and accessories required for a complete Textile Canopy System, whether or not specifically shown or specified.
 3. Textile Canopy support frame will assume bolted/pinned connections for field assembly. No field welding will be permitted.
- ii. The Textile Canopy System Subcontractor shall be responsible for the structural design, detailing, fabrication, supply, and installation of the Work specified herein. The intent of this specification is to establish in the first instance an undivided, single-source responsibility of the Subcontractor for all of the foregoing functions.
- iii. Subcontractor's Work shall include the structural design, supply, fabrication, shipment, and installation of the following items:
1. Architectural Textile Canopy as indicated on the drawings and in these specifications.
 2. Braided stainless steel cables with tension clips.
 3. Finishes, Covers and Fasteners.

b. REFERENCES

- i. Reference Standards: Except as otherwise shown or noted, all work shall comply with the requirements of the following codes and standards:
1. American Institute of Steel Construction (AISC)
 - a. Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings.
 - b. Code of Standard Practices for Steel Buildings and Bridges.
 - c. Specifications for Structural Steel Buildings – Allowable Stress Design and Plastic Design.
 - d. Specification for Allowable Stress Design of Single-angle Members.
 - e. Seismic Provisions for Structural Steel Buildings.
 2. American Society of Civil Engineers
 - a. ASCE 19: Structural Applications of Steel Cables for Buildings.

3. American Society of Testing and Materials (ASTM)
 - a. ASTM A586: Standard Specifications for Zinc-Coated Parallel and Helical Steel Wire Structural Strand.
 - b. ASTM D4851: Standard Test Methods for Coated Laminated and Woven Fabrics for Architectural Use.
 - c. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
 - d. ASTM C423: Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
 - e. ASTM A36/A36M Specification for Carbon Structural Steel.
 - f. ASTM A500/A500M Specification for Cold-Formed Welded Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
4. American Welding Society (AWS)
 - a. AWS D1.1: Structural Welding Code (Steel).
 - b. AWS A2.4: Symbols for Welding, Brazing & Nondestructive Examination.
 - c. AWS D1.2 Structural Welding Code (Aluminum).
5. National Fire Protection Association (NFPA)
 - a. NFPA 701: Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.
6. The Society for Protective Coatings (SSPC)
 - a. Steel Structures Painting Manual, Volumes 1 and 2.

c. ACTION SUBMITTALS

i. Product Data: For each type of product

1. Include styles, material data, material descriptions, construction details, fabrication details, dimensions of individual components and profiles, hardware, fittings, mounting accessories, features, and finishes for Textile Canopy Systems.
2. Include rated capacities, light transmissions, and operating characteristics of furnished specialties and accessories.

ii. Design Drawings:

1. Include plans, elevations, sections, and mounting heights.

2. Show fabric attachment hardware and details.
3. Show details of fabric panel anchorage and connection details, dimensions including length of spans, seam locations and interferences with building construction.

iii. Engineered Drawings (Submit after Design Drawings are approved):

1. Calculations with Wet Stamp seal of a Professional Engineer licensed in the same state as the project location.
2. Include plans, elevations, sections, mounting heights, and frame assembly details.
3. Provide frame support member sizes and required wall thicknesses.
4. Identify all welding requirements.
5. Detail all bolted and/or pin connection points for frame assembly.
6. Identify required sizes of bolts, pins, plates and tubing.
7. Verify fabric selection meets minimum engineering requirements.
8. Detail fabric attachment methods, cable type (wire rope), cable end connections, clamps and other attachment components.
9. Call out all cable sizes and pre-tensioning requirements.

iv. Samples for Initial Selection: Electronic submittal of available frame finish colors.

v. Samples for Verification of the following:

1. Fabric: Qty (3) 8 ½" x 11" fabric samples selected by the architect.
2. Frame Finish: Qty (3) sample chips with a minimum size of 2" x 3"

d. INFORMATIONAL SUBMITTALS

- i. Qualification Data: For Installers, Fabricator and Professional Engineer.
- ii. Fabric Manufacturer's Warranty.

e. CLOSEOUT SUBMITTALS

- i. Maintenance Data: Textile Canopy System to include Maintenance Manuals.
 1. Include the following information:
 - a. Methods for maintaining Textile Canopy System.
 - b. Precautions on cleaning solutions, materials and methods that could be detrimental to fabrics, finishes, and performance of the Textile Canopy System

f. QUALITY ASSURANCE

i. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate Textile Canopy Systems similar in size & complexity to those required for this Project with a successful record in-service performance.

1. Fabricator's responsibilities include the fabrication of the Textile Façade System and providing professional engineering services.
2. Fabricator must have proven record of at least five (5) successful projects similar in size and similar specified fabric material.
3. Fabricator must have been in continuous operation as a professional Textile Canopy System manufacturer for minimum of ten (10) years prior to this Project.

ii. Installer Qualifications:

1. Must be a licensed contractor or have authority and required insurance to legally perform work in the state where the Textile Façade System is being installed.
2. Must provide required insurance coverage required by the project.

iii. Welding Qualifications: Qualify personnel procedures and personnel according to the following:

1. AWS D1.1/D1.1M Structural Welding Code - (Steel)
2. AWS D1.2 Structural Welding Code - (Aluminum)

g. FIELD CONDITIONS

i. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of Textile Canopy System in exterior locations performed according to manufacturers' written instructions and warranty requirements.

ii. Field Measurements: When Textile Canopy System installation is indicated to fit to other work, verify dimensions by Project Site field measurements before fabrication starts. Submit measurements on Shop Drawings to Architect for approval. Allow clearances for fenestration operation throughout the entire operating range. Notify Architect of discrepancies immediately. Coordinate fabrication schedule with construction progress to avoid any delays to the Project.

h. WARRANTY

i. Special Warranty: Fabric Manufacturer and Textile Canopy System fabricator agree to repair or replace components of Textile Canopy System that fail in material or workmanship within specified Warranty period of one (1) year from the date of Substantial Completion.

1. Failures include, but are not limited to:
 - a. Structural or framework failures.
 - b. Fabric deterioration including any seam failure.
 - c. Metals, metal finishes, and any other materials beyond normal weathering.

2. Fabric Warranty: Fabric manufacturer's limited Warranty.

i. MEASUREMENT AND PAYMENT

- i. Full compensation for conforming with the requirements of Textile Canopy System including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Textile Canopy System", where applicable, and no additional compensation will be allowed therefore.
- ii. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Sunbrella North America,
142 Glen Raven Road
Burlington, NC 27217-1100
Toll Free (336) 221-2211
Website www.sunbrella.com

- A. Substitutions: Or approved equal.

2.2 DESCRIPTION

- A. General: Provide a Textile Canopy System that complies with requirements specified herein by testing the Subcontractor's corresponding membrane system in accordance with the indicated test methods.
- B. Regulatory Requirements: Provide Textile Canopy System in compliance with requirements and limitations of Jurisdictional Authorities that are within Subcontractor's control.
 - 1. Building Code Criteria: The Textile Canopy System shall comply with current building codes.
 - 2. Comply with Local Building Codes and respective loading criteria for Snow Loads, Live Loads, Dead Loads, Wind Speed, and Seismic Loads.
 - 3. Life Safety: Textile Canopy System shall be detailed so that no life safety issue is created in the event of the loss of fabric membrane or associated parts. The Textile Canopy System does not rely on any membrane for structural stability.

2.3 PERFORMANCE / DESIGN CRITERIA

- A. Delegated Design: Retain a qualified Professional Engineer to design Textile Canopy System. Design Engineering requirements to include, but are not limited to, the following:
 - 1. Prepare structural design drawings defining the precise interface geometry determination, reaction loads imposed on structural steel framing, anchoring loads, connection details, interfaces and seam layouts.
- B. In engineering the Textile Canopy System, fittings and accessories to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - 1. Steel: 72 percent of minimum yield strength.
 - 2. Stainless Steel: 60 percent of minimum yield strength.

3. Aluminum: The lesser of minimum yield strength divided by 1.65 or minimum ultimate tensile strength divided by 1.95.
- C. Structural Performance: Textile Canopy System shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7:
 1. Wind Loads: To be determined by Subcontractor's Engineer of Record.
 2. Live Loads: To be determined by Subcontractor's Engineer of Record.
 3. Seismic Loads: To be determined by Subcontractor's Engineer of Record.
- D. Thermal Movements: Allowance for thermal movements from ambient and surface temperature changes.
 1. Material Surface Temperature Change: 22 degrees F to 158 degrees F
- E. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

2.4 TEXTILE CANOPY MATERIALS

- A. Product: Subject to compliance with requirements, provide fabric as called out and specified by the Architect in the bid set drawings and specifications.
- B. Fire-Test-Response Characteristics: Provide Textile Canopy System fabric with the Fire-Test- Response characteristics indicated, determined by testing identical products according to the test method indicated below by a recognized testing and inspection agencies acceptable to authorities having jurisdiction on the Project:
 1. Flame-Resistance Ratings: Passes NFPA 701
 2. California State Fire Marshal Title 19
- C. Textile Manufacturer:
 1. Serge Ferrari Textiles
 - a. Soltis product line
 - 1) Serge Ferrari Soltis 92
 1. Manufacturing Process: Serge Ferrari Preconstraint.
 - a. Equally tension high-tenacity polyester weave in warp and weft directions before and during the entire coating process.
 - b. Extrusion Weaving/Coating: Not acceptable.
 2. Yarn: High-tenacity polyester.
 3. Weight: 12.4 oz/ yd².
 4. Thickness: 0.45mm
 5. Width: 69" and 105"
 6. Tensile Strength:
 - a. Warp: 310 daN/ 5 cm
 - b. Weft: 210 daN/ 5 cm
 7. Tear Strength:
 - a. Warp: 45 daN
 - b. Weft: 20 daN

- 8. Flame Retardancy, NFPA 701; ASTM E-84 Class A
- 9. Length of Rolls: 50 m and 40 m.

b. Color: As indicated on drawings.

2.5 TEXTILE CANOPY SYSTEM FRAME, FITTINGS AND ACCESSORIES

- A. General: Provide standard accessories with Textile Canopy System fabricator as specified. Fabricate and finish accessories in the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles as well as dimensional and structural requirements.
- B. Metal Surfaces: Provide materials with smooth seamless surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- C. Steel and Iron:
 - 1. Tubing: ASTM A500/A500M Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes –A513/A513M Electric-Resistance–Welded Carbon and Alloy Steel Mechanical Tubing
 - 2. Bars: ASTM A29/A29M Steel Bars, Carbon and Alloy, Hot-Wrought, Grade 1010
 - 3. Plates, Shapes, and Bars: ASTM A36 Carbon Structural Steel or ASTM A572 High- Strength Low-Alloy Columbium-Vanadium Structural Steel per engineer requirements.
- D. Aluminum Support Extrusions
 - 1. EIDE Canopy System per parts list attached. Job Specific.
 - 2. Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with strength and durability properties for each aluminum form required not less than that of alloy and temper designated below.
 - 3. Extruded Bars and Shapes: ASTM B221Aluminum & Aluminum – Alloy Extruded Bars, Rods, Wire, Profiles and Tubes, Alloy 6063-T5/T52.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine structural steel framing and other substrates, with Authorized Installation Technician present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Prepare written report, endorsed by Authorized Installation Technician, listing conditions detrimental to performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

- A. Proceed with installation of Textile Canopy System only when weather conditions permit work to be performed in accordance with manufacturer's recommendations.
- B. Erect frame and fabric in accordance with the procedures of the approved manufacturer.
- C. Adequate pre-stress what shall be applied to eliminate fabric wrinkles.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: A factory-authorized service Authorized Installation Technician must be present during all tests and inspections of components, assemblies, and equipment installations, including connections.

END OF SECTION 133130 – Textile Canopy System

SECTION 23 – EXTERIOR LIGHTING (265600)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Luminaires.
 2. Emergency luminaires.
 3. Luminaire supports.

1.2 DEFINITIONS

- A. LIGHTING CONSULTANT: Party responsible for luminaire specification and approval. This may be the Lighting Designer, Electrical Engineer, Architect or the Owner's Representative.
- B. LUMINAIRE, LIGHT FIXTURE or FIXTURE: A complete lighting device consisting of lamp(s) or LED modules together with parts designed to distribute light, to position and protect lamps, to mount the luminaire as required and to connect lamps to power supply.
- C. LED: Light Emitting Diode used as the light source in the luminaire.
- D. LAMP: Removable, modular light source intended to be installed in a luminaire. Lamps may be LED or incandescent.
- E. CCT: Correlated color temperature of the light source. The color temperature of a light source is the temperature of an ideal black-body radiator that radiates light of a color comparable to that of the light source. The lower the Correlated Color Temperature, the "warmer" the light source is.
- F. CRI: Color Rendering Index is a measure of the ability of a light source to reveal the colors of various objects faithfully in comparison with an ideal or natural light source. The higher the CRI, the better color is rendered.
- G. IP: or Ingress Protection Rating classifies and rates the degree of protection provided by mechanical casings and electrical enclosures against intrusion, dust, accidental contact, and water.
- H. LUMEN: a measure of the total quantity of visible light emitted by a light source, or a luminaire.
- I. FOOT-CANDLE: Measurement of illuminance or light falling on a surface, such as the floor or a desk. These units are used to calculate adequate lighting levels for different surfaces or tasks.
- J. EFFICACY: The ratio of luminous flux to power, measured in lumens per watt.
- K. BALLAST: Device placed in series with a load to limit the amount of current in an electrical circuit. Typically uses to power fluorescent, compact fluorescent, and HID loads.
- L. DRIVER or POWER SUPPLY: Device used to adjust power and current to illuminate a light-emitting diode (LED). The circuit must provide sufficient current to light the LED at the required brightness but must

also limit the current to prevent damaging the LED.

- M. TRANSFORMER: Core and coil device used to convert mains voltage to low voltage to power luminaires or lamps.

1.3 GENERAL REQUIREMENTS

- A. Provide labor, materials, and equipment for the installation of exterior luminaires and equipment as shown on the drawings and specified here.
- B. The luminaires, lamps, ballasts, power supplies, drivers and transformers for this project have been specified to ensure that specific aesthetic and performance requirements will be satisfied. These products have been carefully researched and each specified item has unique qualities which were determined to be essential in satisfying the owner's, architect's, engineer's and lighting consultant's design criteria.
 - 1. "?" characters in the lighting fixture model number indicate a lighting fixture option that the contractor must identify prior to ordering/providing submittals.
 - 2. Conflicts between catalog numbers and lighting fixture descriptions shall be brought to the attention of the Lighting Consultant prior to bid time for clarification.
- C. Conflicts between catalog numbers and lighting fixture descriptions shall be brought to the attention of the Lighting Consultant prior to bid time for clarification.
- D. Contractor shall perform all work in strict accordance with all local, national and seismic governing codes. Work not in conformance with applicable codes shall be brought into compliance at no additional cost to the Owner.
- E. All electrical material shall be new and in perfect condition when installed. All equipment shall be listed, labeled or certified by a nationally recognized testing laboratory.
- F. All equipment shall be factory tested to ensure proper operation prior to shipment to job site.
- G. Contractor shall be responsible for all electrical permits and inspection fees. It is the responsibility of the contractor to schedule all electrical inspections required by the building department and serving utilities.
- H. Contractor shall guarantee all materials and workmanship related to the electrical installation for a minimum period of one year from the date which the Owner accepts the finished project. Any defects in materials or workmanship during this guarantee period shall be corrected by the contractor at no additional cost to the Owner or tenant.
- I. Contractor shall immediately notify Lighting Consultant of any required modifications that are not shown on the drawings.
- J. Electrical contractor shall be licensed by the jurisdiction where the project is located and capable of employing the proper labor force necessary to complete the installation.
- K. Delivery of equipment to the job site shall be in clearly identified crates, cartons, or appropriate shipping containers as to item, quantity, and installation location.
- L. Contractor shall notify Lighting Consultant of any provision of specification that is in conflict with local or national codes and an addendum shall be issued to correct the specification. Local or national codes will

take precedence.

- M. All measurements found in lighting plans are approximate. Contractor is required to make field measurements based on actual site conditions to develop complete orders and install systems per drawings and specifications.
 - 1. Refer to architectural, landscape and / or civil plans for exact location of all luminaires and all devices. All wall-mounted luminaire and device heights shall be verified with the Architect prior to rough-in.
 - 2. Conflicts between the architectural, landscape and / or civil plans and the electrical/lighting design plan(s) shall be brought to the attention of the Lighting Consultant and Architect in writing prior to ordering luminaires.
- N. Contractor shall properly test and validate all circuitry, dimming and control prior to focus and programming phase commencing.
- O. Contractor services shall include necessary systems integration and engineering, project management and interface with Owner, Consultants, Architects, contractors and all other parties necessary to provide a complete and working lighting system.

1.4 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

- A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4-M.
- B. Live Load: Single load of 500 lbf distributed as stated in AASHTO LTS-4-M.
- C. Ice Load: Load of 3 lbf/sq. ft., applied as stated in AASHTO LTS-4-M Ice Load Map.
- D. Wind Load: Pressure of wind on pole and luminaire and banners and banner arms, calculated and applied as stated in AASHTO LTS-4-M.

1.5 SUBMITTALS

- A. Contractor shall submit SPECIFIED or NAMED EQUAL luminaire data for review within ten (10) days of award of contract. Failure to submit within deadline constitutes a guarantee that only the base specified products will be supplied and that no other products, whether listed as alternates or not, will be considered.
- B. Named equal manufacturers identified in the fixture schedule by name and/or catalog number shall comply with all specification description requirements and performance standards. Any substitution must meet or exceed these standards.
- C. Contractor shall verify all luminaire voltages prior to release of order.
- D. Contractor shall provide a submittal for each luminaire type in the following format:
 - 1. Arrange product data in same order and sequence as shown in fixture schedule.
 - 2. Provide manufacturer product data for luminaire, including

- a. Power supply (i.e., driver, ballast or transformer).
 - b. Photometric data, including delivered lumens, and adjustment factors based on laboratory tests.
 - c. Operational lifespan.
 - d. CCT.
 - e. CRI.
 - f. Efficacy.
 - g. Accessories (i.e., filters, lenses, louvers, etc.).
 - h. Finish.
 - i. For all emergency fixtures with integral battery, please provide submittals for battery system and test button location.
 - j. Anchor bolt template keyed to specific poles and certified by the manufacturer.
 - k. Wind load rating for poles.
3. Pole and Support Component Certificates: Signed by manufacturers of poles, certifying that products are designed for indicated load requirements in AASHTO LTS-4-M and that load imposed by luminaire and attachments has been included in design. The certification shall be based on design calculations by a professional engineer.
 4. Any incomplete luminaire submittal shall be rejected.

E. Shop Drawings:

1. Structural Design calculations, certified by a qualified professional engineer, indicating strength of screw foundations and soil conditions on which they are based.
2. Provide manufacturer shop drawings for all non-standard or custom luminaires. Include dimensioned plan, elevation(s), sections, and mounting or attachment details.
3. Provide details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
4. Provide diagrams for normal and emergency power feeds and segments, signal and control wiring.
5. For custom fixtures, modified fixtures, catenary systems or linear fixtures mounted in continuous rows, submit scaled drawings prepared by the manufacturer showing all details of construction, lengths of runs, pendant and power feed locations, accessory pieces, finishes and a bill of materials. Contractor to provide manufacturer with field dimensions where required.
6. For remote power supply systems, provide scale plans showing fixture assembly, remote driver assemblies, and all interconnect wire requirements, including wire size, length and topology requirements. Please provide power supply specification information for review.
7. For fiber optic lighting systems, provide scale plans showing cable layout, number and type of bundles, illuminator location and a complete bill of materials. Field dimensions required to be furnished by the contractor shall be shown on shop drawings. Please provide illuminator and fiber specification information for review.

1.6 SUBSTITUTIONS

- A. Substitutions of the specified products are strictly prohibited unless approved as stated herein. Luminaire substitutions shall be formally presented to the Lighting Consultant, by appointment only, at least ten (10) working days prior to bid time. The submittal material shall include the following items:
 1. Provide a signed copy of the "substitution compliance form" (located in the Division 1 specification) for each proposed luminaire type substitution stating that any if any proposed substitutions are accepted, the project schedule will not be negatively affected. If the completion of the project is

delayed because of the approved substitution, the electrical contractor shall be responsible for payment of any established liquidated damages.

2. Contractor shall provide a separate substitution submittal for each luminaire type.
 3. Arrange product data in same order and sequence as shown in fixture schedule.
 4. Provide manufacturer product data for luminaire, including:
 - a. Power supply (i.e., driver, ballast or transformer).
 - b. Photometric data, including delivered lumens, and adjustment factors based on laboratory tests.
 - c. Operational lifespan.
 - d. CCT.
 - e. CRI.
 - f. Efficacy.
 - g. Accessories (i.e. filters, lenses, louvers, etc.).
 - h. Finish.
 - i. For all emergency fixtures with integral battery, please provide submittals for battery system and test button location.
 - j. Anchor bolt template keyed to specific poles and certified by the manufacturer.
 - k. Wind load rating for poles.
 5. Any incomplete luminaire submittal shall be rejected.
- B. Contractor shall verify all luminaire voltages prior to release of order.
- C. Provide a complete photometric report for the proposed substitute product, using the proposed lumen package and wattage, including tabulated candlepower values, coefficient of utilization, and an iso-foot-candle diagram. Prorated data will not be acceptable. The photometric report must be done in accordance with published IESNA testing procedures and certified by a registered Electrical Engineer
1. Calculation report shall be a three-dimensional model with assigned surface reflectances and Light Loss Factors (LLFs).
 2. Calculation report shall have a fixture schedule listing IES file types, initial lumens and LLFs. If the substituted luminaire is a part of the emergency lighting system, the report shall be provided with both normal and emergency solutions, with statistics showing compliance.
 3. Calculation report shall be configured with specific constraints, as directed by the Engineer of Record.
 4. Calculation report shall prove that the substituted luminaire provides performance delivered luminance equal to or better than the lighting levels of the specified product.
 5. Reimburse Consultant for cost of evaluating proposed substitutions, even if proposed substitutions are not accepted.
 6. Provide a list of comparable projects where the product has been used in the last two years.
 7. Upon request from the Lighting Consultant, provide a complete and operating sample luminaire wired with cord and plug for 120v operation. Provide sample fixture complete with any specified accessories and with specified driver, if requested.
- D. All manufacturers of submitted products must have been in business for five years and in no instance will this project be the occasion of the first installation of any luminaire or product unless it is listed on the specification.
- E. Substitution luminaires shall not be ordered prior to approval by Lighting Consultant.

1.7 MOCK-UPS

- A. As part of the work of this specification, when called for in the Fixture Descriptions, and at no additional cost to the Owner, temporarily install, connect and adjust a reasonable number of fixtures of each type specified for a particular mock-up. Order and store mock-up fixtures, when approved, as necessary to complete the work, at the Contractor's expense.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Contractor shall allow proper ordering time for procurement of fixtures. Lighting Designer and Electrical Engineer shall be notified of any product substitutions as a result of delivery, prior to ordering alternate product. Failure to order fixtures with adequate lead-time to meet the installation schedule does not relieve the contractor of the responsibility to provide the specified product without compensation to the owner.
- B. Should a manufacturer fail to deliver a product that has been ordered within reasonable lead-time, contractor shall notify Lighting Consultant and Electrical Engineer with a proposed alternate fixture. Lighting Designer and Electrical Engineer shall maintain final authority for authorization of any substitution due to delivery schedule issues.
- C. Luminaires and their component elements shall be delivered to the job site factory-assembled and wired to the greatest extent practical, in strict accordance with the approved shop drawings, samples, certificates and catalog cuts, and shall be handled in a careful manner to avoid damage.
- D. Immediately inspect and replace any luminaires or accessories that may have been damaged or lost in transit.
- E. Luminaires shall be and tagged and/or marked with fixture type at the factory, or upon arrival.
- F. Exposed finishes shall be protected during manufacture, transport, storage and handling. Materials that become damaged shall be repaired and/or replaced as directed.
- G. Luminaires shall be stored in a secured area, under cover, elevated above the ground, in clean, dry areas,
- H. Store poles on decay-resistant skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.
- I. Handle wood poles so they will not be damaged. Do not use pointed tools that can indent pole surface. Do not apply tools to section of pole to be installed below finished grade
- J. Retain factory-applied pole wrappings on fiberglass and laminated wood poles until right before pole installation. Handle poles with web fabric straps.
- K. Retain factory-applied pole wrappings on metal poles until right before pole installation. Handle poles with web fabric straps.

1.9 WARRANTY

- A. Special warranty specified in this Article shall not deprive the Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other

warranties of, other rights and remedies Owner may have under requirements of the Contract Documents.

- B. Emergency warranty repairs shall be performed within twenty-four (24) hours of notification when a system or component malfunctions during use.
- C. All warranty repairs shall be performed by qualified personnel in the regular employ of the manufacturer and shall not be subcontracted or assigned without the written consent of the client. In no case shall the manufacturer be relieved of responsibility for the performance of warranty repairs.
- D. Contractor shall guarantee all materials and workmanship related to the electrical installation for a minimum period of one year from the date that the Owner accepts the finished project. If the manufacturer's standard warranty is longer than one year, then that will constitute the warranty period. Any defects in materials or workmanship during this guarantee period shall be corrected by the contractor at no additional cost to the Owner.
- E. Drivers/Transformers: Provide manufacturer's warranty for a period of not less than five years. Warranty shall include parts and labor to replace defective ballasts.
- F. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
 - 1. Warranty Period for Luminaires: Five (5) years from date of Substantial Completion.
 - 2. Warranty Period for Metal Corrosion: Five (5) years from date of Substantial Completion.
 - 3. Warranty Period for Color Retention: Five (5) years from date of Substantial Completion.
 - 4. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than Three (3) years from date of Substantial Completion.

1.10 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of Exterior Lighting including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Exterior Lighting", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide product indicated on Drawings or fixture specifications.

2.2 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

- A. Contractor shall provide luminaires and all materials as detailed on drawings and/or schedules and labor as required to achieve a complete and operating lighting system.
- B. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
 - 1. LER Tests Incandescent Fixtures: Where LER is specified, test according to NEMA LE 5A.
 - 2. LER Tests Fluorescent Fixtures: Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.
 - 3. LER Tests HID Fixtures: Where LER is specified, test according to NEMA LE 5B.
- C. Luminaire Construction:
 - 1. Luminaires: shall be manufactured in accordance with applicable standards of ANSI and NEMA.
 - 2. Luminaire Ingress Protection (IP) rating: above-ground exterior luminaires shall have minimum IP rating of 65 to prevent ingress of dust and protection from water jet spray from any angle. In-grade luminaires shall have a minimum IP rating of 68 for occasional submersion under water.
 - 3. Luminaire housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
 - 4. Metal parts: shall be free from burrs; sharp corners and edges and shall be finished to prevent corrosion or discoloration. Form and support to prevent warping and sagging.
 - 5. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.
 - 6. Plastic or composite parts: shall be resistant to yellowing, turning brittle, or other changes due to aging, exposure to heat and ultraviolet radiation.
 - 7. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
 - 8. Exposed Hardware Material: Stainless steel.
 - 9. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - 10. Retain "Light Shields" Paragraph below if one or more luminaires require partial shielding of light output to avoid light trespass or to meet other requirements. Coordinate with the Exterior Lighting Device Schedule on Drawings.
 - 11. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
 - 12. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:
 - a. White Surfaces: 85 percent.
 - b. Specular Surfaces: 83 percent.
 - c. Diffusing Specular Surfaces: 75 percent.
 - 13. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- D. Luminaire Wiring:
 - 1. Provide internal wiring of fixtures containing a minimum number of splices. Make splices with

- approved mechanical insulated steel spring type connectors, suitable for the temperature and voltage conditions to which the splices are to be subjected.
2. Protect wiring with wire wrap, inserts, grommets, or tubing at points where abrasion may occur. Conceal wiring within fixture construction except where the fixture design or mounting dictates otherwise.
 3. Make all internal wiring connections and splices in a neat and workmanlike manner, ensuring that all connections are electrically and mechanically secure, with no loose strands protruding.
 4. Provide wiring channels and wireways free from projections and rough or sharp edges throughout. At points or edges over which conductors must pass and may be subject to injury or wear, rough bush to make a smooth contact surface with the conductors.
 5. Install insulated bushings at points of entrances and exit of flexible wiring.
- E. Diffusers, Lenses, Globes and Color Filters:
1. All lenses shall be positively secured to luminaire housing.
 2. Luminaires approved for use in humid, damp or wet locations shall have neoprene or silicone gaskets or washers to seal optical compartment.
 3. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
 - b. UV stabilized.
 - c. Lenses shall have uniform brightness throughout the entire visible area at angles from 45° to 90° from vertical, without bright spots or striations.
 4. Glass: Annealed crystal glass unless otherwise indicated.
 5. Color filters shall be glass or film designed for LED sources, where indicated. Color shall be confirmed with Lighting Consultant prior to ordering.
- F. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
1. Label shall include the following lamp characteristics:
 - a. LED wattage, Lumens, Driver information
 - b. CCT and CRI for all luminaires.

2.3 LUMINAIRES WITH REMOVABLE LAMPS

- A. Luminaire labels shall be factory-Applied and shall comply with UL 1598. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles under normal operating conditions.
- B. Label shall include the following lamp characteristics:
1. "USE ONLY" and include specific lamp or module type.
 2. Lamp diameter, shape, size, wattage and coating.
 3. CCT and CRI for all luminaires.

2.4 LUMINAIRES WITH INTEGRATED LED LIGHT ENGINE

- A. Luminaires shall use LED chips of proven quality from an established, reputable LED chip manufacturer.
- B. Manufacturer shall utilize an advanced production LED binning process to ensure consistency from fixture to fixture and project to project over time, while ensuring a reliable supply of LEDs from the supplier.
- C. Manufacturer shall provide optical performance, polar diagrams and photometric data in various formats including ".IES" data file format in accordance with IESNA LM-79-08. ".IES" data file must be available and downloadable from manufacturer's website.
- D. Luminaire delivered lumens; lumen depreciation, CCT and CRI shall be tested and measured in accordance with IES LM-80 Approved Method: Measuring Lumen Maintenance of LED Light Sources.
- E. Luminaire lumen maintenance shall be tested and measured in accordance with IES TM-21-11 Projecting Long Term Lumen Maintenance of LED Light Sources. Projections shall not exceed 6X of the available system-level lumen depreciation test data.
- F. Unless specified otherwise, the LED system shall be rated at L70 for a minimum of 50,000 hours.
- G. Manufacturer shall provide a five (5) year warranty from date of substantial completion of the project.

2.5 LUMINAIRE AND POLE FINISHES

- A. Provide luminaire in finish as specified. All finishes on exterior luminaires shall be UV Stabilized for outdoor use.
- B. Prior to painting, give all parts proper etched surface preparation to assure paint adherence and durability.
- C. Except where specifically indicated to the contrary, provide luminaires with a final synthetic, high-temperature baked enamel coating of color and finish as specified or directed. Unless otherwise specified, provide white baked enamel reflective surfaces, with a minimum reflectance of 85%. Unless otherwise specified, provide matte black non-reflective surfaces. Concealed parts (lamp holders, yokes, brackets, etc.) shall be matte black.
- D. Luminaire Finish, STANDARD: Manufacturer's standard paint shall be applied to factory-assembled and tested luminaire before shipping. Where indicated, match finish process and color of mounting bracket(s), pendants, canopies, or other visible support means.
- E. Luminaire Finish, NON-STANDARD RAL: where indicated, manufacturer shall provide RAL paint finish color as noted in specifications. Manufacturer shall apply non-standard RAL finish to factory-assembled and tested luminaire before shipping. Where indicated, match finish process and color of mounting bracket(s), pendants, canopies, or other visible support means.
- F. Luminaire Finish, CUSTOM COLOR MATCH: where indicated, manufacturer shall provide custom paint finish color as noted in the specifications, or to match sample chip provided. Manufacturer shall provide min (5) paint chip samples for submittal approval prior to painting. Manufacturer shall procure and apply custom paint finish to factory-assembled and tested luminaire before shipping. Where indicated, match finish process and color of mounting bracket(s), pendants, canopies, or other visible support means.
- G. Luminaire finishes shall be applied after fabrication in a manner that will assure a durable sunlight,

weather and wear-resistant surface.

1. Prior to finishing, hot clean the surfaces by accepted chemical means, and treat them with corrosion inhibiting (phosphating) treatment to assure positive paint-adhesion.
 2. Give exposed metal surfaces (brass, bronze, aluminum and other) and finished castings except chromium-plated or stainless-steel parts and even coat of high-grade methacrylate lacquer, or transparent epoxy.
 3. Anodize exposed aluminum surfaces for corrosion resistance.
 4. Make sheet steel fixture housing, and iron and steel parts which have not received phosphating treatment, or which are to be utilized in exterior applications corrosion resistant by zinc or cadmium plating or hit-dip zinc galvanized after completion of all forming, welding, or drilling operations.
- H. Provide minimum thickness of protective coatings:
1. Hot galvanized zinc coating: .0005 inch.
 2. Cadmium plating: .00015 inch.
- I. Electroplate all parts that will operate under temperatures injurious to hot-dipped galvanizing.
- J. Cadmium plate screws, bolts nuts and other fastening or latching hardware.
- K. Noticeable variations in color, sheen or texture of the luminaire assembly are unacceptable. Variations in appearance of adjoining components are only acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- L. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20 requirements; and seal aluminum surfaces with clear, hard-coat wax.
 3. Class I, Clear-Anodic Finish: AA-M32C22A41 (Mechanical Finish: Medium satin; Chemical Finish: Etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
 4. Class I, Color-Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: Medium satin; Chemical Finish: Etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker), complying with AAMA 611.
- M. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1 or SSPC-SP 8.

2.6 LUMINAIRE POWER SUPPLIES (DRIVERS, BALLASTS, TRANSFORMERS)

- A. Provide all drivers/ transformers suitable for the electrical characteristics of the supply circuits to which

they are to be connected, and which are suitable for operating the specified light source.

- B. Provide drivers / transformers conforming to UL and ANSI specifications and displaying labels or symbols of approval by the UL and of certification by the CBM, as tested by the ETL.
- C. Provide dimmer type drivers / transformers of design recognized and approved under the UL component program. These drivers / transformers must coordinate with dimming control devices specified for the particular application.
- D. All remote drivers/ transformers are to be installed within the manufacturer's recommended distance from the light source.
- E. For outdoor use and wherever drivers / transformers are used outside a heated environment provide drivers / transformers capable of operating at any temperature down to minus 20 degrees F.

2.7 REPLACEABLE LAMPS

- A. The lamps for this project have been specified to ensure that specific aesthetic and performance requirements will be satisfied. These products have been carefully researched and each specified item has unique qualities which were determined to be essential in satisfying the Owner's, Architect's, Lighting Consultant's and Electrical Engineer's design criteria.
- B. Substitutions of the specified products are strictly prohibited - unless approved as stated herein. Lamp substitutions shall be formally presented to the Lighting Consultant, by appointment only, at least ten (10) working days prior to bid time. The submittal material shall include the following items.
 - 1. A current original catalog data sheet with lamp catalog numbers. Modified data sheets will not be acceptable.
 - 2. A signed copy of the "substitution compliance form", located in the Division 1 specification, stating that if the proposed substitution is accepted, the project schedule will not be negatively affected. If the completion of the project is delayed because of the approved substitution, the electrical contractor will be responsible for payment of any established liquidated damages.
- C. Conflicts between catalog numbers and lamp descriptions shall be brought to the attention of the Lighting Consultant prior to bid time for clarification.
- D. Unless specified otherwise, Contractor shall furnish and install all lamp(s), as required, for each luminaire indicated on the drawings.
- E. Contractor to replace all failed lamps, as required, until written acceptance of the project is executed by the Owner.
- F. At the completion of the project, Contractor shall provide to the Owner an additional 10% (minimum quantity of two) stock of lamps for each lamp type used on the project.
- G. Contractor shall provide submittal data per the general specification requirements for each type of lamp used on the project consisting of a lamp manufacturer's cut sheet.

2.8 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4-M.
 - 1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in "Structural Analysis Criteria for Pole Selection" Article.
 - 2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of [1.1] <Insert number> to obtain the equivalent projected area to be used in pole selection strength analysis.
- B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.
- C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
 - 1. Materials: Shall not cause galvanic action at contact points.
 - 2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
 - 3. Anchor-Bolt Template: Plywood or steel.
- D. Handhole: Oval-shaped, with minimum clear opening of 2-1/2 by 5 inches, with cover secured by stainless-steel captive screws. Provide on all, except wood poles.
- E. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Concrete, reinforcement, and formwork are specified in Section 033000 "Cast-in-Place Concrete."
- F. Power-Installed Screw Foundations: Factory fabricated by pole manufacturer, with structural steel complying with ASTM A 36/A 36M and hot-dip galvanized according to ASTM A 123/A 123M; and with top-plate and mounting bolts to match pole base flange and strength required to support pole, luminaire, and accessories.
- G. Breakaway Supports: Frangible breakaway supports, tested by an independent testing agency acceptable to authorities having jurisdiction, according to AASHTO LTS-4-M.

2.9 STEEL POLES (NOT USED)

- A. Poles: Comply with ASTM A 500, Grade B, carbon steel with a minimum yield of 46,000 psig (317 MPa); one-piece construction up to 40 feet in height with access handhole in pole wall.
 - 1. Shape: Round tapered, Round straight, Square tapered, Square straight.
 - 2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.
- B. Steel Mast Arms: [Single-arm] [Truss] [Davit] type, continuously welded to pole attachment plate. Material and finish same as pole.
- C. Brackets for Luminaires: Detachable, cantilever, without underbrace.
 - 1. Adapter fitting welded to pole, allowing the bracket to be bolted to the pole mounted adapter, then

- 1. bolted together with [stainless] [galvanized]-steel bolts.
 - 2. Cross Section: Tapered oval, with straight tubular end section to accommodate luminaire.
 - 3. Match pole material and finish.
- D. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- E. Steps: Fixed steel, with nonslip treads, positioned for 15-inch (381-mm) vertical spacing, alternating on opposite sides of pole; first step at elevation 10 feet (3 m) above finished grade.
- F. Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, complying with requirements in Section 260526 "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- G. Cable Support Grip: Wire-mesh type with rotating attachment eye, sized for diameter of cable and rated for a minimum load equal to weight of supported cable times a 5.0 safety factor.
- H. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- I. Galvanized Finish: After fabrication, hot-dip galvanize complying with ASTM A 123/A 123M.
 - 1. Factory-Painted Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 2. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or with SSPC-SP 8, "Pickling."
 - 3. Interior Surfaces of Pole: One coat of bituminous paint, or otherwise treat for equal corrosion protection.
 - 4. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
- J. Color: As specified in fixture schedule or as selected by Architect, Landscape Architect or Owner.

2.10 ALUMINUM POLES (NOT USED)

- A. Poles: ASTM B 209, 5052-H34 marine sheet alloy with access handhole in pole wall.
 - 1. Shape: Round tapered, Round straight, Square tapered, Square straight.
 - 2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.
- B. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- C. Grounding and Bonding Lugs: Welded 1/2-inch (13-mm) threaded lug, complying with requirements in Section 260526 "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- D. Brackets for Luminaires: Detachable, with pole and adapter fittings of cast aluminum. Adapter fitting welded to pole and bracket, then bolted together with stainless-steel bolts.

1. Tapered oval cross section, with straight tubular end section to accommodate luminaire.
 2. Finish: Same as pole and luminaire.
- E. Aluminum Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- F. Color: As specified in fixture schedule or as selected by Architect, Landscape Architect or Owner.

2.11 FIBERGLASS POLES (NOT USED)

- A. Poles: Designed specifically for supporting luminaires, with factory-formed cable entrance and handhole. Not less than 65 percent fiberglass, with resin and pigment making up the remainder.
1. Resin Color: [Dark bronze] <Insert color>; provide uniform coloration throughout entire wall thickness.
 2. Surface Finish: Pigmented polyurethane, with a minimum dry film thickness of 1.5 mils (0.04 mm). Polyurethane may be omitted if the surface layer of pole is inherently UV inhibited.
- B. Color: As specified in fixture schedule or as selected by Architect, Landscape Architect or Owner.

2.12 DECORATIVE POLES

- A. Pole Material:
1. Cast ductile iron.
 2. Cast gray iron, according to ASTM A 48/A 48M, Class 30.
 3. Cast aluminum.
 4. Cast concrete.
 5. Spun concrete.
 6. Steel tube, covered with closed-cell polyurethane foam, with a polyethylene exterior.
- B. Mounting Provisions:
1. Bolted to concrete foundation.
 2. Embedded.
- C. Fixture Brackets:
1. Cast ductile iron.
 2. Cast gray iron.
 3. Cast aluminum.
- D. Color: As specified in fixture schedule or as selected by Architect, Landscape Architect or Owner.

2.13 LAMINATED WOOD POLES (NOT USED)

- A. Species and Grades for Structural Glulam Timber: Engineer and fabricate structural laminated wood poles, complying with ANSI A190.1. Use Southern Pine, Douglas Fir Alaska Cedar, or any approved species listed in AITC 117 to withstand indicated structural loads without exceeding allowable design

working stresses according to AITC 117.

- B. Shape: Round tapered, Round straight, Square tapered, Square straight.
- C. Features: Include wood bracket, wood crossarm, pole-top adapter for mounting luminaire(s), metal pole cap, and concealed raceway path connected to access handhole.
- D. Mounting Provisions: Steel butt flange for bolted mounting to foundation or Embedded.
- E. Appearance Grade: Architectural appearance grade complying with AITC 110.
- F. Preservative Treatment: Pressure treat lumber before gluing according to AWPA C28 for waterborne preservatives. After dressing and end-cutting each member to final size and shape, apply a field-treatment preservative to comply with AWPA M4 to surfaces cut to a depth of more than 1/16 inch.
- G. Adhesive: Wet-use type complying with ASTM D 2559.
- H. End Sealer: Manufacturer's standard, transparent, colorless wood sealer that is effective in retarding the transmission of moisture at cross-grain cuts and is compatible with indicated finish.
- I. Penetrating Sealer: Manufacturer's standard, transparent, penetrating wood sealer that is compatible with indicated finish.
- J. Finish: stain color and treatment as selected by Architect, Landscape Architect or Owner.

2.14 WOOD POLES (NOT USED)

- A. Poles: [Douglas fir] [Southern yellow pine], [machine trimmed by turning,] complying with ANSI O5.1 and with AWPA C4 for wood species used; and bored, roofed, and galled before treatment.
- B. Shape: Round tapered, Round straight, Square tapered, Square straight.
- C. Mounting Provisions: Steel butt flange for bolted mounting to foundation or Embedded.
- D. Preservative Treatment: Pressure treat poles with creosote, pentachlorophenol, or ammoniacal copper arsenate according to AWPA C1 and AWPA C4.
- E. Luminaire Brackets: Comply with ANSI C136.13.

2.15 PRESTRESSED CONCRETE POLES (NOT USED)

- A. Poles: Manufactured [by centrifugal spin-casting process] [of cast concrete].
- B. Shape: Round tapered, Round straight, Square tapered, Square straight.
- C. Mounting Provisions: Steel butt flange for bolted mounting to foundation or breakaway support; Embedded.
- D. Finishing: Capped at top and plugged at bottom. Seat each steel reinforcing strand with epoxy adhesive.

- E. Grounding: Continuous copper ground wire cast into pole. Terminate at top of pole [and attach to 24-inch (610-mm) lightning rod].
- F. Cure with wet steam and age for a minimum of 15 days before installation.
- G. Fabricate poles with a hard, nonporous surface that is resistant to water, frost, and road and soil chemicals and that has a maximum water-absorption rate of 3 percent.
- H. Cast aluminum nameplate into pole wall at approximately 5 feet (1.5 m) above ground line, listing name of manufacturer, Project identifier, overall height, and approximate weight.
- I. Pole Brackets: Comply with ANSI C136.13.
- J. Finish Color: Provided by color material complying with ASTM C 979, uniformly impregnated throughout the pole concrete. Color material shall provide a uniform, stable, permanent color and be as follows:
 - 1. Inert, and carbon free.
 - 2. Unaffected by environmental conditions and contaminants including, but not limited to, UV solar radiation, salts, and alkalis.
 - 3. Finish Texture: Standard form, Polished exposed aggregate, or Etched exposed aggregate as selected by Architect, Landscape Architect or Owner.
 - 4. Finish Color: as selected by Architect, Landscape Architect or Owner.

2.16 POLE ACCESSORIES

- A. Wind Mitigation Devices: Provide in areas of consistent, high, uneven winds.
- B. Duplex Receptacle: provide a NEMA 5-20R duplex receptacle in a weatherproof assembly complying with Section 262726 "Wiring Devices" for ground-fault circuit-interrupter (GFCI) type.
 - 1. Flush mount receptacle at height noted in fixture specifications.
 - 2. Nonmetallic polycarbonate plastic or reinforced fiberglass, weatherproof in-use cover, painted to match pole, that when mounted results in NEMA 250, [Type 3R] [Type 4X] enclosure with cord opening.
 - 3. Cover shall have lockable hasp and latch that complies with OSHA lockout and tag-out requirements.
 - 4. Where noted, provide minimum 1800-W transformer, 120v secondary, protected by replaceable fuses, mounted behind pole access cover.
- C. Base Covers: Manufacturers' standard metal units, arranged to cover pole's mounting bolts and nuts. Finish same as pole.
- D. Decorative accessories, supplied by decorative pole manufacturer, include the following:
 - 1. Banner Arms: Coordinate with manufacturer for maximum banner size limitations to avoid banner arm or pole failure. Banner arms shall be break-away type designed to fail before over stressing the pole.

PART 3 - EXECUTION

3.1 GENERAL

- A. Pole Assemblies & Luminaires: Set level, plumb, and square with ceilings and walls.
- B. Fasten luminaire to indicated structural supports.
 - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
- C. Adjust luminaires that require field adjustment or aiming.
- D. Lighting design drawings represent the design intent of the equipment, devices, etc., to be connected and the circuits to which they are to be connected. Contractor shall install all conduit, pull-boxes and additional hardware and devices as required for a complete and operating system.

3.2 POLE INSTALLATION

- A. Alignment: Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.
- B. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features unless otherwise indicated on Drawings:
 - 1. Fire Hydrants and Storm Drainage Piping: [60 inches (1520 mm)] <Insert dimension>.
 - 2. Water, Gas, Electric, Communication, and Sewer Lines: [10 feet (3 m)] <Insert dimension>.
 - 3. Trees: [15 feet (5 m)] <Insert dimension> from tree trunk.
- C. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Section 033000 "Cast-in-Place Concrete." Verify required bolt extension above concrete with pole manufacturer.
- D. Foundation-Mounted Poles: Mount pole with leveling nuts and tighten top nuts to torque level recommended by pole manufacturer.
 - 1. Use anchor bolts and nuts selected to resist seismic forces defined for the application and approved by manufacturer.
 - 2. Grout void between pole base and foundation. Use nonshrink or expanding concrete grout firmly packed to fill space.
 - 3. Install base covers unless otherwise indicated.
 - 4. Use a short piece of 3/8-inch diameter pipe to make a drain hole through grout to drain condensation from interior of pole.
- E. Embedded Poles with Tamped Earth Backfill: Set poles to depth below finished grade indicated on Drawings, but not less than one-sixth of pole height.
 - 1. Dig holes large enough to permit use of tampers in the full depth of hole.
 - 2. Backfill in 6-inch (150-mm) layers and thoroughly tamp each layer so compaction of backfill is equal to or greater than that of undisturbed earth.

- F. Embedded Poles with Concrete Backfill: Set poles in augered holes to depth below finished grade indicated on Drawings, but not less than one-sixth of pole height.
 - 1. Make holes 6 inches (150 mm) in diameter larger than pole diameter.
 - 2. Fill augered hole around pole with air-entrained concrete having a minimum compressive strength of 3000 psi (20 MPa) at 28 days, and finish in a dome above finished grade.
 - 3. Use a short piece of 1/2-inch- (13-mm-) diameter pipe to make a drain hole through concrete dome. Arrange to drain condensation from interior of pole.
 - 4. Cure concrete a minimum of 72 hours before performing work on pole.
- G. Raise and set poles using web fabric slings (not chain or cable).

3.3 BOLLARD LUMINAIRE INSTALLATION

- A. Align units for optimum directional alignment of light distribution.
- B. Install on concrete base, extend top of concrete 2 inches above finished grade or surface at bollard location. Cast conduit into base, and shape concrete base extension to match shape of bollard base. Finish by troweling and rubbing smooth. Concrete materials, installation, and finishing are specified in Section 033000 "Cast-in-Place Concrete."

3.4 DIRECT BURIAL LUMINAIRE INSTALLATION

- A. Install direct burial luminaires per manufacturer's installation instructions.
- B. Provide minimum 88" pea gravel drainage below fixture, unless otherwise specified.
- C. Make all wiring terminations with silicon-filled wire nuts.

3.5 CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- B. Steel Conduits: Comply with Section 260533 "Raceways and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch- (0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.6 GROUNDING

- A. Ground metal poles and support structures according to Section 260526 "Grounding and Bonding for Electrical Systems."
 - 1. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.
- B. Ground nonmetallic poles and support structures according to Section 260526 "Grounding and Bonding for Electrical Systems."

1. Install grounding conductor and conductor protector.
2. Ground metallic components of pole accessories and foundations.

3.7 CLEANING

- A. Immediately prior to occupancy, Contractor shall remove protective covers, clean all poles and luminaires, reflectors, lenses, louvers, and decorative elements to remove any accumulated dirt or paint.
- B. Upon completion of the installation of luminaires, and at the time of final inspection, all luminaires must be clean, and free from marks, scratches, dust, overspray, spotting or other defects. Replace any broken or defective parts prior to final inspection. Contractor shall replace or make good all defects revealed by final inspection.

3.8 FIELD QUALITY CONTROL

- A. Contractor shall inspect each unit for damage and promptly replace damaged units. All units should be inspected when received to allow proper time for replacement of any damaged units. Reject and do not install blemished, damaged or unsatisfactory fixtures. Replace imperfect or unsatisfactory fixtures, if installed, as directed by the Consultant.
- B. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.
- C. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.9 COMMISSIONING, TEST AND ADJUST

- A. Lighting Consultant's Project Manager will coordinate with Contractor and Owner to establish schedule for all focusing and programming of lighting system.
- B. Contractor to replace all inoperative luminaires at the end of the construction phase prior to the focus and programming phase and again prior to Owner occupancy or project opening.
- C. Contractor shall arrange for and provide temporary electrical service, if required, during the focus and programming phase as well as required mock-ups.
- D. Contractor to include aiming/adjusting labor after dark as required for any adjustable luminaires and for each individual luminaire head or lamp holder in a multi-fixture/multi-lamp assembly. Luminaires to be aimed/adjusted per the direction of Owner, Architect and/or Lighting Consultant.
- E. Contractor shall supply adequate access equipment including ladders, lifts or other equipment required to access luminaires at the time for focus, including evening or night work as may be required due to schedule conflict or daylight impact.
- F. Contractor shall provide manpower and tools for final focusing and adjustment, under the Lighting Consultant's supervision, of all adjustable luminaires after regular working hours, whenever necessary, at no additional cost to the Owner.

3.10 AS-BUILT DOCUMENTATION

- A. Contractor shall provide Complete Maintenance Manuals to Owner including, but not limited to:
1. Required maintenance check-off schedule.
 2. Original Manufacturer's Equipment (OME) technical data sheets, installation instructions and operating or maintenance manuals.
 3. Detailed operating procedures.
 4. A list of recommended spare parts and lamps.
 5. Installation wiring diagrams.
 6. Installation shop drawings
 7. Installation and/or construction As-Built drawings, including focus notes, hookup and dimmer schedules and color references for each luminaire.

END OF SECTION 265600 – Exterior Lighting

SECTION 24 – UNIT PAVING (321400)

SECTION 321400 - UNIT PAVING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Concrete Pavers on concrete.

1.2 SUBMITTALS

- A. Product Data: For materials other than water and aggregates.
- B. Samples for unit pavers.
- C. Mock-Up Panel: A minimum section of 4' x 4' for each pattern required on the drawings must be reviewed and approved by owner and design professional. Cut pavers will be no less than 1/3 of a full unit unless specifically approved.

1.3 QUALITY ASSURANCE

- A. Mockups: Build mockup to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Size: Minimum section of 4 feet by 4 feet (1220 by 1220 mm) for each pattern required on the Drawings.
 - 2. Obtain review and approval by Owner and Architect prior to commencing Work.
 - 3. Provide cut pavers with no less than 1/3 of a full unit unless specifically approved.

1.4 PROJECT CONDITIONS

- A. Cold-Weather Protection: Do not use frozen materials or build on frozen sub-grade or setting beds.

1.5 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of Unit Paving including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Unit Paving", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

2.1 CONCRETE PAVERS

- A. Concrete Pavers: Solid interlocking paving units complying with ASTM C 936 and resistant to freezing and thawing when tested according to ASTM C 67, made from normal-weight aggregates.
 - 1. Products: As shown on drawings

2.2 ACCESSORIES

- A. Steel Edge Restraints: Provide in sizes as required for type of paver restrained with manufacturer's standard connectors and stakes or spikes for anchoring into ground.

2.3 CONCRETE SETTING-BED MATERIALS

- A. Sand for Leveling Course: Sound, sharp, washed, natural sand or crushed stone complying with gradation requirements in ASTM C 33 for fine aggregate.
- B. Sand for Joints: Provide sek gray polymeric sand swept joints.

2.4 SEALER

- A. Provide chem select water-based satin sealer on all unit paver areas.

2.5 AGGREGATE SETTING-BED MATERIALS

- A. Graded Aggregate for Base: Sound, crushed stone or gravel complying with ASTM D 448 for Size No. 8.
- B. Sand for Leveling Course: Sound, sharp, washed, natural sand or crushed stone complying with gradation requirements in ASTM C 33 for fine aggregate.
- C. Sand for Joints: Fine, sharp, washed, natural sand with 100 percent passing No. 16 (1.18-mm) sieve and no more than 10 percent passing No. 200 (0.075-mm) sieve.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.
- B. Cut unit pavers with motor-driven masonry saw equipment to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Do not install cut pavers less than 1/3 of a full unit unless specifically approved.

- C. There shall be not cut paver pieces along paving band edges. Contractor shall verify dimensions of bands to accommodate full pavers.
- D. Joint Pattern: As indicated on plans
- E. Tolerances: Do not exceed 1/16-inch (1.6-mm) unit-to-unit offset from flush (lippage) nor 1/8 inch in 24 inches (3 mm in 600 mm) and 1/4 inch in 10 feet (6 mm in 3 m) from level, or indicated slope, for finished surface of paving.
- F. Provide edge restraints as indicated. Install edge restraints before placing unit pavers.

3.2 CONCRETE SETTING-BED APPLICATIONS

- A. Place leveling course and screed to a thickness as required to match finish elevations taking care that moisture content remains constant and density is loose and constant until pavers are set and compacted.
- B. Set pavers with a minimum joint width of 1/16 inch (1.5 mm) and a maximum of 1/8 inch (3 mm), or as recommended by manufacturer of unit pavers being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars.
- C. Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a 3500- to 5000-lbf (16- to 22-kN) compaction force at 80 to 90 Hz.
- D. Spread dry sand and fill joints immediately after vibrating pavers into leveling course. Vibrate pavers and add sand until joints are completely filled, then remove excess sand. Leave a slight surplus of sand on the surface for joint filling.

3.3 AGGREGATE SETTING-BED APPLICATIONS

- A. Compact soil subgrade uniformly to at least 98 percent of ASTM D 698, Standard Proctor.
- B. Place aggregate base, compact by tamping with plate vibrator, and screed to depth indicated.
- C. Place leveling course and screed to a thickness of 1 to 1-1/2 inches (25 to 38 mm), taking care that moisture content remains constant and density is loose and constant until pavers are set and compacted.
- D. Set pavers with a minimum joint width of 1/16 inch (1.5 mm) and a maximum of 1/8 inch (3 mm), being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars.
- E. Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a 3500- to 5000-lbf (16- to 22-kN) compaction force at 80 to 90 Hz.
- F. Spread dry sand and fill joints immediately after vibrating pavers into leveling course. Vibrate pavers and add sand until joints are completely filled, then remove excess sand. Leave a slight surplus of sand on the surface for joint filling.

END OF SECTION 321400 – Unit Paving

SECTION 25 – PLAYGROUND PROTECTIVE SURFACING (321816.13)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes Poured-in-Place Playground Surfacing System: Super-7 (when aromatic urethane for the top surface is specified) with a 7-year warranty & Extreme-10 (when aliphatic urethane for the top surface is specified) with a 10-year warranty
 - 1. Poured-in-place playground surfacing system.

1.3 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide a 2 layer rubber-urethane playground surfacing system which has been designed, manufactured and installed to meet the following criteria:
 - 1. Shock Attenuation (ASTM F1292):
 - a. Gmax: Less than 200.
 - b. Head Injury Criteria: Less than 1000.
 - 2. Flammability (ASTM D2859): Pass.
 - 3. Tensile Strength (ASTM D412): 60 psi (413 kPa).
 - 4. Tear Resistance (ASTM D624): 140%.
 - 5. Water Permeability: 0.4 gal/yd²/second.
 - 6. Accessibility: Comply with requirements of ASTM F1951.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each playground surface system, include materials, plans, cross sections, drainage, installation, and edge termination.
- C. Samples: For each exposed product and for each color and texture specified.
- D. Quality Assurance/Control Submittals: Submit the following:
 - 1. Certificate of qualifications of the playground surfacing installer.

1.5 INFORMATIONAL SUBMITTALS

- A. Material certificates.
- B. Material test reports.
- C. Product certificates.
- D. Product test reports.
- E. Field quality-control reports.
- F. Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Standards and Guidelines: Comply with CPSC No. 325, "Handbook for Public Playground Safety"; ASTM F 1292; and ASTM F 1487.

1.8 WARRANTY

- A. Warranty Period: Super-7 (when aromatic urethane for the top surface is specified): 7 years from date of completion of work. Extreme-10 (when aliphatic urethane for the top surface is specified): 10 years from date of completion of work.

1.9 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming with the requirements of Playground Protective Surfacing including all labor, tools, equipment, and material necessary to perform the work shall be included in the unit price for "Playground Protective Surfacing", where applicable, and no additional compensation will be allowed therefore.
- B. All costs involved shall be included in the related bid items in the Payment Items Section of these Specifications, and no additional compensation will be made therefore.

PART 2 - PRODUCTS

2.1 POURED-IN-PLACE PLAYGROUND SURFACING SYSTEM

- A. Provide manufacturer's standard thickness as required for overall thickness indicated, tested for impact attenuation according to ASTM F 1292 and for accessibility according to ASTM F 1951.
- 1. Basis-of-Design Product: Subject to compliance with requirements, provide playground system, by Surface America, Inc., (800) 999-0555.
 - a. PlayBound Poured-In-Place Primer
 - 1) Material: Urethane
 - b. PlayBound Poured-in-Place Basemat
 - 1) Material: Blend of 100% recycled SBR (styrene butadiene rubber) and urethane
 - a) The type of playground equipment determines the required basemat thickness, and the basemat thickness may be different at various locations on the playground site. Depending on ASTM F1292 requirements for critical fall height (4', 5', 6', 7', 8', 9', 10' or 12' (1219, 1524, 1829, 2134, 2438, 2743, 3048 or 3657 mm)), select basemat thickness from options provided in subparagraph below (1 1/4", 1 1/2", 2", 2 1/2", 3", 3 1/2", 4" or 5" (31.75, 38, 51, 64, 76, 89 or 102 mm), respectively). Refer to drawings for thickness.
 - c. PlayBound Poured-In-Place Top Surface
 - 1) Material: Blend of recycled EPDM (ethylene propylene diene monomer) rubber and aromatic or aliphatic urethane binder
 - 2) Thickness and color: As shown on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Substrate preparation must be in accordance with surfacing manufacturer's specification. New asphalt must be fully cured – up to 30 days. New concrete must be fully cured – up to 7 days.
- B. Proper drainage is critical to the longevity of the PlayBound Poured-in-Place surfacing system. Inadequate drainage will cause premature breakdown of the poured system in affected areas; and void the warranty.

3.2 PREPARATION

- A. Surface Preparation: Using a brush or short nap roller, apply primer to the substrate perimeter and any adjacent vertical barriers such as playground equipment support legs, curbs or slabs that will contact the surfacing system at the rate of 300 ft²/gal (7.5 m²/L).

3.3 INSTALLATION

- A. Comply with the instructions and recommendations of the playground surfacing manufacturer.
- B. Do not proceed with playground surfacing installation until all applicable site work, including substrate preparation, fencing, playground equipment installation and other relevant work, has been completed.

C. Basemat Installation:

1. Using screeds and hand trowels, install the basemat at a consistent density of 29 pounds, 1 ounce per cubic foot (466 kg/m³) to the specified thickness.
2. Allow basemat to cure for sufficient time so that indentations are not left in the basemat from applicator foot traffic or equipment.
3. Do not allow foot traffic or use of the basemat surface until it is sufficiently cured.

D. Primer Application: Using a brush or short nap roller, apply primer to the basemat perimeter and any adjacent vertical barriers such as playground equipment support legs, curbs or slabs that will contact the surfacing system at the rate of 300 ft²/gal (7.5 m²/L).

E. Top Surface Installation:

1. Using a hand trowel, install top surface at a consistent density of 58 pounds, 9 ounces per cubic foot (938 kg/m³) to a nominal thickness of 1/2" (12.7 mm).
2. Allow top surface to cure for a minimum of 48 hours.
3. At the end of the minimum curing period, verify that the top surface is sufficiently dry and firm to allow foot traffic and use without damage to the surface.
4. Do not allow foot traffic or use of the surface until it is sufficiently cured.

3.4 PROTECTION

- A. Protect the installed playground surface from damage resulting from subsequent construction activity on the site

END OF SECTION 321816.13 – Playground Protective Surfacing

PAYMENT ITEMS

PAYMENT ITEMS

Street Improvement Plans (1-3095)

1. **Payment for “Mobilization and Demobilization”** will be made at the contract unit price for Item No. 1, per Lump Sum, which shall include all costs for mobilize and demobilize all materials, tools, and equipment, and all incidentals, as directed by the Engineer.
2. **Payment for “Traffic Control”** will be made at the contract unit price for Item No. 2, per Each Day, which shall include all costs for traffic control for all construction related activities per City approved traffic control plans and MUTCD, and all incidentals, as directed by the Engineer.
3. **Payment for “Pedestrian Concrete Removal (4-inch, TYP.)”** will be made at the contract unit price for Item No. 3, per Cubic Yard, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and disposing of existing Portland cement concrete pavement of 4-inch thickness, complete in place, as shown on the plans, including field marking, saw-cutting, dump fees, construction survey, and all incidentals, as directed by the Engineer.

Item No. 3 **does not include** the removal and disposal for the following:

- a. Concrete curbs

Payment for the above work shall be included in the unit price bid for the various related items.

4. **Payment for “Vehicular Reinforced Concrete Pavement Removal, Various Thickness (7-inch to 10-inch)”** will be made at the contract unit price for Item No. 4, per Cubic Yard, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and disposing of existing reinforced Portland cement concrete pavement of 7-inch to 10-inch thickness, complete in place, as shown on the plans, including field marking, saw-cutting, dump fees, discard concrete without onsite reinforcement separation, hauling away and all incidentals, as directed by the Engineer.

Item No. 4 **does not include** the removal and disposal for the following:

- a. Concrete curbs

Payment for the above work shall be included in the unit price bid for the various related items.

5. **Payment for “Remove and Salvage Pedestrian Paver, Various Thickness (1-inch to 1.5-inch)”** will be made at the contract unit price for Item No. 5, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and salvaging of existing pedestrian pavers of 1-inch to 1.5-inch thickness, complete in place, as shown on the plans, including field marking, construction survey, separating pavers deemed reusable by PW project manager, labeling and safely storing salvaged pavers onsite, discarding pavers deemed unusable by PW project manager, dump fees, and all incidentals, as directed by the Engineer.
6. **Payment for “Remove and Salvage Vehicular Paver, Various Thickness (2-inch to 3-inch)”** will be made at the contract unit price for Item No. 6, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and salvaging of existing pedestrian pavers of 2-inch to 3-inch thickness, complete in place, as shown on the plans, including field marking, construction survey, separating pavers deemed reusable by PW project manager, labeling and safely storing salvaged pavers onsite, discarding pavers deemed unusable by PW project manager, dump fees, and all incidentals, as directed by the Engineer.
7. **Payment for “Remove Concrete Sub Base, Various Thickness (3-inch to 7-inch)”** will be made at the contract unit price for Item No. 7, per Cubic Yard, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and disposing of existing Portland

cement concrete pavement of 3-inch to 7-inch thickness, complete in place, as shown on the plans, including field marking, saw-cutting, dump fees, discard concrete and hauling away and all incidentals, as directed by the Engineer.

- 7A. **Payment for “Remove Reinforced Concrete Sub Base, Various Thickness (6-inch to 8-inch)”** will be made at the contract unit price for Item No. 7A, per Cubic Yard, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and disposing of existing Portland cement concrete pavement of 6-inch to 8-inch thickness, complete in place, as shown on the plans, including field marking, saw-cutting, , dump fees, discard concrete without onsite reinforcement separation, hauling away, dump fees, and all incidentals, as directed by the Engineer.
8. **Payment for “Planting Removal”** will be made at the contract unit price for Item No. 8, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and disposing of existing planting material of various species, complete in place, as shown on the plans, including field marking, root removal, dump fees, hauling away and all incidentals, as directed by the Engineer.
9. **Payment for “Pavement Removal, Asphalt Various Thickness (5-inch to 8-inch)”** will be made at the contract unit price for Item No. 9, per Cubic Yard, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and disposing of existing asphalt concrete pavement of 5-inch to 8-inch thickness, complete in place, as shown on the plans, including field marking, saw-cutting, dump fees, construction survey, and all incidentals, as directed by the Engineer.
10. **Payment for “Pavement Removal, Asphalt Thickness Surface Plane (2-inch TYP)”** will be made at the contract unit price for Item No. 10, per Square Yard, which shall include all costs for furnishing all labor, tools, and equipment, and for doing all the work involved in the grinding and removal of variable thickness (approximately 2-inch) of the existing asphalt concrete pavement, complete in place, as shown on the plans, including field marking, hauling away and disposing of excess grindings, dump fees, and all incidentals, and directed by the Engineer.
11. **Payment for “Pavement Removal and 18-inch soil amendment”** will be made at the contract unit price for Item No. 11, per Cubic Yard, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and disposing of existing asphalt concrete and/or Portland cement concrete pavement of varying thickness and till compacted sub base/grade of 8 inches minimum or to depth needed to achieve total depth of 18 inches of uncompacted soil, complete in place, as shown on the plans, including field marking, saw-cutting, dump fees, construction survey, removal and disposal of pavement, importing, furnishing and spreading of organic top soil mix, and all incidentals, as directed by the Engineer.
12. **Payment for “Remove Concrete Curbs and Median Curbs”** will be made at the contract unit price for Item No. 12, per Linear Feet, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all the work involved in removal of variable height (approximately 6 inches plus footing) Portland cement concrete curbs as shown on the plans, including field marking, hauling away and disposing of removals, dump fees, and unforeseen subsurface, in preparation for new work, and all incidentals, and directed by the Engineer.

Item No. 12 **does not include** the removal and disposal for the following:

- a. Concrete Pavement

13. **Payment for “Over Excavation of Sub-grade (2-inch deep)”** will be made at the contract unit price for Item No. 13, per Cubic Yard, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in the over excavation of sub-grade due to unsuitable native material,

complete in place, as shown on the plans, including haul away and disposal of excess excavated materials, dump fees, and all incidentals, as directed by the Engineer.

14. **Payment for “Crushed Miscellaneous Base”** will be made at the contract unit price for Item No. 14, per Tons, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing, spreading, and compacting crushed miscellaneous base of varying thickness, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
15. **Payment for “Remove Valve Caps and Sleeves. Fill Void with Cement Sand Slurry as Necessary”** will be made at the contract unit price for Item No. 15, per Each, which shall include all costs for furnishing all labor, all new materials, tools, equipment, and for doing all the work involved in “Abandon existing valve in place.”, as directed by the Engineering, and as described in Section 11 “Construction of Water Facilities Work” in the Special Conditions, including haul away and disposal, dump fees and all incidentals, as directed by the Engineer. The water main can only be shut down during non-business hours for a maximum of four hours. The contractor shall notify the customers of shut down of water service at least 24 hours prior to shut down. Only contractors with recent work experience on public water systems will be approved by GWP to perform this work.
16. **Payment for “Abandon Fire Hydrant Service Lateral and Valve. Salvage Fire Hydrant to GWP ”** will be made at the contract unit price for Item No. 16, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and salvaging existing fire hydrant head, complete in place, as shown on the plans, including haul away and disposal, dump fees, and all incidentals, as directed by the Engineer. The Contractor shall deliver Fire Hydrant head, which are removed including hardware, to Glendale Water and Power Yard at 800 Air Way.
17. **Payment for “Remove Street Light Poles and Foundations. Salvage Poles and luminaires to GWP yard”** will be made at the contract unit price for Item No. 17, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and salvaging the existing light poles and luminaires, complete in place, as shown on the plans, including removing the existing foundations, salvaging poles and luminaires, restoration of disturbed improvements, haul away and disposal, dump fees, and all incidentals, as directed by the Engineer. The Contractor shall deliver Street light pole and luminaire, which are removed including hardware, to Glendale Water and Power Yard at 800 Air Way.
18. **Payment for “Remove and Salvage Existing Light Poles and Luminaires to GWP. Remove Pole Foundations”** will be made at the contract unit price for Item No. 18, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and salvaging the existing light poles and luminaires, complete in place, as shown on the plans, including removing the existing foundations, salvaging poles and luminaires, restoration of disturbed improvements, haul away and disposal, dump fees, and all incidentals, as directed by the Engineer. The Contractor shall deliver Light pole and Luminaire, which are removed including hardware, to Glendale Water and Power Yard at 800 Air Way.
19. **Payment for “Remove and Salvage Existing Light Poles and Luminaires. Install Salvaged Poles and Deliver Luminaires to GWP. Remove Pole Foundations”** will be made at the contract unit price for Item No. 19, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and salvaging the existing light poles and luminaires, complete in place, as shown on the plans, including removing the existing foundations, salvaging poles and luminaires, installing salvaged light poles, adjust to grade, restoration of disturbed improvements, haul away and disposal, dump fees, and all incidentals, as directed by the Engineer. The Contractor shall deliver Luminaire, which are removed including hardware, to Glendale Water and Power Yard at 800 Air Way.
20. **Payment for “Remove and Salvage Existing Luminaires to GWP. Protect Light Poles in Place in Preparation for New Luminaires”** will be made at the contract unit price for Item No. 20, per Each, which

shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and salvaging the light luminaires, protecting existing light poles in place in preparation for new luminaires, complete in place, as shown on the plans, including removing and salvaging the existing luminaires, and all incidentals, as directed by the Engineer. The Contractor shall deliver luminaires, which are removed including hardware, to Glendale Water and Power Yard at 800 Air Way.

21. **Payment for “Remove and Salvage Existing Manhole Covers. Extension and Adjust Covers to Grade”** will be made at the contract unit price for Item No. 21 per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in adjusting existing manholes, lamphole frames and covers sets to the new finished surface grade, complete in place, as shown on the plans, including salvaging existing manhole cover, re-paving around adjusted manholes, dump fees, and all incidentals, as directed by the Engineer.
- 21A. **Payment for “Protect in Place Existing Electrical Vaults, Salvage Covers, Extension and Adjust Covers to Grade”** will be made at the contract unit price for Item No. 21A per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all work involved in adjusting existing electrical vaults set to the new finished surface grade, complete in place, as shown on the plans, including salvaging vault covers, re-paving around adjusted covers, dump fees, and all incidentals, as directed by the Engineer.
22. **Payment for “Remove and Salvage Vault Box Covers. Protect In Place Vaults and Adjust Covers to Grade”** will be made at the contract unit price for Item No. 22 per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all work involved in adjusting existing vaults and covers set to the new finished surface grade, complete in place, as shown on the plans, including salvaging vault covers, re-paving around adjusted covers, dump fees, and all incidentals, as directed by the Engineer.
23. **Payment for “Remove Electrical Pull Boxes”** will be made at the contract unit price for Item No. 23, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing the existing pull boxes, complete in place, as shown on the plans, as required by Glendale Water & Power, including conduit, pull boxes, wiring, and new concrete base, removing and disposing of the existing concrete base, restoration of disturbed improvements, dump fees, and all incidentals, as directed by the Engineer.
24. **Payment for “Reconstruction/Remodel Curb Drains”** will be made at the contract unit price for Item No. 24, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in remodeling existing curb drains within the limit of concrete repairs, complete in place, as shown on the plans, including connection to existing cast iron pipe or box, dowels, outlet through curb, haul away and disposal, dump fees, and all incidentals, as directed by the Engineer.
25. **Payment for “Remove Water Feature, Stub and Cap Water and Electrical Lines. Salvage Water Feature Equipment to City PW Yard. Discard Veneer Material”** will be made at the contract unit price for Item No. 25, in per Each, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all the work involved in capping and removing water and electrical lines and concrete frame with veneer, as shown on the plans, including field marking, veneer removal, hauling away and disposing of excess grindings, dump fees, and all incidentals, and directed by the Engineer. The Contractor shall deliver water feature equipment, which are removed including hardware, to the City’s Public Works Corporate Yard located at 540 Chevy Chase Drive.
26. **Payment for “Remove and Salvage Special Tree Grates to City PW Yard”** will be made at the contract unit price for Item No. 26, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removal and salvaging of existing special tree grates, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer. The Contractor shall

deliver special tree grate, which are removed including hardware, to the City's Public Works Corporate Yard located at 540 Chevy Chase Drive. Tree grates may consist of multiple components. Regardless of the number of components, payment will be made per module for each tree well.

27. **Payment for "Relocating Existing Palm Trees"** will be made at the contract unit price for Item No. 27, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in relocating existing palm trees, 12-inches and above in diameter, as shown on the plans, including hand digging around tree roots, preparing and digging new tree locations, backfill as necessary, grading and compacting the area, protecting in place new location from potential construction elements, maintenance period throughout construction (watering, weeding, trash removal), haul away and disposal, dump fees, and all incidentals, as directed by the Engineer.
28. **Payment for "Remove Trees and Tree Wells"** will be made at the contract unit price for Item No. 28, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing existing trees, complete in place, as shown on the plans, including saw-cutting and disposing of trunk, limbs and roots, backfill as necessary, grading and compacting the area, protecting in place existing adjacent areas and structures from potential falling branches and limbs, haul away and disposal, dump fees, and all incidentals, as directed by the Engineer.
- 28A. **Payment for "Remove Trees"** will be made at the contract unit price for Item No. 28A, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing existing trees, complete in place, as shown on the plans, including saw-cutting and disposing of trunk, limbs and roots, backfill as necessary, grading and compacting the area, protecting in place existing adjacent areas and structures from potential falling branches and limbs, haul away and disposal, dump fees, and all incidentals, as directed by the Engineer.
29. **Payment for "Remove and Relocate Existing Signs. Salvage Posts and Remove Foundations"** will be made at the contract unit price for Item No. 29, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in relocating the existing signs and posts, complete in place, as shown on the plans, including removing the existing foundations, replacing the posts (if necessary), restoration of disturbed improvements, haul away and disposal, dump fees, and all incidentals, as directed by the Engineer. The Contractor shall deliver salvaged signs and poles to the City's Public Works Corporate Yard located at 540 Chevy Chase Drive.
30. **Payment for "Remove Existing Bollards and Foundations. Salvage Bollards to City PW Yard"** will be made at the contract unit price for Item No. 30, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing the existing bollards, complete in place, as shown on the plans, including removing the existing foundations, restoration of disturbed improvements, haul away and disposal, dump fees, and all incidentals, as directed by the Engineer. The Contractor shall deliver salvaged bollards to the City's Public Works Corporate Yard located at 540 Chevy Chase Drive.
31. **Payment for "Remove and Salvage Grate Inlets. Set Covers to New Grade"** will be made at the contract unit price or Item No. 31, per Each, which shall include all costs for furnishing all labor, tools, materials, and equipment, and for doing all work involved in removing inlet cover and adjusting grate drains to the new finished surface grade, complete in place, as shown on the plans, including removing existing drain inlet covers, disposal of construction debris, dump fees, and all incidentals, as directed by the Engineer.
32. **Payment for "Remove and Discard Planter Lights"** will be made at the contract unit price for Item No. 32, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing the existing planter lights, complete in place, as shown on the plans, including conduit, pull boxes, wiring, removing and disposing fixture, dump fees, and all incidentals, as directed by the Engineer.

33. **Payment for “Remove and Salvage Existing Bike Racks and Benches. Deliver to City PW Yard”** will be made at the contract unit price for Item No. 33, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing and salvaging the existing bike racks and benches, complete in place, as shown on the plans, including, removing and disposing foundation and bolt down hardware, restoration of disturbed improvements, dump fees, and all incidentals, as directed by the Engineer. The Contractor shall deliver bike racks and benches, which are removed, to the City’s Public Works Corporate Yard located at 540 Chevy Chase Drive.
34. **Payment for “Miscellaneous Demo and Haul Away”** will be Time and Material Allowance for Item No. 34, which shall include all costs for furnishing labor, materials, tools, and equipment, and for doing all the work involved in the miscellaneous demolition and haul away, complete in place, **not** shown on the plans, including haul away and disposal of excess excavated materials, dump fees, and all incidentals, as directed by the Engineer.
35. **Payment for “Erosion Control – Gravel Bags Berm”** will be made at the contract unit price for Item No. 35, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in the gravel bags berm, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
36. **Payment for “Asphalt Concrete Pavement (Surface and Base Course)”** will be made at the contract unit price for Item No. 36, per Ton, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in construction base course 4.5” asphalt concrete pavement and surface course 1.5” asphalt concrete pavement (C2 - PG 64-10 - 4000), complete in place, as shown on the plans, including saw-cutting, off-haul, disposing, dump fees, and all incidentals, as directed by the Engineer.
37. **Payment for “Asphalt Rubber Hot Mix Pavement (ARHM, 2-inch Thick)”** will be made at the contract unit price for Item No. 37, per Ton, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in construction 2” asphalt ARHM pavement (PG 64-16 -GG-C), complete in place, as shown on the plans, including off-haul, disposing, dump fees, and all incidentals, as directed by the Engineer.
38. **Payment for “Install Creative Crosswalk”** will be made at the contract unit price for Item No. 38, per Square Foot, which shall include all costs for furnishing all labor, tools, and equipment, and for doing all the work involved in installing a Traffic Patterns durable preformed thermoplastic pavement marking material in the crosswalk area in the evening hours only, complete in place, as shown on the plans, including field marking, deviation in working hours permit, complete in place and operational as specified in the Standard Specifications and Special Provisions and all incidentals, as directed by the Engineer.

Payment will be made at the contract unit prices for **Item NOs. 39 through 45**, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for performing all the work as described in the following Payment Items, complete in place, as shown on the plans, including field marking; construction survey; saw-cutting; removal and disposal of existing asphalt and Portland cement concrete pavements and concrete curbs; removal and disposal of pavement fabric, if any, placement and removal of temporary asphalt concrete as needed or directed; excavation; over-excavation; crushed miscellaneous base; sub-grade preparation and grading; compaction; forming; furnishing and application of epoxy where needed; curb markings; reflective fire hydrant markers: Portland cement concrete; cord (backer rod); sealant; finishing (texture as specified or directed in the field, including rotary finish); grooving for wheelchair ramps; replacing all pull boxes and meter boxes that have existing damage or are damaged during construction; steel plates and/or plywood paths, as required; adjusting various pull boxes and meter boxes to grade including adjustment of conduits, if necessary; finishing of the surface of any footing or foundation or base that may be exposed as a result of the new PCC pavement grade; re-laying existing brick or other decorative pavements;

regrading to drain behind new improvement; relocating street signs; pavement and other materials necessary for forming; removing brick borders; disposal of excess excavated materials and all construction debris; maintaining access including ramping or plating driveways; removing AC or PCC scabs from existing AC or PCC pavement before joining the new construction; and all incidentals, as directed by the Engineer.

39. **Item No. 39 “Construct Integral P.C.C. Curb and Gutter”** consists of constructing Portland cement concrete curb including depressed curbs for driveways, per Linear Foot, using Class 560-C-3250 Portland cement concrete (high-early strength).
40. **Item No. 40 “Construct 4-Inch P.C.C. Pavement (Scored and Stamped Sidewalk)”** consists of constructing 4-inch Portland cement concrete sidewalk, curb ramps including grooving for curb ramps, per Square Foot, using Class 520-C-2500 Portland cement concrete, including ADA ramps.
41. **Item No. 41 “Install Pedestrian Paver, including Salvaged Paver”** consists of installing pavers sidewalk over concrete subbase, including mortar setting bed, per Square Foot, using salvaged pavers approved by Public Works project manager. Item No. 39 shall also include furnishing paver material to match existing.
Item No. 39 **does not include** concrete subbase.
42. **Item No. 42 “Install Vehicular Paver, including Salvaged Paver”** consists of installing pavers roadway over concrete subbase, including mortar setting bed, per Square Foot, using salvaged pavers approved by Public Works project manager. Item No. 40 shall also include furnishing paver material to match existing.
Item No. 40 **does not include** concrete subbase.
43. **Item No. 43 “Install Pedestrian Paver Concrete Subbase (4-inch)”** consists of constructing 4-inch Portland cement concrete subbase, per Square Foot, using Class 520-C-2500 Portland cement concrete.
44. **Item No. 44 “Install Vehicular Paver Concrete Subbase (7-inch)”** consists of constructing a 7-inch Portland cement concrete subbase, per Square Foot, using reinforced Class 520-C-2500 Portland cement concrete.
45. **Item No. 45 “Construct 5-inch Playground Surface”** consists of constructing 5-inch poured in place play surfacing, per Square Foot, including padding, sub-layer/sub-surfaces, and drainage, as shown on the plans.
46. **Payment for “Install Cast-In-Place Detectable Warning Surface on ADA Curb Ramps”** will be made at the contract unit price for Item No. 46, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all work involved in providing and installing cast-in-place detectable warning surface, complete in place, as shown on the plans, including fasteners, and all incidentals as directed by the Engineer. The installed tiles shall comply with the applicable sections of the Americans with Disabilities Act (ADA) requirements and Standard Plans for Public Works Construction (Current Edition). The tile material shall be an epoxy polymer composition with an ultraviolet stabilized coating, black color for residential streets (Federal Color No. 17038) and yellow color for collector and arterial roads (Federal Color No. 33538) unless otherwise specified on the plans or directed by the Engineer.
47. **Payment for “Install Surface Mounted Detectable Warning Surface at Transitions”** will be made at the contract unit price for Item No. 47, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all work involved in providing and installing epoxy applied detectable warning surface, complete in place, as shown on the plans, including fasteners, anchorage, sealing or caulking of the perimeter, and beveling of the edges if necessary per manufacturer’s latest specifications, and all incidentals, as directed by the Engineer. The installed tiles shall comply with the applicable sections of the Americans with Disabilities Act (ADA) requirements and Standard Plans for Public Works Construction (Current Edition). The tile material shall be an epoxy polymer composition with an ultraviolet stabilized coating, black color for residential streets (Federal Color No. 17038) and yellow color for collector and arterial roads (Federal Color No. 33538) unless otherwise specified on the plans or directed by the Engineer.

48. **Payment for “Install Safety Barrier with Concrete Footing”** will be made at the contract unit price for Item No. 48, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing Safety Barrier, complete in place, as shown on the plans, including conduit, pull boxes, wiring, new concrete base, concrete footings, using Class 560-C-3250 Portland cement concrete (high-early strength), forming, steel reinforcing bars, reinforcing, excavation, off-haul, disposing, dump fees, and all incidentals, as directed by the Engineer.
49. **Payment for “Install Bollards with Concrete Footing”** will be made at the contract unit price for Item No. 49, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing new bollards, complete in place, as shown on the plans, including concrete footings, using Class 560-C-3250 Portland cement concrete (high-early strength), forming, steel reinforcing bars, reinforcing, excavation, off-haul, disposing, dump fees, and all incidentals, as directed by the Engineer.
50. **Payment for “Furnish and Install 4-foot Square Tree Grate”** will be made at the contract unit price for Item No. 50, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing 4-foot square tree grates (heel proof), complete in place, as shown on the plans, including reinforcing, and forming, and all incidentals, as directed by the Engineer.
51. **Payment for “Install Foundry Service”** will be made at the contract unit price for Item No. 51, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing Foundry Service #4 size rectangular drain, complete in place, as shown on the plans, including reinforcing, forming, excavation, off-haul, disposing, dump fees, and all incidentals, as directed by the Engineer.
52. **Payment for “Install ADA Compliant and Heel Proof 24-inch NDS Channel Grate”** will be made at the contract unit price for Item No. 52, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing ADA Compliant and heel proof 24-inch NDS channel grate, complete in place, as shown on the plans, including reinforcing, forming, and all incidentals, as directed by the Engineer.
53. **Not Used**
54. **Payment for “Install New Water Valve On Existing Fire Line”** will be made at the contract unit price for Item No 54, per Each, which shall include all costs for furnishing all labor, all new materials, tools, equipment and for doing all the work involved in Install new water valve, as shown on GWP Standard Plan 6772-A, sheet 4 in Appendix G and as described in Section 11 “Construction of Water Facilities” in the Special Conditions, and all incidentals, as directed by the Engineer. Only contractors with recent work experience on public water systems will be approved by GWP to perform this work.
55. **Payment for “Replace Existing Water Valve Box with Two Piece Cast Iron Valve Box and Set to Hardscape”** will be made at the contract unit price for Item No. 55, per Each, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all the work involved in removing and salvaging existing water valve cover and installing new water valve, as shown on GWP Standard Plan 6854-A, sheet 1 in Appendix G as directed by the Engineer.
56. **Payment for “Replace Existing Water Valve Box, Extension and Cover Set to Softscape”** will be made at the contract unit price for Item No. 56, per Each, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all the work involved in removing and salvaging existing water valve and installing new water valve, as shown on GWP Standard Plan 6854-A sheet 2 in Appendix G as directed by the Engineer.

57. **Payment for “Adjust GWP Water Valve Covers to New Finished Grade”** will be made at the contract unit price for Item No. 57, per Each, which shall include all costs to adjust GWP Water valve to new finished grade per standard drawing 1590 in Appendix G as directed by the Engineer. All water valves shall be vacuumed of debris in valve box and cap painted accordingly to corresponding color. Water main valve caps must be painted in blue, hydrant lateral gate valve caps must be painted in yellow.
58. **Payment for “Install Fire Hydrant and Assembly installation. Connection to Existing 12-inch Water Main with 7.5-inch Lateral. Install Gate Valve East of Fire Service Lateral”** will be made at the contract unit price for Item No. 58, per Each, which shall include all costs to Fire Hydrant and assembly to new finished grade per standard drawing 4946-A in Appendix G as directed by the Engineer. All water valves shall be vacuumed of debris in valve box and cap painted accordingly to corresponding color. Water main valve caps must be painted in blue, hydrant lateral gate valve caps must be painted in yellow.

Signage and Stripping Plan (49-251)

59. **Payment for “Remove Existing Signs, Posts and Footing”** will be made at the contract unit price for Item No. 59, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing the existing signs and posts, complete in place, as shown on the plans, including removing the existing foundation, including hauling off of materials, disposing, dump fees, and all incidentals, as directed by the Engineer. The Contractor shall deliver salvaged signs and poles to the City’s Public Works Corporate Yard located at 540 Chevy Chase Drive.
60. **Payment for “Remove Existing Signs from the Existing Sign Posts or Street Lighting Poles”** will be made at the contract unit price for Item No. 60, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in removing the existing signs from posts or street lighting poles complete in place, as shown on the plans, and all incidentals, as directed by the Engineer. The Contractor shall deliver salvaged signs and poles to the City’s Public Works Corporate Yard located at 540 Chevy Chase Drive.
61. **Payment for “Remove conflicting Striping”** will be made at the contract unit price for Item No. 61, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing conflicting striping by wet sandblasting, complete in place, as shown on the plans, including dust control, and all incidentals, as directed by the Engineer.
62. **Payment for “Remove conflicting Limit Line/ Crosswalk Pavement Arrows”** will be made at the contract for Item No. 62, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing conflicting pavement markings by wet sandblasting, complete in place, as shown on the plans, including dust control, and all incidentals, as directed by the Engineer.
63. **Payment for “Install New Signs with 2-inch Galvanized Square Tubing Sign Posts with Footing”** will be made at the contract unit price for Item No. 63, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing the new sign and post, complete in place, as shown on the plans, including the sign, post and concrete foundation, hauling off of materials, disposing, dump fees, and all incidentals, as directed by the Engineer.
64. **Payment for “Install Signs Attached to Existing Sign Posts or Street Lighting Poles”** will be made at the contract unit price for Item No. 64, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing the new sign on the existing post, complete in place, as shown on the plans, including the sign and any strapping or bolting for attachment, and all incidentals, as directed by the Engineer.

65. **Payment for “Reorient Existing Signs on the Existing Street Lighting Poles to Face Direction Noted in Plans”** will be made at the contract unit price for Item No. 65, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in reorienting the existing signs on the existing street lighting pole to face direction noted in drawings, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
66. **Payment for “Thermoplastic 12-inch Wide White Limit Line”** will be made at the contract unit price for Item No. 66, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic 12-inch wide white limit line, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
67. **Payment for “Thermoplastic 12-inch Wide White Crosswalks”** will be made at the contract unit price for Item No 67, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic 12-inch wide white crosswalks, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
68. **Payment for “Thermoplastic Continental Crosswalk With 24-inch Wide White Longitudinal Lines 24-inch Apart”** will be made at the contract unit price for Item No. 68, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic continental crosswalk with 24-inch wide white longitudinal lines, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
69. **Payment for “Thermoplastic 4-inch Wide Double Yellow Centerline Separated by 3-inch Wide Black Stripe”** will be made at the contract unit price for Item No. 69, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic 4-inch wide double yellow centerline, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
70. **Payment for “Thermoplastic 4-inch Wide Yellow Left Edge Line”** will be made at the contract unit price for Item No. 70, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic 4-inch wide yellow left edge line, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
71. **Payment for “Thermoplastic 4-inch Wide White Right Edge Line”** will be made at the contract unit price for Item No. 71, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic 4-inch wide white right edge line, complete in place, as shown on the plans, including, and all incidentals, as directed by the Engineer.
72. **Payment for “Thermoplastic 8-inch Wide White Channeling Line With One-Way Clear R.P.M.”** will be made at the contract unit price for Item No. 72, per Linear Foot which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic 8-inch wide white channeling line with one-way clear R.P.M., complete in place, as shown on the plans, and all incidentals, as directed by the Engineer
73. **Payment for “Thermoplastic Pavement Arrows/Legends”** will be made at the contract unit price for Item No. 73, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic pavement arrows/legends, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
74. **Payment for “Thermoplastic 12-inch Wide White Diagonal Line at 5-feet on Center”** will be made at the contract unit price for Item No. 74, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic 12-inch wide white diagonal line, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.

75. **Payment for “Thermoplastic 4-inch Wide Solid White Lane Line”** will be made at the contract unit price for Item No. 75, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing thermoplastic 4-inch wide solid white lane line, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.

76. **Not Used**

77. **Not Used**

Traffic Signal Modification Plans (50-687, 50-686, and 50-685)

78. **Payment for “Traffic Signal Modification at Artsakh Avenue and Wilson Avenue”** will be made at the contract Lump Sum price for Item No. 78, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all work involved in modifications of traffic signal and safety lighting, complete and operational per Plan No. 50-687 on Artsakh Avenue and Wilson Avenue, complete in place, as shown on the plans, including foundations, standards, vehicle mast arms, vehicle and pedestrian signal heads, luminaires, luminaire mast arms, pedestrian push buttons, internally illuminated street name signs, signs, conduit, pull boxes, wiring, interconnect cables, video detection system, detector lead-in cables, traffic signal controller and assemblies, providing temporary traffic signal poles and foundation or temporarily relocating existing pole standards on new foundations, and all auxiliary equipment; also including existing poles and equipment removal and salvage, off-haul, dump fees, pole removal and dispose and all additional equipment not indicated on the Plans or the Specifications but necessary to operate the traffic signal as shown on the Plans; also including painting traffic signal poles, mast arms, and equipment to “midwest brown” color, and install new “bird-x” bird spikes, and all incidents, as directed by the Engineer.

79. **Payment for “Traffic Signal Modification at Artsakh Avenue and Broadway”** will be made at the contract Lump Sum price for Item No. 79, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all work involved in modifications of traffic signal and safety lighting, complete and operational per Plan No. 50-686 on Artsakh Avenue and Broadway, complete in place, as shown on the plans, including foundations, standards, vehicle mast arms, vehicle and pedestrian signal heads, luminaires, luminaire mast arms, pedestrian push buttons, internally illuminated street name signs, signs, conduit, pull boxes, wiring, interconnect cables, video detection system, detector lead-in cables, traffic signal controller and assemblies, providing temporary traffic signal poles and foundation or temporarily relocating existing pole standards on new foundations, and all auxiliary equipment; also including existing poles and equipment removal and salvage, off-haul, dump fees, pole removal and dispose and all additional equipment not indicated on the Plans or the Specifications but necessary to operate the traffic signal as shown on the Plans; also including painting traffic signal poles, mast arms, and equipment to “midwest brown” color, and install new “bird-x” bird spikes, and all incidents, as directed by the Engineer.

80. **Payment for “Traffic Signal Modification at Artsakh Avenue and Harvard Street”** will be made at the contract Lump Sum price for Item No. 80, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all work involved in modifications of traffic signal and safety lighting, complete and operational per Plan No. 50-685 on Artsakh Avenue and Harvard Street, complete in place, as shown on the plans, including foundations, standards, vehicle mast arms, vehicle and pedestrian signal heads, luminaires, luminaire mast arms, pedestrian push buttons, internally illuminated street name signs, signs, conduit, pull boxes, wiring, interconnect cables, video detection system, detector lead-in cables, traffic signal controller and assemblies, providing temporary traffic signal poles and foundation or temporarily relocating existing pole standards on new foundations, and all auxiliary equipment; also including existing poles and equipment removal and salvage, off-haul, dump fees, pole removal and dispose and all additional equipment not indicated on the Plans or the Specifications but necessary to operate the traffic signal as shown on the Plans; also including painting traffic signal poles, mast arms, and equipment to “midwest brown” color, and install new “bird-x” bird spikes, and all incidents, as directed by the Engineer.

Parking Garage Improvement Plans (PG-3095)

81. **Payment for “Remove and Discard Veneer at Existing Water Feature Wall”** will be made at the contract unit price for Item No. 81, per Square Foot, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all the work involved in removing wall surface/finish material, as shown on the plans, including field marking, hauling away and disposing of excess material and debris, dump fees, and all incidentals, as directed by the Engineer.
82. **Payment for “Remove and Salvage Column Sconces. Deliver to City Yard. Replace Column with Cap”** will be made at the contract unit price for Item No. 82, per Each, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all the work involved in removing column sconce and capping column, as shown on the plans, including field marking, dump fees, and all incidentals, as directed by the Engineer.
83. **Payment for “Infill Wall with Vinyl Graphic Mural ”** will be made at the contract unit price for Item No. 83, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in constructing tube steel wall with stucco finish, as shown on the plans, including 20-30 stucco, using high-early strength epoxy, anchoring, welding, attachments, hauling away access materials, dump fees, and all incidentals, as directed by the Engineer.
84. **Payment for “Paint Existing Overhead Breezeway (Metal Preparation and Finish) ”** will be made at the contract unit price for Item No. 84, per Square Foot, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all the work involved in preparing the existing steel trellis to accept new paint, as shown on the plans, as described in Section 20 “High Performance Coatings” in the Special Conditions including sanding, grinding and repairing steel, and all incidentals, as directed by the Engineer.
- 84A. **Payment for “Paint Existing Steel Barrier (Metal Preparation and Finish)”** will be made at the contract unit price for Item No. 84A, per Square Foot, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all the work involved in preparing the existing steel barrier at garage to accept new paint, as shown on the plans, as described in Section 20 “High Performance Coatings” in the Special Conditions including sanding, grinding and repairing steel, and all incidentals, as directed by the Engineer.
85. **Payment for “Power Connection for Blade Sign”** will be made at the contract unit price for Item No. 85, per Each, which shall include all costs for furnishing all labor, materials, tools and equipment, and for doing all the work involved in providing 120V power to blade sign location, per special contractor description as shown on the plans, including coring, conduit, plan check review and fees, and all incidentals, excluding blade sign fabrication and installation, as directed by the Engineer.

Landscape Improvement Plans (PLA-3095)

86. **Payment for “Plant 24-inch Box tree”** will be made at the contract unit price for Item No. 86, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in planting trees of size 24-inch Box, complete in place, as shown on the plans, including furnishing & installing, tree stakes, cinch ties, planting mix, trees, mulch, arbor-gard, 90-day maintenance period (watering, weeding, trash removal), disposal of excess excavated material and construction debris, dump fees, and all incidentals, as directed by the Engineer.
87. **Payment for “Plant 15 Gallon Shrub (Various Types)*”** will be made at the contract unit price for Item No. 87, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in planting various types of shrubs, complete in place, as shown on the plans, including

the 90-day maintenance period (watering, weeding, trash removal), dump fees, and all incidentals, as directed by the Engineer.

88. **Payment for "Plant 5 Gallon Shrub (Various Types)"** will be made at the contract unit price for Item No. 88, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in planting various types of shrubs, complete in place, as shown on the plans, including the 90-day maintenance period (watering, weeding, trash removal), dump fees, and all incidentals, as directed by the Engineer.
89. **Payment for "Plant 1 Gallon Shrub (Various Types)"** will be made at the contract unit price for Item No. 89, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in planting various types of shrubs, complete in place, as shown on the plans, including the 90-day maintenance period (watering, weeding, trash removal), dump fees, and all incidentals, as directed by the Engineer.
90. **Payment for "Install Ground Cover Mulch"** will be made at the contract unit price for Item No. 90, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing and spreading 2-inch mulching for planting, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
91. **Payment for "Install Linear Root Barrier at Tree Well"** will be made at the contract unit price for Item No. 91, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in constructing root barrier Including any anchoring, and attachments as shown on the plans, and all incidentals, as directed by the Engineer.
92. **Not Used**
93. **Payment for "Plant 15 Gallon Shrub In Planter Pot (Various Types)"** will be made at the contract unit price for Each for Item No. 93, per each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in planting various types of shrubs in planter pots, complete in place, as shown on the plans, including the 90-day maintenance period (watering, weeding, trash removal), dump fees, and all incidentals, as directed by the Engineer.
94. **Payment for "Plant 1 Gallon Shrub in Planter Pot (Various Types)"** will be made at the contract unit price for Item No. 94, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in planting various types of shrubs in planter pots, complete in place, as shown on the plans, including the 90-day maintenance period (watering, weeding, trash removal), dump fees, and all incidentals, as directed by the Engineer.
95. **Not Used**
96. **Payment for "Soil Preparation and Amendment (SC-13-2.02/03)"** will be made at the contract unit price for Item No. 96, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in amending the soil for planting, complete in place, as shown on the plans, including generating the mix design for soil amendment based on soils testing report, and all incidentals, as directed by the Engineer.
97. **Payment for "Garden Soil for Planter Pots"** will be made at the contract unit price for Item No. 97, per Cubic Yard, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in soil for planter pots, complete in place, as shown on the plans, including generating the garden mix design for pots, and all incidentals, as directed by the Engineer.

Irrigation Plans (IRR-3095)

98. **Payment for “Install Drip Irrigation”** will be made at the contract unit price for Item No. 98, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing drip irrigation for planting areas, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
99. **Payment for “Install Tree Bubblers”** will be made at the contract unit price for Item No. 99, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing tree irrigation bubblers, two per tree, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
100. **Payment for “Install Palm Tree Spray”** will be made at the contract unit price for Item No 100, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing palm tree spray irrigation, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
- 101A. **Payment for “Install Rain Sensor”** will be made at the contract unit price for Item No. 101A, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing rain sensor, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
- 101B. **Payment for “Install Irrigation Controller”** will be made at the contract unit price for Item No. 101B, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing irrigation controller, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
- 102A. **Payment for “Install Master control valve”** will be made at the contract unit price for Item No. 102A, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work in installing master control valve, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
- 102B. **Payment for “Install Flow Sensor Equipment”** will be made at the contract unit price for Item No.102B, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work in installing flow sensor equipment, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
103. **Payment for “Install Mainline and Wiring (Sleeves and Fittings)”** will be made at the contract unit price for Item No. 103, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing irrigation mainline and wiring, complete in place, as shown on the plans, including trenching, sleeves and fittings, backfill, and all incidentals, as directed by the Engineer.
104. **Payment for “Install Lateral Piping (Sleeves and Fittings)”** will be made at the contract unit price for Item No. 104, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing lateral piping, complete in place, as shown on the plans, including sleeves and fittings, trenching, backfill, and all incidentals, as directed by the Engineer.

105. **Payment for “Install New Irrigation Meter (1.5-inch)”** will be made at the contract unit price for Item No. 105, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing irrigation water meter, complete in place, as shown on the plans, including pipe of a size and material to match existing pipe, new water meter box (if necessary), restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
106. **Payment for “Irrigation Quick Coupler Valve”** will be made at the contract unit price for Item No. 106, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing quick coupler, complete in place, as shown on the plans, including fittings as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
- 107A. **Payment for “Install Manual Flush Valves”** will be made at the contract unit price for Item No. 107A., per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing manual flush valves, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
- 107B. **Payment for “Install Gate Valves”** will be made at the contract unit price for Item No. 107B, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing gate valves, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
- 107C. **Payment for “Install Valves for Trees”** will be made at the contract unit price for Item No. 107C, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing valves for trees, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.
- 107D. **Payment for “Install Valves for Shrubs”** will be made at the contract unit price for Item No. 107D, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing valves for shrubs, complete in place, as shown on the plans, as described in Section 12 “Detailed Specifications for Irrigation” in the Special Conditions, and all incidentals, as directed by the Engineer.

Lighting-Electrical Improvement Plans (GWP00638AA)

108. **Payment for “Install Tree Ring Assembly (L3)”** will be made at the contract unit price for Item No. 108, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing upright lights and attaching to existing tree, complete in place, as shown on the plans, as required by Glendale Water & Power, including conduit, pull boxes, wiring, and tree protection, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
109. **Payment for “Install Tree Ring Assembly (L4)”** will be made at the contract unit price for Item No. 109, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing upright lights and attaching to existing tree, complete in place, as shown on the plans, as required by Glendale Water & Power, including conduit, pull boxes, wiring, and tree protection, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
110. **Payment for “Install Tree Ring Assembly (L5)”** will be made at the contract unit price for Item No. 110, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the

work involved in installing upright lights and attaching to existing tree, complete in place, as shown on the plans, as required by Glendale Water & Power, including conduit, pull boxes, wiring, and tree protection, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.

111. **Payment for “Install Festoon Lighting at Steel Cabana”** will be made at the contract unit price for Item No. 111, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing string lights and attaching to steel structure, complete in place, as shown on the plans, including conduit, pull boxes, wiring, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
112. **Payment for “Install LED Tape Light (Under Toe Kick and Counter)”** will be made at the contract unit price for Item No. 112, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing LED tape lights, complete in place, as shown on the plans, including conduit, pull boxes, wiring, attachments removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
113. **Payment for “Install Pedestrian Pole Light (P4)”** will be made at the contract unit price for Item No. 113, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing 4 head street light Pole, complete in place, as shown on the plans, as described in Section 23 “Detailed Specifications for Exterior Lighting” in the Special Conditions, including conduit, pull boxes, wiring, and new concrete base, restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
114. **Payment for “Install Pedestrian Pole Light (P5)”** will be made at the contract unit price for Item No. 114, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing 5 head street light Pole, complete in place, as shown on the plans, as described in Section 23 “Detailed Specifications for Exterior Lighting” in the Special Conditions, including conduit, pull boxes, wiring, and new concrete base, restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
115. **Payment for “Remove and Replace Surface Mount Lights at Existing Overhead Breezeway. Salvage Fixture to PW Yard (K-2)”** will be made at the contract unit price for Item No. 115, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing existing light and installing lights, complete in place, as shown on the plans, including conduit, pull boxes, wiring, attachment, removing existing lighting fixtures and restoration of disturbed improvements, and all incidentals, as directed by the Engineer. The Contractor shall deliver all existing lighting fixture, which are removed including hardware, not to be reused to the City’s Public Works Corporate Yard located at 540 Chevy Chase Drive.
116. **Payment for “Remove and Replace Surface Mount Lights at Building. Salvage Fixture to City Yard (K1 and K4)”** will be made at the contract unit price for Item No. 116, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing existing light and installing lights, complete in place, as shown on the plans, including conduit, pull boxes, wiring, attachment, removing existing lighting fixtures and restoration of disturbed improvements, and all incidentals, as directed by the Engineer. The Contractor shall deliver all existing lighting fixture, which are removed including hardware, not to be reused to the City’s Public Works Corporate Yard located at 540 Chevy Chase Drive.
117. **Payment for “Remove and Replace Step Light (L1)”** will be made at the contract unit price for Item No. 117, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing existing light and installing lights, complete in place, as shown on the plans, including conduit, pull boxes, wiring, attachment, removing existing lighting fixtures and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.

118. **Payment for “Remove and Replace Surface Mount Lights at Parking Garage Column, Salvage Fixture to PW Yard (K3)”** will be made at the contract unit price for Item No. 118, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing existing light and installing lights, complete in place, as shown on the plans, including conduit, pull boxes, wiring, attachment, removing existing lighting fixtures and restoration of disturbed improvements, and all incidentals, as directed by the Engineer. The Contractor shall deliver all existing lighting fixture, which are removed including hardware, not to be reused to the City’s Public Works Corporate Yard located at 540 Chevy Chase Drive.
119. **Payment for “Install Recess Downlight at Cabana Structural Tubing”** will be made at the contract unit price for Item No. 119, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing recess downlight within steel structure member, complete in place, as shown on the plans, including conduit, pull boxes, wiring, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
120. **Payment for “Install Suspended Light Fixtures in Tree Canopy (D1)”** will be made at the contract unit price for Item No. 120, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing suspended lights and attaching to existing tree set 9-foot minimum from adjacent finish surface, complete in place, as shown on the plans, as required by Glendale Water & Power, including conduit, pull boxes, wiring, and tree protection, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
121. **Payment for “Install New Light Pole and Fixture”** will be made at the contract unit price for Item No. 121, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing street light poles and fixtures, complete in place, as described in Section 23 “Detailed Specifications for Exterior Lighting” in the Special Conditions including conduit, pull boxes, wiring, and new concrete foundation, restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
122. **Payment for “Install New Fixture at Existing Pole”** will be made at the contract unit price for Item No. 122, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing street light pole and fixture, complete in place, as described Section 23 “Detailed Specifications for Exterior Lighting” in the Special Conditions, including conduit, pull boxes, wiring, and repairing existing pole to remain as needed, providing temporary lighting, restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
123. **Payment for “Install Existing Light Pole onto New Foundation with New Fixture”** will be made at the contract unit price for Item No. 123, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing street light poles and fixtures, complete in place, as described in Section 23 “Detailed Specifications for Exterior Lighting” in the Special Conditions, including conduit, pull boxes, wiring, and repairing existing pole to be reused as needed, protecting existing pole on site, new foundation, providing temporary lighting, restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
124. **Payment for “Install Weather Proof Junction Box for Power Connection to Internally Illuminated Sign**”** will be made at the contract unit price for Item No. 124, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing Weather Proof Junction Box, complete in place, as shown on the plans, including conduit, pull boxes, wiring, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
125. **Payment for “Install Weather Proof Junction Box for Power connection to Art Sculpture”** will be made at the contract unit price for Item No. 125, per each, which shall include all costs for furnishing all labor, materials,

tools, and equipment, and for doing all the work involved in installing Weather Proof Junction Box, complete in place, as shown on the plans, including conduit, pull boxes, wiring, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.

126. **Payment for “Install New Electrical Service”** will be made at the contract unit price for Item No. 126, per Each, which shall include all cost for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing GWP Electrical Service Pedestal, per drawing in Appendix F, including conduit, pull boxes, wiring, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
- 126A. **Payment for “Electrical Main Trench”** will be made at the contract unit price for Item No. 126A, per Linear Foot, which shall include all cost for furnishing all labor, materials, tools, and equipment, and for doing all the work involved electrical main trench, complete in please, as shown on plans, including sleeves. dump fees, fittings, and all incidentals, as directed by the Engineer.
- 126B. **Payment for “Boring Under Curb”** will be made at the contract unit price for Item No. 126B, per Each, which shall include all cost for furnishing all labor, materials, tools, and equipment, and for doing all the work involved boring under curb, complete in please, as shown on plans, including sleeves, dump fees, fittings, and all incidentals, as directed by the Engineer.
127. **Payment for “Install Power Connection to Internally Illuminated Signage”** will be made at the contract unit price for Item No. 127, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing Weather Proof Junction Box, complete in place, as shown on the plans, including conduit, pull boxes, wiring, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
128. **Payment for “Install 120V Weatherproof GFCI Outlet with Lockable Cover at South Parking Garage”** will be made at the contract unit price for Item No. 128, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing Weather Proof Outlet, complete in place, as shown on the plans, including lockable cover, conduit, pull boxes, wiring, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.
129. **Payment for “Electrical Line Source from Nearest Location within Garage to Provide 120V for Exterior Lighting”** will be made at the contract lump sum price for Item No. 129, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing electrical connection, complete in place, as shown on the plans, including conduit, pull boxes, wiring, removing and restoration of disturbed improvements, and all incidentals, as directed by the Engineer.

Wayfinding Signage Plan (WS-3095)

130. **Payment for “Install District Markers-Pylon Sign at Artsakh Avenue”** will be made at the contract unit price for Item No. 130, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing the pylon sign, complete in place, as shown on the plans, including the sign and any strapping or bolting for attachment, electrical, and all incidentals, as directed by the Engineer.
131. **Payment for “Install Alley Identity - Blade Sign”** will be made at the contract unit price for Item No. 131, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing the blade sign, complete in place, as shown on the plans, including the sign and any strapping, or bolting for attachment, electrical, and all incidentals, as directed by the Engineer.
132. **Payment for “Install District Directional- Ground Sign at Artsakh Avenue”** will be made at the contract unit price for Item No. 132, per Each, which shall include all costs for furnishing all labor, materials, tools,

equipment and for doing all the work involved in installing the ground sign, complete in place, as shown on the plans, including affixing the sign, and all incidentals, as directed by the Engineer.

133. **Payment for “Install Enhanced Backer to Stop Sign (R1-1)”** will be made at the contract unit price for Item No. 133, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing enhanced backer to Stop sign, complete in place, as shown on the plans, including affixing the sign, attachments, bolting, anchoring, and all incidentals, as directed by the Engineer.
134. **Payment for “Install Enhanced Backer to Left Turn Only Sign (R3-5L)”** will be made at the contract unit price for Item No. 134, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing enhanced backer to Left Turn Only sign, complete in place, as shown on the plans, including affixing the sign, attachments, bolting, anchoring, and all incidentals, as directed by the Engineer.
135. **Payment for “Install Enhanced Backer to Right Turn Only Sign (R3-5R)”** will be made at the contract unit price for Item No. 135, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing enhanced backer to Right Turn Only sign, complete in place, as shown on the plans, including affixing the sign, attachments, bolting, anchoring, and all incidentals, as directed by the Engineer.
136. **Payment for “Install Enhanced Backer to Do Not Enter Sign (R5-1)”** will be made at the contract unit price for Item No. 136, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing enhanced backer to Do Not Enter sign, complete in place, as shown on the plans, including affixing the sign, attachments, bolting, anchoring, and all incidentals, as directed by the Engineer.
137. **Payment for “Install Enhanced Backer to NO Right Turn Sign (R3-1)”** will be made at the contract unit price for Item No. 137, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing enhanced backer to No Right Turn sign, complete in place, as shown on the plans, including affixing the sign, attachments, bolting, anchoring, and all incidentals, as directed by the Engineer.
138. **Payment for “Install Enhanced Backer to NO Left Turn Sign (R3-2)”** will be made at the contract unit price for Item No. 138, per Each, which shall include all costs for furnishing all labor, materials, tools, equipment and for doing all the work involved in installing the sign, complete in place, as shown on the plans, including affixing the sign, attachments, bolting, anchoring, and all incidentals, as directed by the Engineer.

Streetscape Site Furnishing Plans (SSF-3095)

139. **Payment for “Construct Curved Bench with Steel Frame and Wood Accent ”** will be made at the contract unit price for Item No. 139, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in HSS framing, with Metal panel finish and Wood Accent slats, as shown in the drawings, Including footings, using Class 560-C-3250 Portland cement concrete (high-early strength) including concrete forming, steel reinforcing bars, anchoring, welding, primed powder coated panels with marine grade attachments, concrete foundation, hauling away access materials, dump fees, and all incidentals, as directed by the Engineer.
140. **Payment for “Construct Steel Cabana 32'-6”x 12'-0”x10'-8””** will be made at the contract unit price for Item No. 140, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in constructing HSS framing with steel louvers as shown in plans, Including any footings, using Class 560-C-3250 Portland cement concrete (high-early strength) including concrete forming,

steel reinforcing bars, paint with high performance paint, anchoring, welding, attachments, hauling away access materials, dump fees, and all incidentals, as directed by the Engineer.

141. **Payment for “Construct Steel Cabana 32’-6”x 10’-0”x10’-8””** will be made at the contract unit price for Item No. 141, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in constructing HSS framing with steel louvers as shown in plans, Including any footings, using Class 560-C-3250 Portland cement concrete (high-early strength) including concrete forming, steel reinforcing bars, paint with high performance paint, anchoring, welding, attachments, hauling away access materials, dump fees, and all incidentals, as directed by the Engineer.
142. **Payment for “Construct Steel and Fabric Shade Structure’** will be made at the contract unit price for Item No. 142, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in constructing HSS framing with shade canopy as shown in plans, Including any footings, using Class 560-C-3250 Portland cement concrete (high-early strength) including concrete forming, steel reinforcing bars, paint with high performance paint, anchoring, welding, attachments, hauling away access materials, dump fees, and all incidentals, as directed by the Engineer.
143. **Payment for “Furnish and Install Limpido Park Benches (SF-2)”** will be made at the contract unit price for Item No 143, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Limpido park benches, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
144. **Payment for “Furnish and Install Drum Side Tables (SF-3)”** will be made at the contract unit price for Item No 144, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing drum side tables, complete in place, as shown on the plan, including required attachments, all incidentals, as directed by the Engineer.
145. **Payment for “Furnish and Install Radium Stools (SF-4)”** will be made at the contract unit price for Item No. 145, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing radium stools, complete in place, as shown on the plan, including required attachments with deepen concrete slab, disposing, dump fees, and all incidentals, as directed by the Engineer.
146. **Payment for “Furnish and Install Café Tables (SF-5)”** will be made at the contract unit price for Item No. 146, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing café tables, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
147. **Payment for “Furnish and Install Signature Dining Chairs (SF-6)”** will be made at the contract unit price for Item No. 147, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing signature dining chairs, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
148. **Payment for “Furnish and Install Signature Lounge Chairs (SF-7)”** will be made at the contract unit price for Item No. 148, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing signature lounge chairs, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
149. **Payment for “Furnish and Install Square Top Café Tables (SF-8)”** will be made at the contract unit price for Item No. 149, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing square top café tables, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.

150. **Payment for “Furnish and Install XL Signature Table (SF-9)”** will be made at the contract unit price for Item No. 150, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing XL signature table, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer. (Note that table is customized to meet ADA requirements)
151. **Payment for “Furnish and Install Rautster Picnic Tables (SF-10)”** will be made at the contract unit price for Item No. 151, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Rautster picnic tables, complete in place, as shown on the plan, including required attachments with deepen concrete footing, disposing, dump fees, and all incidentals, as directed by the Engineer.
152. **Payment for “Furnish and Install Mistrals Umbrellas with Base (SF-11/12)”** will be made at the contract unit price for Item No. 152, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Mistrals umbrellas with base, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
153. **Payment for “Furnish and Install Stoop Bench (SF-13)”** will be made at the contract unit price for Item No. 153, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing stoop bench, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
154. **Payment for “Furnish and Install Signature Rocking Chairs (SF-14)”** will be made at the contract unit price for Item No. 154, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Signature rocking chairs, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer. (Note that chair is customized)
155. **Payment for “Furnish and Install Bloc Sun Benches (SF-15)”** will be made at the contract unit price for Item No. 155, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Bloc sun benches, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
156. **Payment for “Furnish and Install Bistrot Outdoor Tables (SF-16)”** will be made at the contract unit price for Item No. 156, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Bistrot outdoor tables, complete in place, as shown on the plan, including required attachments with deepen concrete footing, disposing, dump fees, and all incidentals, as directed by the Engineer.
157. **Payment for “Furnish and Install Bistrot Outdoor Stools (SF-16)”** will be made at the contract unit price for Item No. 156, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Bistrot outdoor stools, complete in place, as shown on the plan, including required attachments with deepen concrete footing, disposing, dump fees, and all incidentals, as directed by the Engineer.
158. **Payment for “Furnish and Install April Chairs (SF-17)”** will be made at the contract unit price for Item No. 158, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing April chairs, complete in place, as shown on the plan, including required attachments with deepen concrete footing, disposing, dump fees, and all incidentals, as directed by the Engineer.

159. **Payment for “Furnish and Install Code Benches (SF-18)”** will be made at the contract unit price for Item No. 159, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Code benches, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
160. **Payment for “Furnish and Install April Steel Tables (Small) (SF-19)”** will be made at the contract unit price for Item No. 160, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing April steel tables, complete in place, as shown on the plan, including required attachments with deepen concrete footing, disposing, dump fees, and all incidentals, as directed by the Engineer.
161. **Payment for “Furnish and Install April Steel Tables (Large) (SF-19)”** will be made at the contract unit price for Item No. 161, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing April steel tables, complete in place, as shown on the plan, including required attachments with deepen concrete footing, disposing, dump fees, and all incidentals, as directed by the Engineer.
162. **Payment for “Furnish and Install April Seats (SF-20)”** will be made at the contract unit price for Item No. 162, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing April seats, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
163. **Payment for “Furnish and Install Foosball Tables (SF-21)”** will be made at the contract unit price for Item No. 163, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing foosball tables, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
164. **Payment for “Furnish and Install Cornhole (SF-22)”** will be made at the contract unit price for Item No. 164, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing cornholes, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
165. **Payment for “Furnish and Install Ping Pong Tables (SF-23)”** will be made at the contract unit price for Item No. 165, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Ping Pong tables, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
166. **Payment for “Furnish and Install Bike Racks (Small and Large) (SF-25)”** will be made at the contract unit price for Item No. 166, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing bike racks, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
167. **Payment for “Furnish and Install Stone Bench (SF-26)”** will be made at the contract unit price for Item No. 167, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing stone bench, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
168. **Payment for “Furnish and Install Solid Table (SF-27)”** will be made at the contract unit price for Item No. 168, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing solid table, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.

169. **Payment for “Furnish and Install City Litter Trash Bin (180-liter) (SF-24)”** will be made at the contract unit price for Item No. 169, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing city litter trash bin, complete in place, as shown on the plan, including required attachments, and all incidentals, as directed by the Engineer.
170. **Payment for “Furnish and Install Pop Planter Large Low (PP-1)”** will be made at the contract unit price for Item No. 170, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing pop planter, complete in place, as shown on the plan, including required attachments, disposing, dump fees, and all incidentals, as directed by the Engineer.
171. **Payment for “Furnish and Install April Go Planter (PP-3)”** will be made at the contract unit price for Item No. 171, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing April go planter, complete in place, as shown on the plan, including required attachments, disposing, dump fees, and all incidentals, as directed by the Engineer.
172. **Payment for “Furnish and Install April Go Planter (PP-4)”** will be made at the contract unit price for Item No. 172, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing April go planter, complete in place, as shown on the plan, including required attachments, disposing, dump fees, and all incidentals, as directed by the Engineer.
173. **Payment for “Furnish and Install Code Planter (PP-5A)”** will be made at the contract unit price for Item No. 173, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Code planter, complete in place, as shown on the plan, including required attachments, disposing, dump fees, and all incidentals, as directed by the Engineer.
174. **Payment for “Furnish and Install Code Planter (PP-5B)”** will be made at the contract unit price for Item No. 174, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Code planter, complete in place, as shown on the plan, including required attachments, disposing, dump fees, and all incidentals, as directed by the Engineer.
175. **Payment for “Furnish and Install Merida Round Planter (PP-6)”** will be made at the contract unit price for Item No. 175, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in furnishing and installing Merida round planter, complete in place, as shown on the plan, including required attachments, disposing, dump fees, and all incidentals, as directed by the Engineer.
176. **Payment for “Construct P.I.P Concrete Seat Wall (20-inch wide by 18-inch height)”** will be made at the contract unit price for Item No. 176, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in constructing Portland cement concrete seat wall, including specified finish, footings using Class 560-C-3250 Portland cement concrete (high-early strength concrete forming, steel reinforcing bars, removing, hauling away excess material, backfilling, dump fees, and all incidentals, as directed by the Engineer. hauling away access materials, and all incidentals, as directed by the Engineer.
177. **Payment for “Construct P.I.P Concrete Seat Wall with Wood Furnishing (23-inch wide by 14-inch height)”** will be made at the contract unit price for Item No. 177, per Linear Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in constructing Portland cement concrete seat wall, including specified finish, footings using Class 560-C-3250 Portland cement concrete (high-early strength), concrete forming, steel reinforcing bars, removing, hauling away excess material, backfilling, dump fees, and all incidentals, as directed by the Engineer.
178. **Payment for “Construct Concrete Counter with Steel Frame and Aluminum Panels”** will be made at the contract unit price for Item No. 178, per Linear Foot, which shall include all costs for furnishing all labor,

materials, tools, and equipment, and for doing all the work involved in constructing HSS framing with concrete countertops and metal panels (perforated and solid), as shown on the plan, including concrete counter top with specified finish, footings using Class 560-C-3250 Portland cement concrete (high-early strength), concrete forming, steel reinforcing bars, removing, hauling away excess material, backfilling, dump fees, and all incidentals, as directed by the Engineer.

179. **Payment for “Furnish and Install Stripes Benches (SF-1)”** will be made at the contract unit price for Item No. 179, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in installing Stripes benches, including required attachments, complete in place, as shown on the plans, and all incidentals, as directed by the Engineer.
180. **Payment for “Construct Painted Graphic (P-2) over Concrete Pavement”** will be made at the contract unit price for Item No. 180, per Square Foot, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in constructing painted graphic, complete in place, as shown on the plans, including field surveying, sealing, excluding concrete pavement and all incidentals, as directed by the Engineer.
181. **Payment for “Remove and Salvage Existing Tables, Chairs, Umbrellas and Relocate to New Locations”** will be made at the contract unit price for Item No. 181, per Each, which shall include all costs for furnishing all labor, materials, tools, and equipment, and for doing all the work involved in removing existing tables, chairs, umbrellas and relocating to new locations, including disposing of unwanted items, dump fees, and all incidentals, as directed by the Engineer.
182. **Payment for “South Block Art Sculpture Foundation”** will be time and material allowance for Item No. 182, which shall include all costs for furnishing labor, materials, tools, and equipment, and for doing all work involved in coordinating installation of the art sculpture per Appendix H, including installation of foundation, sculpture attachments, utility infrastructure connections, and related activities, complete, to support the sculpture installation, as directed by Engineer, the contracted Artist and sculpture fabricator, excluding fabrication, delivery, and installation of art piece (which is to be done by artist).
183. **Payment for “North Block Art Sculpture Foundation”** will be time and material allowance for Item No. 183, which shall include all costs for furnishing labor, materials, tools, and equipment, and for doing all work involved in coordinating installation of the art sculpture per Appendix H, including installation of foundation, sculpture attachments, utility infrastructure connections, and related activities, complete, to support the sculpture installation, as directed by Engineer, the contracted Artist and sculpture fabricator, excluding fabrication, delivery, and installation of art piece (which is to be done by artist).
184. **Payment for “Broadway Intersection Art Sculpture Foundation”** will be time and material allowance for Item No. 184, which shall include all costs for furnishing labor, materials, tools, and equipment, and for doing all work involved in coordinating installation of the art sculpture per Appendix H, including installation of foundation, sculpture attachments, utility infrastructure connections, and related activities, complete, to support the sculpture installation, as directed by Engineer, the contracted Artist and sculpture fabricator, excluding fabrication, delivery, and installation of art piece (which is to be done by artist).

Payment for “Permit Fees” will be payment allowance for item 185, which shall include all fees paid to apply necessary permits for the project from the City of Glendale Building and Safety Department. The contractor will be reimbursed for the actual amounts paid for the permit. No markup, overhead or surcharge will be applicable for this payment item.

APPENDIX A – PUBLIC NOTIFICATION

Contents:

- Contractor's Letter
- 2-Weeks Door Hanger for P.C.C./A.C. Improvements (Removals and Replacements)
- 3-Day Door Hanger for P.C.C./A.C. Improvements (Removals and Replacements)
- Project Signs
- Businesses Open During Construction Sign
- Temporary No Parking Sign and Posting Instruction

Insert CONTRACTOR'S NAME/Letterhead/Address	
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NOTICE OF CONSTRUCTION ACTIVITY

Notification Date: _____

**Glendale Arts and Entertainment District Improvements on Artsakh Avenue
Specification No. 3893R**

Dear Resident and/or Property/Business Owner:

The City of Glendale's Public Works Department has retained our company to make certain street and sidewalk improvements, traffic route changes and utility upgrades in your neighborhood on Artsakh Avenue between E. Harvard Street and E. Wilson Avenue (see a map on the opposite side).

The duration of the entire project is approximately 180 working days. The duration of the work adjacent to your property may take approximately ____ working days. The construction work is scheduled to begin in _____ and is expected to be completed by _____, barring unforeseen circumstances or adverse weather conditions.

The project will involve the following work:

- Selective removal and reconstruction of concrete curbs, gutters, sidewalks, curb ramps and driveway aprons
- New traffic stripping and signage
- Surface grinding and placement of the asphalt rubber hot mix pavement over the recycled asphalt pavement base
- Improvements of traffic signals and flashing beacons at the intersections and cross walks
- Adjustment of utility covers to finished pavement grade as required
- Installing street furnishings, special paving areas in selective places and planting/irrigation installation.
- Lighting improvements integrated into project
- Art and wayfinding signage

Our company is committed to working with you to help alleviate the impact of the construction on your daily activities. Every effort will be made to minimize any inconveniences to you. If you need to drive through the construction zone, please allow additional commuting time.

We are responsible for sequencing and scheduling the work. We will post door hangers prior to the start of construction. We will also post "NO PARKING" signs in the work zone 30-hours in advance of working on your street.

Thank you for your assistance while we work to improve the City of Glendale.

If you have any questions or concerns please call.

CONTRACTOR'S COMPANY NAME

OFFICE: (XXX) XXX-XXXX

CONTRACTOR'S PROJECT SUPERINTENDANT
CONTRACTOR'S PROJECT MANAGER:

CELL: (XXX) XXX-XXXX
CELL: (XXX) XXX-XXXX

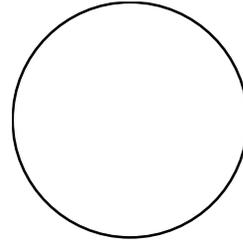
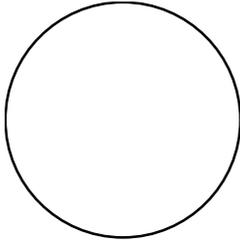


CITY OF GLENDALE PUBLIC WORKS DEPARTMENT

For Information please call:
Եթե հարցեր ունեք, խնդրում ենք զանգահարել:
Si tiene alguna pregunta por favor llame:

(818) 548-3945 Yvonne Guerra
(818) 548-3945 Extension 8331
(818) 548-3945 Extension 8288





NOTICE OF CONSTRUCTION ACTIVITY

IMPROVEMENT ON ARTSAKH AVENUE PROJECT



**City of Glendale
Public Works
Project Hotline
(818) 548-3945**

The City of Glendale’s Public Works Department has retained our company to make certain street improvements and pavement repair

While work is being completed, please remember:

- Access may be restricted between 7:00 AM to 5:00 PM. Street parking may not be allowed and signs will be posted accordingly at least 30 hours in advance of no parking enforcement.
- When access is restricted, detours will be set up to help you reach your destination. Parking will be available within a reasonable distance from your house/business.
- Traffic may be subject to delay.
- If driveway closure becomes necessary, you will be notified in advance. The closure time will be kept to minimum.
- If work occurs on trash collection day on your street, trash will be picked-up as normal.
- Please refrain from using irrigation/sprinklers on the day of the work
- Please restrict drainage into your sewer service line during sewer improvement.

It is anticipated that the entire work will be completed within _____ day(s) and hope that it does not cause undue hardships.

IMPROVEMENT ON ARTSAKH AVENUE PROJECT

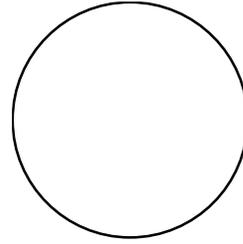
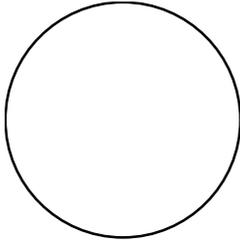
<p>DATE(S): _____</p> <p>TIME: 7:00AM to 5:00PM</p>

PRIME CONTRACTOR

*Contractor’s Name
Address
City, State, Zip Code
(XXX) XXX - XXXX*

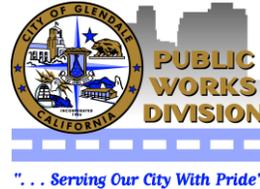
Glendale’s Public Works Department is committed to working with you to help you through the construction period. Every effort will be made to minimize any inconvenience to you. Your cooperation with construction crews and patience with any brief traffic or access delays will be appreciated.

If you have any questions or concerns please call **XXXXXX**, Project Manager, of the Engineering Division at: (818) 548-3945 ext. XXXX.



NOTICE OF CONSTRUCTION ACTIVITY

IMPROVEMENT ON ARTSAKH AVENUE PROJECT



**City of Glendale
Public Works
Project Hotline
(818) 548-3945**

The City of Glendale’s Public Works Department has retained our company to make certain street improvements and pavement repair

While work is being completed, please remember:

- Access may be restricted between 7:00 AM to 5:00 PM. Street parking may not be allowed and signs will be posted accordingly at least 30 hours in advance of no parking enforcement.
- When access is restricted, detours will be set up to help you reach your destination. Parking will be available within a reasonable distance from your house/business.
- Traffic may be subject to delay.
- If driveway closure becomes necessary, you will be notified in advance. The closure time will be kept to minimum.
- If work occurs on trash collection day on your street, trash will be picked-up as normal.
- Please refrain from using irrigation/sprinklers on the day of the work
- Please restrict drainage into your sewer service line during sewer improvement.

It is anticipated that the entire work will be completed within _____ day(s) and hope that it does not cause undue hardships.

IMPROVEMENT ON ARTSAKH AVENUE PROJECT

<p>DATE(S): _____</p> <p>TIME: 7:00AM to 5:00PM</p>

PRIME CONTRACTOR
Contractor’s Name
Address
City, State, Zip Code
(XXX) XXX - XXXX

Glendale’s Public Works Department is committed to working with you to help you through the construction period. Every effort will be made to minimize any inconvenience to you. Your cooperation with construction crews and patience with any brief traffic or access delays will be appreciated.

If you have any questions or concerns please call **XXXXXX**, Project Manager, of the Engineering Division at: (818) 548-3945 ext. XXXX.

CITY OF GLENDALE
INSTALLATION OF “TEMPORARY NO PARKING” SIGN GUIDELINES

1. Use of “Temporary No Parking” signs must be approved by the City of Glendale – Engineering Division, 633 E. Broadway, Room 205. Signs shall not be duplicated or reproduced except with the authorization of the City of Glendale Public Works Division. If duplicated, the signs should have its original color, size (11in x 17in), and paper thickness (90lbs index cover or 110lbs card stock).
2. It is the responsibility of the applicant to clearly mark all “Temporary No Parking” signs in **Black or Blue Ink or marker** (1/4” min. thickness) with all information regarding applicable dates, times, exact physical address or block number where parking will be prohibited, the “Reason” for the posting, the “Issuing Agency” information as well as the posting date and time on each sign at the time of posting.
3. Spacing for the “Temporary No Parking” signs shall be approximately thirty five (35) feet apart. In areas with parking meters, each applicable meter post shall have a separate sign. These signs shall be attached to the parking meter pole only. Posting signs on the meter heads is not permitted.
4. The “Temporary No Parking” signs shall be affixed to posts, street light poles, trees, delineators, or barricades. **These signs shall be posted no less than three (3) feet high and no more than five and a half (5.5) feet high**, which allows the driver of a standard size automobile to clearly observe the signs. Only plastic band, string, rope, zip ties, or other similar type of fastener shall be used. The use of nails, tape, glue, staples and other adhesives is prohibited. The “Temporary No Parking” signs must be posted so that the sign is flat and legible.
5. In areas where there are no poles, light standards or trees, “Temporary No Parking” signs shall be displayed by securing the signs on barricades or delineators to be provided by the Applicant/Contractor installing the signs. Signs must be placed within 3’ behind the curb or roadway.
6. All posting of “Temporary No Parking” signs shall be completed 30 hours prior to the start time indicated on the “Temporary No Parking” signs. **Upon completion of the posting of the signs, the Applicant/Contractor MUST notify the Glendale Police Traffic Bureau at (818) 548-3131 in order to verify the correct posting of the signs. Police verification shall occur Monday through Friday from 8:00 am to 3:00 pm.** No Police verification is available on Saturdays, Sundays, or City holidays.
7. Police enforcement of the “Temporary No Parking” signs shall occur no sooner than 24 hours after the approval of the posted signs by the Glendale Police Traffic Bureau.
8. “Temporary No Parking” signs shall only be valid for a period of seven (7) consecutive days. Additional days will require the posting of new signs, verification, and approval by the Glendale Police Traffic Bureau.
9. Any “Temporary No Parking” sign used for construction purposes shall only be posted for the hours from Monday-Friday 7:00 am to 7:00 pm as defined in Section 8.36.080 Glendale Municipal Code. Any deviation in work hours must be approved in writing by the Director of Public Works prior to posting.
10. The Applicant/Contractor shall be responsible for assuring that the signs remain posted and are legible. In addition, it is the Applicant/Contractor’s responsibility to remove all signs and posting materials immediately after the expiration of the posted time.
11. “Temporary No Parking” signs may not be moved from their original location, nor be re-used by eliminating, adding to, or altering any of the dates, times, reasons, or other information originally entered on the signs. **If corrections need to be made to signs, new signs need to be used to rewrite all required information; do not re-use previous signs.** Any changes made to these signs will void all enforcement for the area posted.
12. The City of Glendale reserves the right to require removal or to remove any posted “Temporary No Parking” signs without notice.
13. A completed sample of a “Temporary No Parking” sign is attached for guidance.

PROHIBITION ONLY DURING WORKING HOURS

**TOW-AWAY
TEMPORARY**

NO PARKING

DATE(S) TIME(S)

1/1/15 to 1/5/15 7AM-5PM

LOCATION:

REASON:

ISSUING AGENCY: DPW - Eng

DATE POSTED: TIME:

BY ORDER OF GLENDALE POLICE DEPARTMENT
CITY OF GLENDALE 10.28.180 GMC/22651 M CVC

PROHIBITION INCLUDING OVERNIGHT

**TOW-AWAY
TEMPORARY**

NO PARKING

DATE(S) TIME(S)

1/1/15 TO 1/5/15 5PM

LOCATION:

REASON:

ISSUING AGENCY: DPW - Eng

DATE POSTED: TIME:

BY ORDER OF GLENDALE POLICE DEPARTMENT
CITY OF GLENDALE 10.28.180 GMC/22651 M CVC

TOW-AWAY

TEMPORARY

NO PARKING

DATE(S)

TIME(S)

LOCATION: _____

REASON: _____

ISSUING AGENCY: _____

DATE POSTED: _____ **TIME:** _____

BY ORDER OF GLENDALE POLICE DEPARTMENT
CITY OF GLENDALE 10.28.180 GMC/22651 M CVC



Under Construction!

Another City Council Approved Public Works Project

Project Name

XX.
XX.
XX.

Start Date: XXXXXX 2018

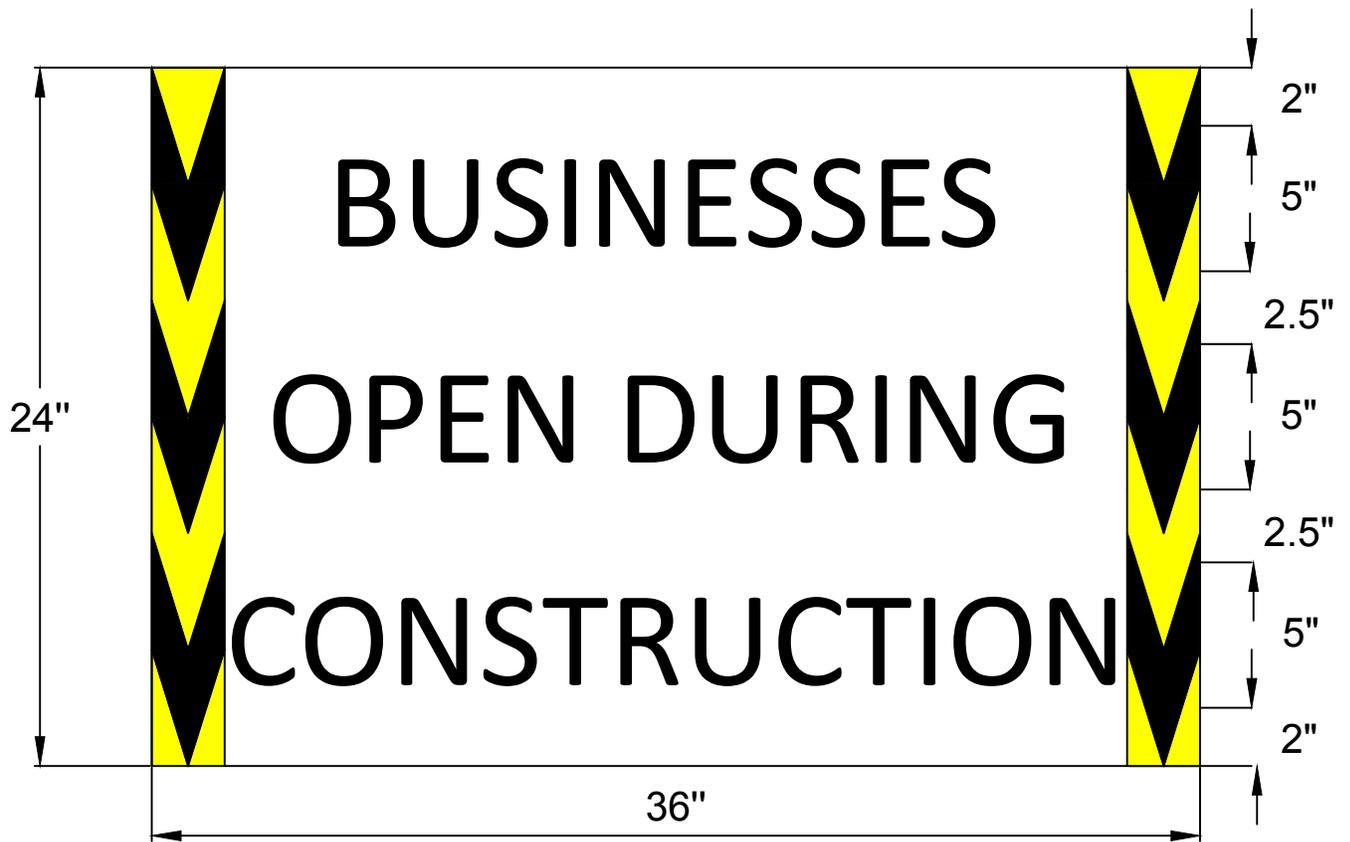
Expected Completion Date: XXXXXX 2018

We apologize for any inconvenience and appreciate your patience.

Questions? Please call: (818)548-3945

Contractor:

Contractor Phone#:



2'(24") X 3'(36") Project Sign - Black Letters on White Background

APPENDIX B
CITY OF GLENDALE
EXCAVATION PERMIT POLICY

**City of Glendale
Public Works Department**

EXCAVATION PERMIT POLICY

A. Introduction

City of Glendale, Public Works Engineering Section is responsible for the issuance of all permits for any work in the public right of way.

The applicant must comply with all provisions of Chapter 12.08.040 of the Glendale Municipal Code and amendments thereto and Standard Specification for Public Works Construction, current edition, whether or not such provisions are herein specified. No other work shall be done under this permit unless specifically set forth herein.

Permits to excavate in the public right of way aid in controlling the location and quality of all types of installations. In addition, permits aid to protecting the general public from potential safety hazards as well preserving the life of City streets.

Typical installations include, but are not limited to:

1. public utilities, telecommunications, cable and their service connections
2. sewer systems
3. storm drain systems
4. fiber optic conduit
5. traffic and lighting systems
6. landscaping and irrigation
7. exploratory excavations, made to locate existing installations or verify certain conditions.

For the purposes of this Policy, "Permittee" refers to any individual or entity performing an excavation, utility cut and/or trench resurfacing project, including private contractors, City-hired contractors and City personnel.

B. Purpose and Objective

The objective of this Policy is to:

1. Promote the safety of the Permittee and the general public;
2. Inform the Permittee of City's policies, procedures and requirements regarding excavations;
3. Protection of existing underground facilities;
4. Protect public rights-of-way from undue and accelerated degradation caused by excavations;
5. Notify the Permittee of the City's time, place and manner regulations on access to the right-of-way.

C. Types of Permits

Excavation permits are classified as follows:

1. **A-Permits** are for the repair or replacement of existing installations or exploratory excavations. Under this permit, no new (additional) facility will occupy the right-of-way. Only replacements of existing facilities in the same location are permitted.
2. **B-Permits** are for "minor" installations such as service connections from the various utilities to public or private property. Spot excavations such as tree planting, single street light installations and other items that pose little or no interference with existing or proposed installations are also

- permitted.
3. **C-Permits** are for major installations such as main line utility installations or replacements; sewers, storm drain, street lighting or traffic signal systems; and, other installations involving more than service to a single property.
 4. **Blanket Permits** apply to (1) isolated excavations three feet by five feet or less for repairing underground facilities and exploratory potholes; (2) replacement of existing service facilities; (3) repairing or replacement of existing vaults; and (4) adjusting vault covers to a new grade. For specific information regarding Blanket Permits, please refer to the document entitled "Blanket Excavation Permit."

D. Permit Processing Time

The City's goal is to issue excavation permits in the shortest time possible, without compromising the public safety, City's interests and integrity of existing facilities. Permittees can help facilitate this goal by following the procedures outlined in this Policy. Upon approval of insurance certificates, liability limits, and endorsements by the City Attorney's Office or Risk Manager and noting that special circumstances may delay meeting this time objective, permits are **estimated** to be issued within the following time periods.

A-Permits	One to two days with approved insurance certificates.
B-Permits	Four working days with approved insurance certificates.
C-Permits	Seven to fourteen working days with approved insurance certificates.

E. Procedure for Processing Permits

Applicants are required to submit 2 sets of detailed drawings of the exact location of the excavation and complete an excavation permit application in the Permit Service Center (MSB, Room 101).

Applicants are required to pay a non-refundable fee to cover the cost of processing and inspection for their Excavation A & B type permits. Excavation C type Permits require a non-refundable fee plus computed charges for services provided by city personnel, including inspection. Additionally, a refundable cash deposit, or a maintenance bond or performance bond, as deemed necessary and appropriate by the City Attorney's Office or Risk manager is necessary, to secure the obligations under the excavation permit. Copies of Excavation Permit Fees are available at the Public Works Engineering counter.

Applicant must submit a Certificate of General Liability Insurance with wet signatures to Public Works Engineering (MSB, Room 204), as per City of Glendale guidelines. Insurance Certificates and Endorsements are approved by the City Attorney's Office or Risk Manager before the issuance of the excavation permit.

The applicant must have a current State Contract License and City Business License on file with Building and Safety when the permit is issued.

The applicant must notify Underground Service Alert of Southern California (USA-SC), 48 hours in advance and have the ticket number available when the permit is issued.

When the application is ready for processing, it will be forwarded to Public Works Engineering to review for potential conflicts with existing or proposed sewers, storm drains or special substructures which are not field-marked by USA-SC. If warranted, other City divisions, such as Public Service, Water and Electric, Traffic and Transportation, may review the permit, plans, and/or sketches. Engineering personnel will compile all comments received from reviewing divisions and Public Works Sections.

Permittees who are granted C-Permits will be **required** to post appropriate signage notifying the public of the

impending construction. Contractors/Utilities shall install two 4' x 5' billboard signs; one at the beginning and the other at the end of each project location at least two weeks prior to the start of construction. Each billboard shall contain the project name and description, the approximate dates when construction will be in progress, the name and phone number of the owner of the project and other wording that may be required by the office of the City Engineer. A copy of a billboard sample is available at the Engineering public counter. The billboards shall comply with all applicable laws and be approved by the office of the City Engineer as to form, contents, letter sizing and overall dimensions prior to installation in the field.

In addition, the Permittee will be **required** to mail a letter of notification to all affected residents and businesses in the area surrounding the project, in advance of the start of construction, informing them about the project, its duration, and any potential and foreseeable inconveniences, detours and interruptions that may be encountered as a result of the project. All letters must be pre-approved by the Director of Public Works prior to mailing.

Permittees may contact Public Works Engineering Department for excavation permit application status.

F. Permit Term

The Excavation Permit shall be effective for sixty days from the date of issuance. Prior to the expiration date, the Permittee may apply to the City Engineer for a single thirty day permit extension. A non-refundable processing fee will apply.

G. Protection of Underground Facilities

An excavation shall not be performed until the requirements of City of Glendale Ordinance No. 4841 for pre-marking of facilities, in accordance with Article 2 (Government Code Chapter 3.1, Division 5) are met. Emergency excavations are exempt from this requirement.

An excavation shall not be performed until Permittee receives a "ticket number" from USA-SC. USA-SC requires notification a minimum of 48 hours prior to the beginning of excavation to verify the location of pipelines containing hazardous substances.

In addition, the Permittee is responsible for thoroughly researching the records to determine if other non-hazardous substance lines are present in the area in which the Permittee intends to excavate. The Permittee must notify the owners of such lines 48 hours prior to excavating, in order to allow utility owners to identify and determine the alignment of their lines. Immediately prior to excavating, the Permittee shall arrange with the utility owners to locate or expose their facilities.

When placing markings on the pavement or other right-of-way areas to indicate the location of underground facilities, contractors and/or utility companies are required to use a temporary water-based marking chalk ("Aervoe" brand or approved equal) with a visibility life not to exceed three (3) weeks). It will be the Permittee's responsibility to ensure the complete removal of all pavement markings remaining upon completion of the permitted work. If the Permittee fails to properly and completely remove all pavement markings, the City will effect the removal and deduct from the special deposit for the cost of removal, as determined by the City Engineer.

H. Traffic Requirements

If no special traffic provisions are required, one 12-foot lane of traffic **must** be maintained in each direction. Permittee shall furnish and place all advance warning signs and other flag control devices required by the City Engineer. All advance warning signs shall be constructed and placed in conformance with the current requirements as specified in *The Work Area Traffic Control Handbook (WATCH Manual)*, published by the *American Public Works Association*.

Adequate advance warning barricades must be maintained and traffic must be routed safely around open excavations and obstructions. Excavations adjacent to, or across traveled lanes must be backfilled, compacted and temporarily or permanently paved before the end of each working day or protected pursuant to this Policy in accordance with approved City materials and standards.

The Permittee shall place and maintain barricades and warning lights at each end of the excavation until the excavation is entirely backfilled and surfaced.

Traffic shall not be detoured across double yellow lines, raised or painted medians, or left turn and two-way left turn lanes without prior approval of the City Engineer.

No traffic markings may be obliterated and/or removed without prior approval from the City Engineer. All markings that are eliminated must be replaced by the Permittee to the satisfaction of the City Engineer. If the Permittee fails to replace the traffic marking, it will be replaced by the City and deducted from the special deposit for both direct and indirect costs, as determined by the Engineer.

I. No Parking Signs

Permittee may post temporary "No Parking" signs.

All such "No Parking" signs must clearly identify the applicable dates and times of the temporary no parking, the reason for the posting, and the posting dates and times. Only signs approved by the Public Works Department may be used for such posting. Samples of such signs may be obtained through the Public Works Department, Traffic and Transportation Section located at 633 East Broadway, Room 300. Signs shall not be duplicated or reproduced except with the authorization of the Public Works Department.

"No Parking" signs shall be posted on posts, poles, street light standards, trees or barricades. Signs shall be spaced approximately fifty (50) feet apart. In areas with parking meters, each applicable meter post shall have a separate sign. Signs shall not be taped or glued to the meter head, street light standards, or poles. String, rope, bands or tape may be used.

"No Parking" signs shall not be nailed to any tree. A band, string, rope or other type of fastener shall be used to ensure that trees are not injured or damaged.

In areas where there are no poles, lighting standards or trees, "No Parking" signs shall be displayed by placing the signs on standard Type I barricades. Barricades are to be provided by Permittee.

All posting of "No Parking" signs shall be completed **30 hours** prior to the effective time of the prohibition. Upon completion of the posting, the Permittee shall notify the Police Department at (818)548-3130 or (818)548-4840. The Permittee shall also contact the Traffic and Transportation Section at (818) 548-3960.

The Permittee shall be responsible for assuring that the signs remain posted and legible. Removal of "No Parking" signs and posting materials shall be removed by the Permittee immediately after the expiration of the posted time. "No Parking" signs may **not** be reused by eliminating, adding to, or altering any of the dates, times, reasons or other information originally entered on the sign. The Public Works Department reserves the right to require the removal of any posting without notice.

Postings shall only be valid in areas where parking is allowed, unless special designations are clearly noted on a permit or other written permission to post.

For any construction in the traveled way which results in traffic flow restrictions, the Permittee must at all times provide access for emergency vehicles and residents. In the event Permittee is not able to provide access for emergency vehicles, Permittee shall notify the Fire Department at (818) 548-4822 and the Police Department at (818) 548-3131.

J. Installation of New or Relocated Underground Facilities

The following **minimum** depths of cover below existing, finished, or proposed gutter grade shall be required for all underground pipeline within the roadway:

1. 24 inches for service pipelines.
2. 30 inches for all other pipelines.

K. Excavation Site Safety

Unless backfilled, excavations shall be adequately and safely protected at all times with one or more of the following: steel plate, wooden planking or plywood, approved fencing, barricades or watch persons.

All work shall be in conformance with all applicable safety laws. For information regarding construction safety order, contact the local office of the State of California, Department of Industrial Relations, Division of Industrial Safety.

All bridging must be approved by the City Engineer. If steel plates are used, the minimum surface bearing width shall be 12" on each side of the excavation and the following minimum provisions shall apply for legal loads.

<u>Trench Width</u>	<u>Minimum Plate Thickness</u>
0" - 18"	3 / 4"
24"-36"	1"
48"	1-1/4"

For spans greater than 4 feet, a structural design shall be prepared by a California registered Civil Engineer.

Steel plate bridging shall be installed to operate with minimum noise. Temporary paving with cold asphalt concrete shall be used to feather the edges of the plates. Bridging shall be secured against displacement by using adjustable cleats, shims, or other devices. Surface of the steel plate shall be roughened, taped or coated to provide a non-skid surface for safety.

As required by the City Engineer, steel plate bridging shall be installed using either Method 1 or 2.

1. Method 1 - For Arterial and Collector Streets:

For steel plate bridging exceeding 4 consecutive working days, or speeds 35 mph or greater, the pavement shall be cold planed to a depth equal to the thickness of the plate, and to a width and length equal to the dimensions of the plate.

2. Method 2 - For all other streets and alleys:

Steel plates shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plate and drilled a minimum of 2" into the pavement. Each subsequent plate is doweled, butted and tacked to prevent displacement. When the steel plate(s) are removed, the dowel holes shall be backfilled with asphalt concrete mix, concrete slurry or equivalent slurry approved by the

City Engineer.

All costs for inspection shall be borne by the Permittee.

Modification of the above requirements and/or additional requirements may be made in the field, with approval from the City Engineer or his/her designee.

L. Trench / Excavation Resurfacing

Upon issuance of an excavation permit, all work shall be done in accordance with Glendale Standard Plan No. 25-153, Glendale Municipal Code, Chapter 12.08, and Glendale Excavation Permit requirements, where applicable. The General notes to Standard Plan 25-153, are as follows:

All work shall be done in accordance with the *Standard Specifications for Public Works Construction* (latest Edition), including supplements and City of Glendale Additions and Amendments.

All pavement removals shall be made to clean straight lines saw cut to a minimum of 1.5 inches deep. If normal cut line is less than three feet from previous cut lines, or less than three feet from concrete expansion joints and edges, the existing pavement shall be removed to said cut lines, joints and edges or as directed by the City Engineer or his/her designee. Pavement saw cuts shall not extend beyond the boundaries for that section of pavement to be removed.

Over-cutting of pavement removals will not be accepted.

During trenching, excavation and sub-grade preparation, the Permittee shall take all necessary steps to insure the protection of all improvements, whether public or private, including utilities and their service connections, from any damage that could occur due to its operation.

Backfill and densification shall be done in conformance with Section 30-6-1.3 of the *Standard Specifications*, except as follows:

Excavation backfill shall be compacted to a minimum of 90 percent relative compaction.

All City arterial and collector streets require one sack sand slurry backfill.

When pavement is to be placed directly on sub-grade material, the top 6 inches of sub-grade material shall be compacted to a relative compaction of 95 percent.

Temporary resurfacing shall be placed at the Permittee's expense, unless otherwise specified by the City Engineer. It shall be placed level with the existing pavement on compacted excavation backfill and shall be a minimum of 2 inches thick maintained free of depressions.

Permanent resurfacing shall be done at Permittee's expense and no longer than **one week** after backfilling of excavations has been completed. **For asphalt concrete (AC) pavement, a 12-inch wide strip of pavement shall be saw cut, cold-planed or a combination of both, on all sides of the excavation, in accordance with the City of Glendale Excavation Permit.** All cuts shall be clean and straight. The contact surfaces of existing pavement, manhole frames and shafts and concrete surfaces shall be given a tack coat before permanent asphalt excavation resurfacing is placed. All work shall be guaranteed from failure for one year after completion of project. In the case of excavation resurfacing by utility companies, the work shall be guaranteed for the life of the street.

Case I and II permanent resurfacing shall consist of an AC surface course of Type C2-PG 64-10 or Type D2-PG 64-10, as determined by the City Engineer, 1-½ inch thick placed on an asphalt concrete base course of Type B-PG 64-10. Where the original asphalt pavement thickness is six inches or less, the replacement thickness shall be a minimum of one inch greater than the original thickness, up to a maximum of six inches. If the thickness of the original asphalt is six inches or more, then the replacement thickness shall be to the same thickness as the original asphalt, or as directed by the City Engineer.

After the final paving, all joint edges shall be sealed with tack coat to the satisfaction of the City Engineer.

In the event the Permittee fails to comply with any of the above-stated requirements, the Permittee will have (10) working days from the date of notification to bring the project into full compliance with the stated policy requirements. In the event that the Permittee fails to comply with said requirements, the Public Works Department may complete, or cause the work to be completed, in order to bring the project into compliance. Compensation of costs for the work administered by the Public Works Department will then be billed to the Permittee, as determined by the Director of Public Works. If the Permittee fails to contest or pay for the amount billed, then City will reserves the right to deduct said costs from the special deposit.

Trenches/Excavation final capping, five (5') feet wide, or wider, shall be machine paved.

Final paving less than five feet wide shall require a spreader box method to ensure a smooth grade. Paving will be in accordance with the Public Works Department requirements at the time of the excavation repair.

M. Moratorium Streets

1. Three Year Moratorium on Resurfaced Public Rights-of-Way

Excavations will be prohibited for a minimum of three years (3) after any public street, alley, sidewalk or other public place that has been newly constructed, re-constructed, re-surfaced or replaced in part or whole. The moratorium will be in effect beginning from the completion of such construction and remain in effect a minimum of three years (3) from said completion.

2. One Year Moratorium on Slurried Public Rights-of –Way

Excavations will be prohibited for a minimum of one year (1) after any public street, alley or other public place that has been newly slurried. The moratorium will be in effect beginning from the completion of such construction and remain in effect a minimum of one year (1) from said completion.

N. Permanent Utility Location Markings

In the event that a utility, municipal or private corporation, or any other agency or contractor desires to install a permanent location indicator for any of their equipment, appurtenances and/or substructures, the location, type of marking device, and method of installation shall be approved by the Director of Public Works prior to any installation. In no case shall the utility or contractor identify the location by painting the street, curb, gutter or sidewalk, or chiseling, chipping or grading the street, curb, gutter or sidewalk.

In the event that any firm or agency fails to abide by the conditions of this section, the illegal marking must be removed by that firm or agency within five days of notification from the Director of Public Works. Failure to remove the illegal marking within the required time will result in the City removing or causing the removal of the markings. The costs will then be billed to the offending firm or agency.

APPENDIX C

STANDARD DRAWINGS

(Refer to Greenbook 2021)

APPENDIX E

BUILDING AND SAFETY REQUIREMENTS

It is the contractors' responsibility to obtain required permits for the project from City of Glendale Building and Safety. All permit fees will be reimbursed with no mark-up.



CITY OF GLENDALE - BUILDING AND SAFETY
 633 E. Broadway, Room 101 Glendale, CA 91206 - (818) 548-3200, 548-4830 (Inspection)

BUILDING PERMIT WORKSHEET

Separate applications are required for Electrical, Plumbing, Heating/Air Conditioning, Fire Sprinklers, B R C, and Signs
 Please complete the section below clearly, legibly and in ink

Application No. B (B) 2120622

PROJECT ADDRESS, CITY AND ZIP _____ UNIT (SUITE) NO. _____

BLDG TYPE DWELLING / DUPLEX COMMERCIAL SCOPE OF CONSTRUCTION ADDITION NEW NO PLAN REQUIRED
 APARTMENT / CONDO MIXED USE ALTERATION / REPAIR DEMOLITION NEW C OF O

DESCRIPTION OF CONSTRUCTION ACTIVITY _____

Cost of Construction: (Includes all materials and labor costs. This may be revised by the Building Official.) \$ _____ Revised Valuation: \$ _____ CHECK THIS BOX IF WORK HAS ALREADY STARTED. Double the permit fee will be charged for legalization.

Check one for the primary contact

APPLICANT'S NAME: Sarkis Oganesyany MAILING ADDRESS: 633 E. Broadway, Room 205 PHONE NO.: 818-937-8242
 E-MAIL ADDRESS: soganesyan@glendaleca.gov

PROPERTY OWNER'S NAME: MAILING ADDRESS: 633 E. Broadway, Room 205 PHONE NO.: 818-937-8242
 E-MAIL ADDRESS: soganesyan@glendaleca.gov

LICENSED DESIGN PROFESSIONAL (ARCHITECT OR ENGINEER IN CHARGE OF THE PROJECT) INFORMATION:
 NAME: _____ PHONE NO.: _____ LICENSE NO.: _____
 MAILING ADDRESS: _____ PHONE NO.: _____ LICENSE NO.: _____
 E-MAIL ADDRESS: _____

CALIFORNIA LICENSED CONTRACTOR'S DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

CONTRACTOR'S NAME _____ MAILING ADDRESS _____ PHONE NO. _____
 E-MAIL ADDRESS _____
 LICENSE CLASS AND NUMBER _____ CONTRACTOR SIGNATURE _____

STAFF USE ONLY BELOW THIS LINE

APN NO.	LOT	TRACT NO.	HIGH FIRE / HAZARD ZONE <input type="checkbox"/> YES <input type="checkbox"/> NO	ZONE USE	NAICS / STRUCTURE USE 1-5	P.C. FEE <input checked="" type="radio"/> Y <input type="radio"/> N
STRUCT. OCC. 1-5	OCC. FLOOR AREA 1-5	OCC. LOAD 1-5	STORIES	BASEMENT	MEZZ	ACCESSIBILITY <input checked="" type="radio"/> Y <input type="radio"/> N
GUSD FLOOR AREA	COMM'L	RESIDENTIAL	BLDG. FLOOR AREA	ABOVE GRADE	BELOW GRADE	ENERGY <input checked="" type="radio"/> Y <input type="radio"/> N
FIRE SPRKLR	EDITION OF THE CODE	STANDARD PARKING	ACTUAL	REQUIRED	DWELLING UNITS	CAL-GREEN <input checked="" type="radio"/> Y <input type="radio"/> N
					BEDROOMS	FIRE <input checked="" type="radio"/> Y <input type="radio"/> N
						SOIL REPORT <input checked="" type="radio"/> Y <input type="radio"/> N
						STRONG MOTION <input checked="" type="radio"/> Y <input type="radio"/> N
						S.F.C. <input checked="" type="radio"/> Y <input type="radio"/> N
						PARKS MIT. <input checked="" type="radio"/> Y <input type="radio"/> N
						LIBRARY MIT. <input checked="" type="radio"/> Y <input type="radio"/> N
						GUSD <input checked="" type="radio"/> Y <input type="radio"/> N
						URBAN ART <input checked="" type="radio"/> Y <input type="radio"/> N
						CONSTR. DEBRIS <input checked="" type="radio"/> Y <input type="radio"/> N
						ARCHIVE FEE (PAGES) <input checked="" type="radio"/> Y <input type="radio"/> N
						SUPP. P.C. FEE <input checked="" type="radio"/> Y <input type="radio"/> N
						DOUBLE FEE <input checked="" type="radio"/> Y <input type="radio"/> N
						PERMIT FEE <input checked="" type="radio"/> Y <input type="radio"/> N

STAFF COMMENTS, (INITIALS)
 Approved for items 1~3 above.

OK TO SUBMIT/EXPRESS BY: _____ SIGNATURE _____ DATE _____ ACCEPTED BY: _____ DATE _____ RECEIPT NO. _____

Check only if applicable

<input type="checkbox"/> ENGINEERING	SIGNATURE _____ DATE _____	Plan Check Expiration Date:
<input checked="" type="checkbox"/> ZONING	SIGNATURE _____ DATE _____	
<input type="checkbox"/> FIRE	SIGNATURE _____ DATE _____	
<input checked="" type="checkbox"/> DESIGN REVIEW	SIGNATURE _____ DATE _____	
<input type="checkbox"/> FOG	SIGNATURE _____ DATE _____	

BLDG. PLAN CHECK: Sarkis Hairapetian (Signature) Sarkis Hairapetian (Signature) 12-27-2021 (Date)

OK TO ISSUE PERMIT BY: Sarkis Hairapetian (Signature) Sarkis Hairapetian (Signature) 12-27-2021 (Date)

ACCEPTED BY: _____ DATE _____ RECEIPT NO. _____

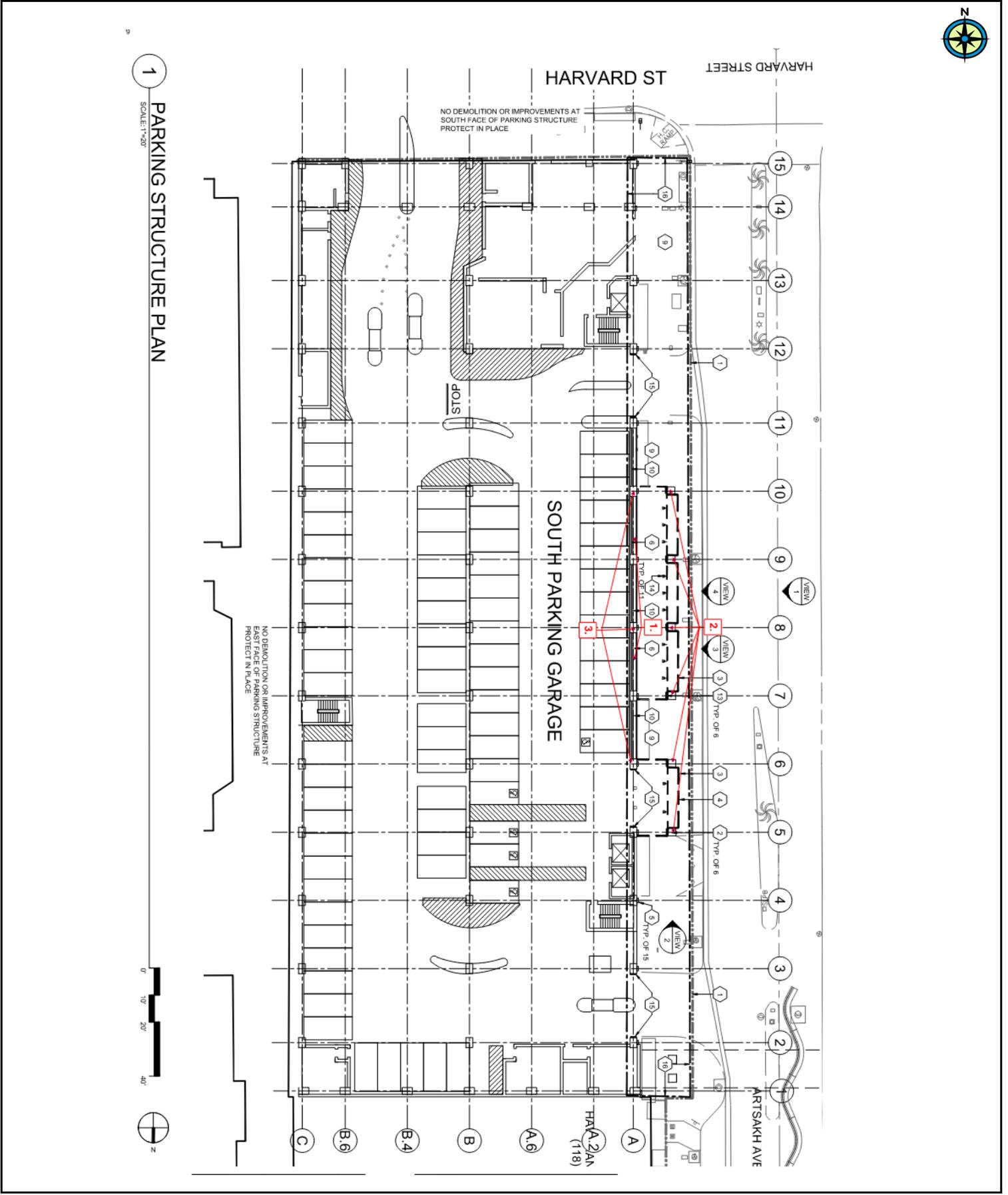
THE CITY OF GLENDALE RESTRICTS ISSUANCE OF THE BUILDING PERMIT TO THE PROPERTY OWNER OR LICENSED GENERAL CONTRACTOR ONLY. SIGNATURES OF THIS INDIVIDUAL MUST BE VERIFIED BY PERSONAL IDENTIFICATION. ANY PERSON SIGNING THE PERMIT APPLICATION AS AGENT FOR THE OWNER OR CONTRACTOR SHALL HAVE AN ORIGINAL LETTER OF AUTHORIZATION AT THE TIME OF PERMIT ISSUANCE. APPLICATIONS SHALL EXPIRE ONE YEAR AFTER THE DATE OF SUBMITTAL AND THEREAFTER, ANY DOCUMENTS SUBMITTED TO THE DEPARTMENT SHALL BE RETURNED TO THE APPLICANT OR DESTROYED BY THE BUILDING OFFICIAL AND THE PLAN CHECK FEE FORFEITED TO THE CITY OF GLENDALE. UPON WRITTEN REQUEST FROM THE APPLICANT, THE BUILDING OFFICIAL MAY EXTEND THE PERIOD OF PERMIT APPLICATION IF RECEIVED PRIOR TO EXPIRATION DATE.

R.T.I., Subject to Planning approval.

ADDRESS: _____

PERMIT NO. **BB 2120622**

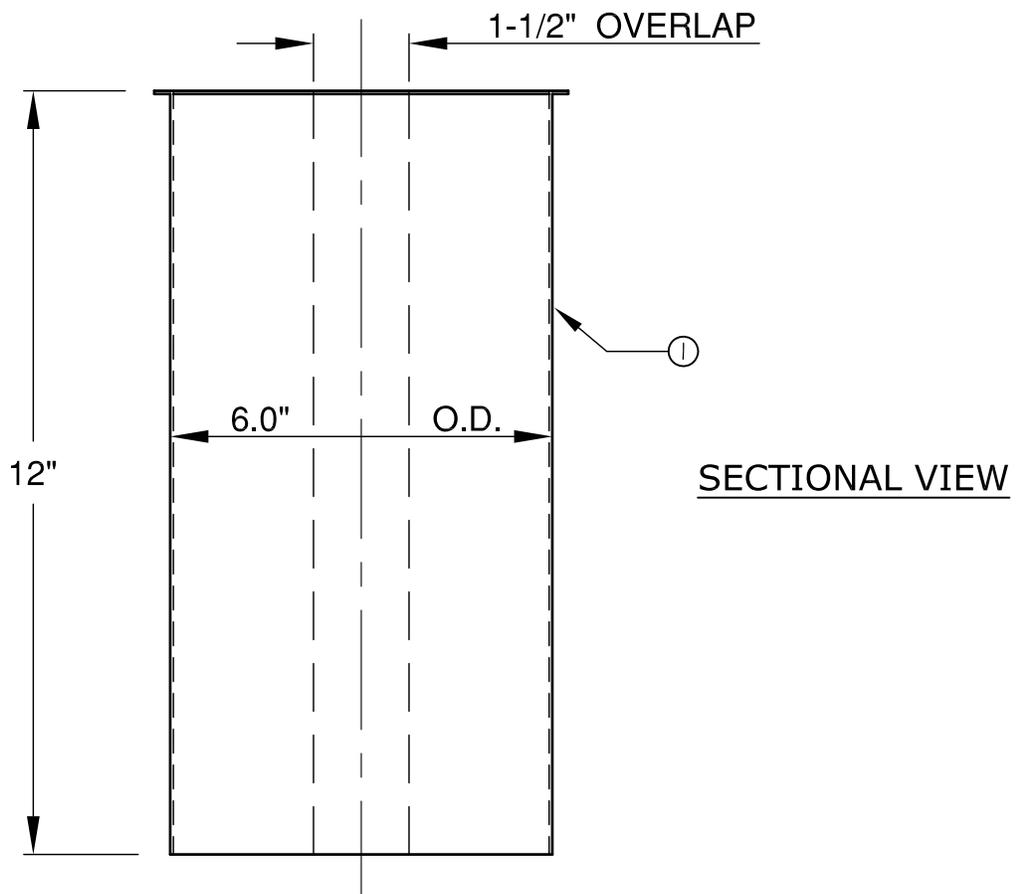
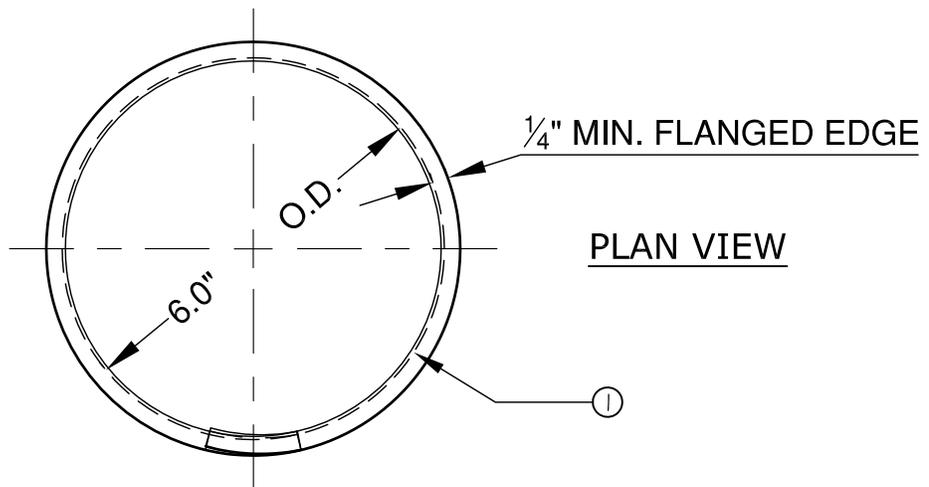
Please Draw a Plot Plan: Locate all structures on lot



APPENDIX F
ELECTRIC SERVICE SPOT CONNECTION
(TO BE PROVIDED BEFORE CONSTRUCTION)

APPENDIX G

GLENDALE WATER AND POWER STANDARD DRAWINGS



DETAIL	DESCRIPTION
①	ADJUSTABLE SLEEVE FOR VALVE BOX, MATERIAL TO BE 18 GAGE (0.049") GALVANIZED SHEET METAL 12" HIGH

NOTES
1. APPLIES TO ALL VALVE INSTALLATIONS IN A.C. PAVEMENT 2. USE GWP STANDARD DRAWING NO. 6854-A FOR WATER VALVE BOX INSTALLATIONS IN CONCRETE OR BARE EARTH SOFTSCAPE AREAS.

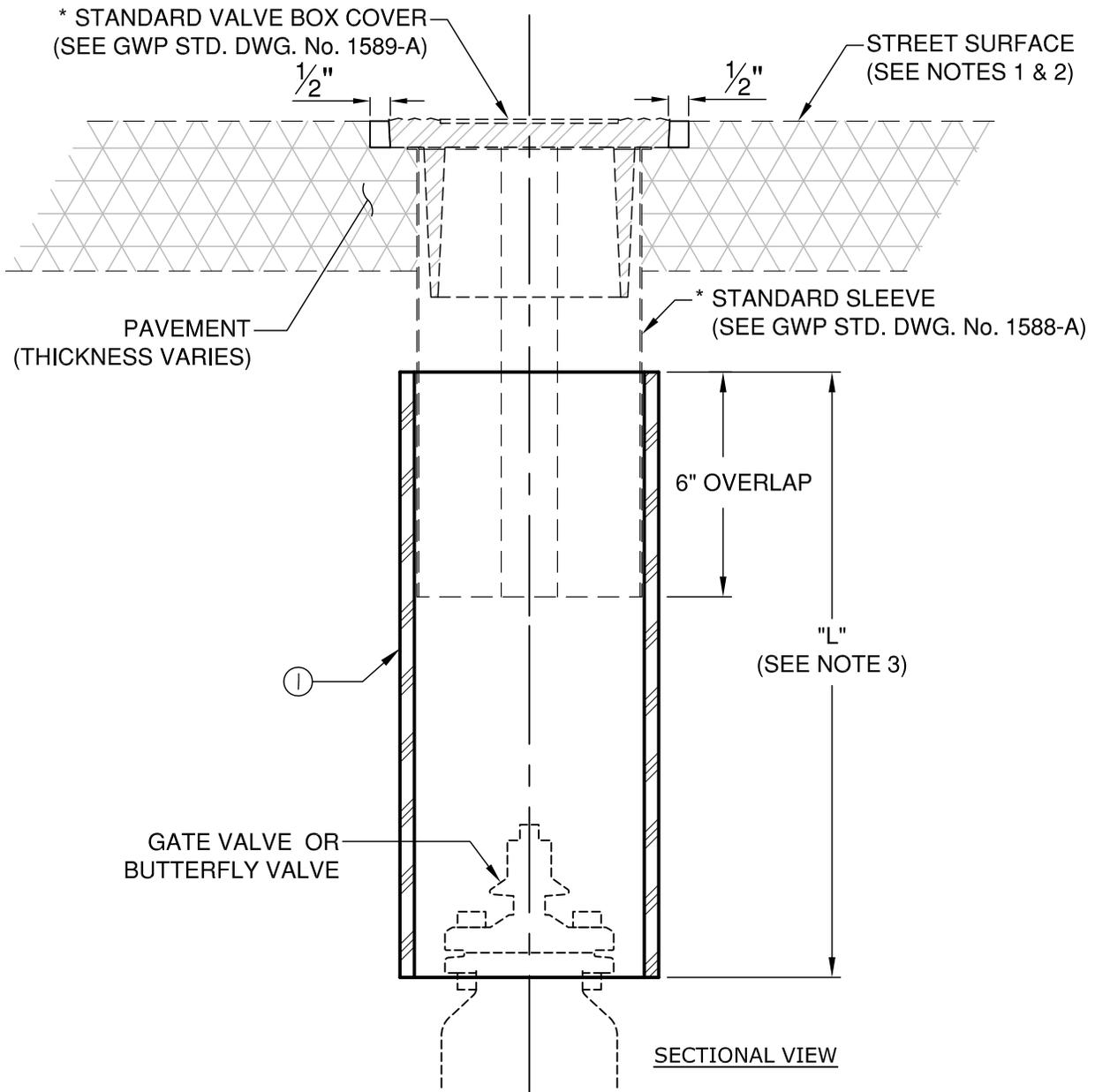
GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA

ADJUSTABLE SLEEVE
FOR WATER VALVE BOX

APPROVED  07/14/2016
 GERALD TOM, SENIOR CIVIL ENGINEER, R.C.E. No. C51209 DATE
 GLENDALE WATER AND POWER - WATER DEPARTMENT

DES: KR SCALE: NONE
 D: KR DATE: 07/14/2016
 C: KR APP: GT

SHEET No. 1 OF 1
1588-A



DETAIL	DESCRIPTION
①	6" C-900 PVC, DR-18, LENGTH VARIES

* ACCOMPANYING GWP STD. DWG. No.'s 1588-A & 1589-A

NOTES

1. APPLIES TO ALL VALVE INSTALLATIONS IN A.C. PAVEMENT
2. USE GWP STANDARD DRAWING NO. 6854-A FOR WATER VALVE BOX INSTALLATIONS IN CONCRETE OR BARE EARTH SOFTSCAPE AREAS.
3. LENGTHS TO BE DETERMINED IN FIELD.

**GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA**

**STANDARD WATER
VALVE BOX**

APPROVED

07/14/2016

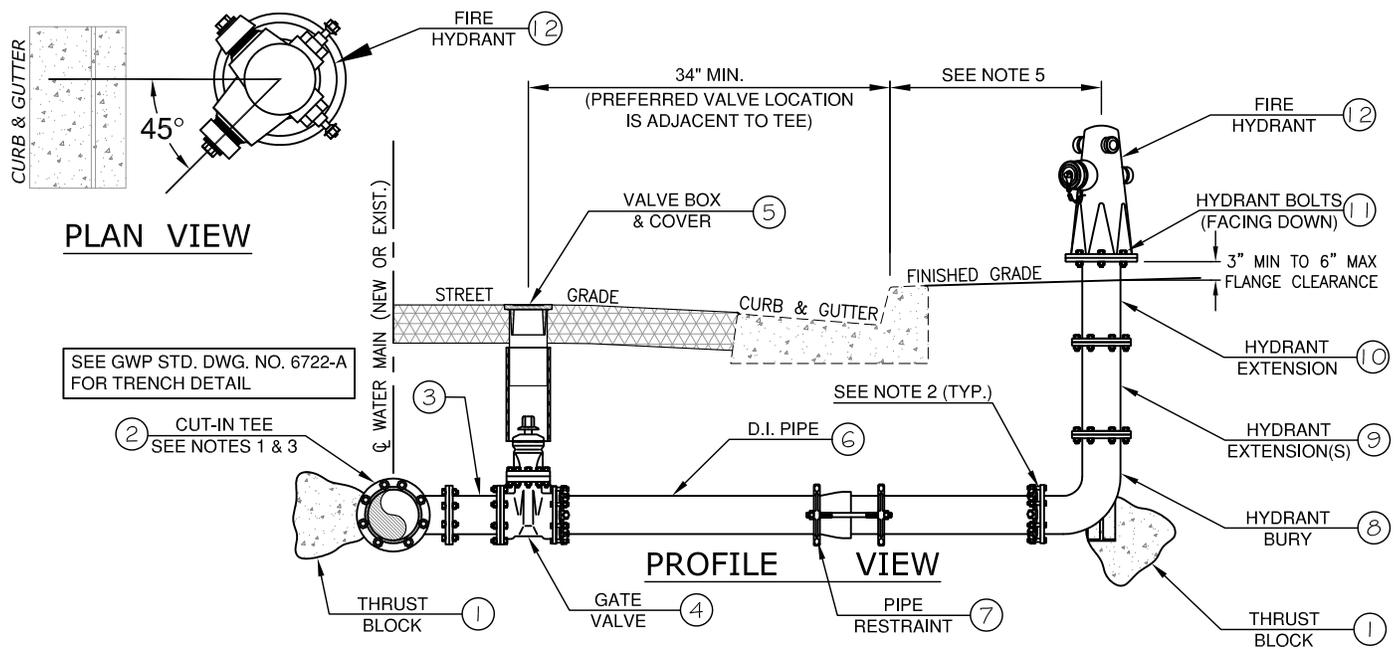
GERALD TOM, SENIOR CIVIL ENGINEER, R.C.E. No. C51209 DATE
GLENDALE WATER AND POWER - WATER DEPARTMENT

DES: KR
D: KR
C: KR

SCALE: NONE
DATE: 07/14/2016
APP: GT

SHEET No. 1 OF 1

1590-A



DETAIL	DESCRIPTION
①	CONSTRUCT CONCRETE THRUST BLOCK AGAINST UNDISTURBED EARTH (*SEE GWP STD. DWG. No. 6083-A)
②	CUT EXIST. MAIN (OR INSTALL NEW MAIN), INSTALL D.I. TEE (M.J. x M.J. x FLG.) & RESTRAIN WITH MEGALUG GLANDS, INSTALL PIPE NIPPLES, AND RESTRAINED COUPLINGS (SEE SPECIFICATIONS FOR ACCEPTABLE TYPES) ON MAIN.
③	6" CLASS 350 D.I. SPOOL (OR REDUCER) WHEN REQUIRED
④	6" GATE VALVE (FLG. x M.J., RESILIENT WEDGE TYPE WITH MEGALUG GLAND)
⑤	VALVE BOX & COVER (*SEE GWP STD. DWG. NOS. 1588-A, 1589-A, & 1590-A)
⑥	6" CLASS 350 D.I. PIPE (WITH ALL JOINTS RESTRAINED)
⑦	INSTALL PIPE RESTRAINING SYSTEM AT EACH PIPE JOINT, USE EBAA MEGALUG® RESTRAINT HARNESS FOR D.I. PIPE.
⑧	6" F-2450 MECHANICAL JOINT BURY (CLOW HYDRANT BURY OR APPROVED EQUAL), (FLG. x M.J.)
⑨	6" HYDRANT EXTENSION, CLASS 350 D.I., (FLG. x FLG.), AS REQUIRED (NON BREAK-OFF TYPE)
⑩	6" HYDRANT EXTENSION FLG.xFLG. (BREAK-OFF OR NON BREAK-OFF TYPE), SEE TABLE BELOW WHICH TYPE IS APPLICABLE.
⑪	INSTALL 6 FIRE HYDRANT BOLTS WITH NUTS: 5/8" - 11 UNC X 3" HEX BOLT, T-316 STAINLESS STEEL PER ASTM F-593, WITH T-316 STAINLESS STEEL HEX NUT PER ASTM F-594. SEE "SPECIAL CONDITIONS" TABLE BELOW FOR DETERMINING WHICH TYPE (BREAK-OFF BOLT OR SOLID BOLT) TO USE.
⑫	FIRE HYDRANT HEAD (6" WET BARREL-JONES J-3700, CLOW 2050, SIZE AS SPECIFIED BY FIRE DEPARTMENT) 2.5"x4" OR 2.5"x4"x4" WITH 1-3/4" PENTAGONAL NUTS & BRONZE CAP

* ACCOMPANY WITH GWP STD. DWG. Nos. 1588-A, 1589-A, 1590-A, 1655-A, 6083-A, 6722-A

NOTES

- CUT-IN TEE SHALL BE THE SAME SIZE AS THE MAIN LINE PIPE.
- JOINTS SHALL BE MECHANICAL TYPE, RESTRAINED WITH *MEGALUG® SERIES MECHANICAL JOINT RESTRAINT FOR D.I. PIPE.*
- TO CONNECT PIPE WITH DIFFERENT OUTSIDE DIAMETERS, USE *SMITH BLAIR 441 TRANSITION COUPLING* (POTHOLE TO GET O.D. FIRST).
- SEE GWP SPECIFICATIONS FOR ACCEPTABLE MANUFACTURERS AND PRODUCTS.
- REFER TO GWP STD. DWG. No. 1655-A FOR APPROXIMATE SITING LOCATION. EXACT LOCATION TO BE DETERMINED BY GWP WATER ENGINEERING.

SPECIAL CONDITIONS

	HARDSCAPE	LANDSCAPE	200 PSI AND ABOVE
SPOOL	SOLID	BREAK-OFF	SOLID
BOLTS	BREAK-OFF	SOLID	SOLID

**GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA**

**NEW FIRE HYDRANT ASSEMBLY
USING CUT-IN TEE
ON MAIN LINE**

APPROVED

07/20/2016

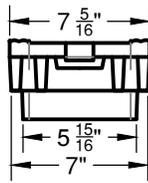
GERALD TOM, SENIOR CIVIL ENGINEER, R.C.E. No. C51209 DATE
GLENDALE WATER AND POWER - WATER DEPARTMENT

DES: KR
D: KR
C: KR

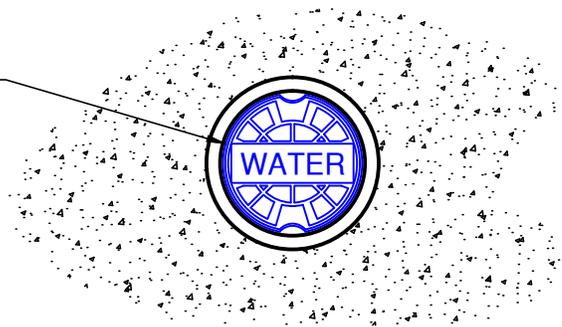
SCALE: NONE
DATE: 07/20/2016
APP: GT

SHEET No. 1 OF 2

4946-A



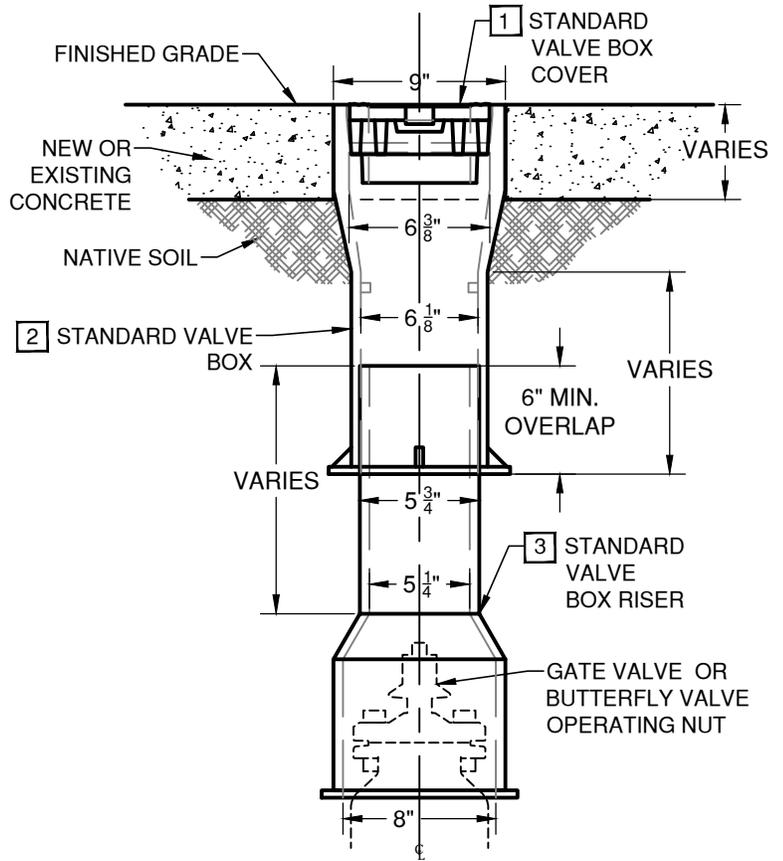
1 STANDARD VALVE BOX COVER



PLAN VIEW - CASE 1

CASE 1: VALVE INSTALL IN CONCRETE HARDSCAPE

1. APPLIES TO ALL VALVE INSTALLATIONS FALLING WITHIN THE FOOTPRINT OF NEW OR EXISTING CONCRETE.
2. VALVE BOX AND LID SHALL BE INSTALLED TO FINISHED GRADE OF SURROUNDING CONCRETE.
3. IF SPECIFIED MAKE AND MODEL ARE NOT AVAILABLE FOR VALVE BOX COVER, VALVE BOX OR VALVE RISER, A DOMESTICALLY-MANUFACTURED SUBSTITUTE SHALL BE PRESENTED TO THE GWP WATER ENGINEER* FOR APPROVAL.
4. ALL CONCRETE USED AROUND THE VALVE BOX SHALL CONFORM TO THE CONCRETE MIX DESIGN AS REQUIRED BY THE LATEST GREENBOOK STANDARD FOR THE SPECIFIC AREA WHERE THE WORK OCCURS.
5. USE GWP STANDARD DWG NO. 1590-A FOR WATER VALVE BOX INSTALLATIONS IN A.C. PAVEMENT.



SECTIONAL VIEW - CASE 1

□□□S□□□□□□□□ □□□□S - B□□□ □□S□S

- 1 TYLER UNION 5 1/4" MWW DROP LID WITH LIFTING HOLES, MARKED "WATER". PART # 145370.
- 2 TYLER UNION 6855 SERIES CAST IRON 5 1/4" SHAFT, SLIP TYPE VALVE BOX (TOP PORTION). LENGTH TO BE DETERMINED BASED ON DEPTH OF OPERATING NUT AND VALVE BODY.
- 3 TYLER UNION 6855 SERIES CAST IRON 5 1/4" SHAFT, SLIP TYPE RISER (BOTTOM PORTION). LENGTH TO BE DETERMINED BASED ON DEPTH OF OPERATING NUT AND VALVE BODY.

*GWP WATER ENGINEERING DEPARTMENT: (818) 548-2062

**GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA**

**STANDARD WATER VALVE
BOX - CASE 1 (CONCRETE)**

APPROVED

08/30/2107

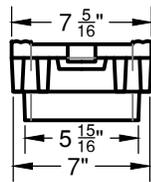
GERALD TOM, SENIOR CIVIL ENGINEER, R.C.E. No. C51209 DATE
GLENDALE WATER AND POWER - WATER DEPARTMENT

DES: CJ
D: CJ
C: GT

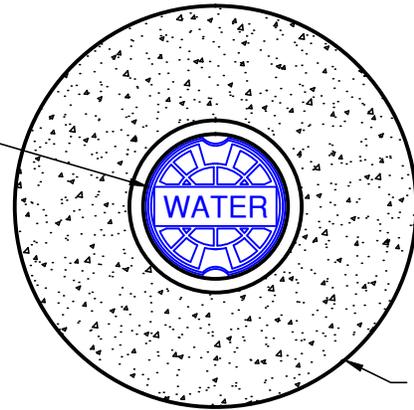
SCALE: NONE
DATE: 08/30/2017
APP: GT

SHEET No. 1 OF 2

6854-A



1 STANDARD VALVE BOX COVER

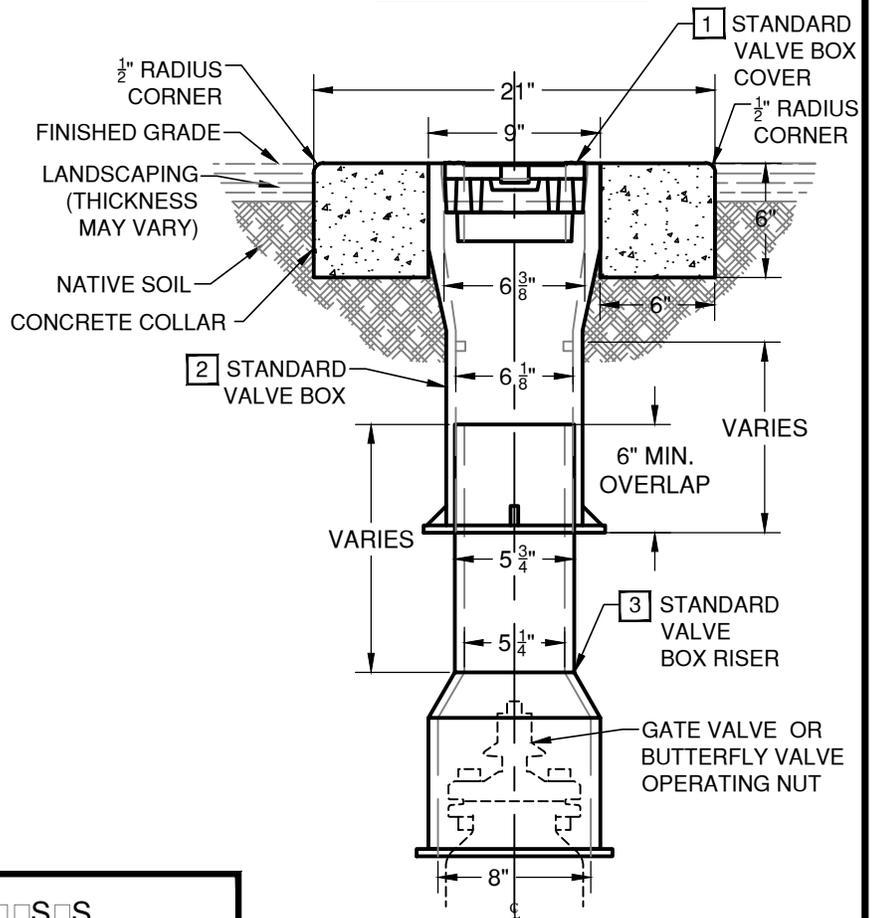


21" DIA. CONCRETE COLLAR

PLAN VIEW - CASE 2

CASE 2: VALVE INSTALL IN SOFTSCAPE

1. APPLIES TO ALL LANDSCAPED OR BARE-EARTH VALVE INSTALLATIONS.
2. VALVE BOX AND LID SHALL BE INSTALLED TO FINISHED GRADE ELEVATION OF SURROUNDING SOFTSCAPE.
3. VALVE BOX SHALL HAVE A CIRCULAR CONCRETE APRON INSTALLED AT 21" O.D. X 9" I.D., TO A DEPTH OF 6" AROUND THE VALVE BOX. THE CONCRETE COLLAR SHALL HAVE 1/2" RADIUS EDGES AS SHOWN.
4. IF SPECIFIED MAKE AND MODEL ARE NOT AVAILABLE FOR VALVE BOX COVER, VALVE BOX OR VALVE RISER, A DOMESTICALLY-MANUFACTURED SUBSTITUTE SHALL BE PRESENTED TO THE GWP WATER ENGINEER*.
5. CONCRETE COLLARS SHALL BE CONSTRUCTED USING AN APPROVED CONCRETE MIX CONSISTENT WITH THE LATEST GREENBOOK STANDARD 502-C-2500.
6. USE GWP STD. DWG. NO. 1590-A FOR WATER VALVE INSTALLATIONS IN A.C. PAVEMENT.



SECTIONAL VIEW - CASE 2

□□□S□□□□□□□□ □□□□S - B□□□ □□S□S

- 1 TYLER UNION 5 1/4" MWW DROP LID WITH LIFTING HOLES, MARKED "WATER". PART # 145370.
- 2 TYLER UNION 6855 SERIES CAST IRON 5 1/4" SHAFT, SLIP TYPE VALVE BOX (TOP PORTION). LENGTH TO BE DETERMINED BASED ON DEPTH OF OPERATING NUT AND VALVE BODY.
- 3 TYLER UNION 6855 SERIES CAST IRON 5 1/4" SHAFT, SLIP TYPE RISER (BOTTOM PORTION). LENGTH TO BE DETERMINED BASED ON DEPTH OF OPERATING NUT AND VALVE BODY.

*GWP WATER ENGINEERING DEPARTMENT: (818) 548-2062

**GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA**

**STANDARD WATER VALVE
BOX - CASE 2 (SOFTSCAPE)**

APPROVED

08/30/2107

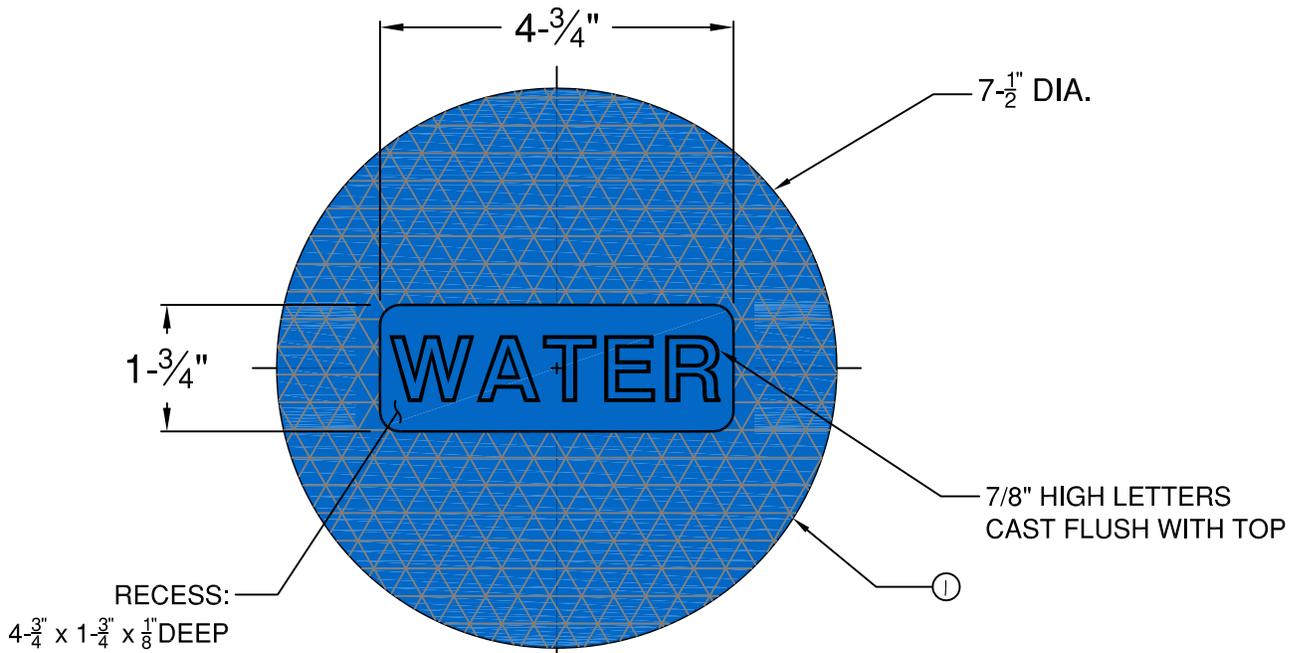
GERALD TOM, SENIOR CIVIL ENGINEER, R.C.E. No. C51209 DATE
GLENDALE WATER AND POWER - WATER DEPARTMENT

DES: CJ
D: CJ
C: GT

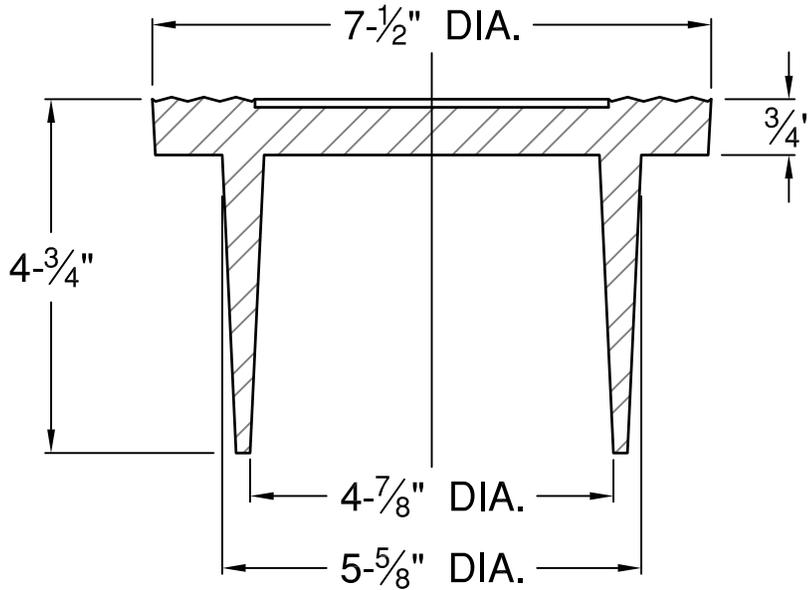
SCALE: NONE
DATE: 08/30/2017
APP: GT

SHEET No. 2 OF 2

6854-A



PLAN VIEW



SECTIONAL VIEW

DETAIL	DESCRIPTION
①	VALVE BOX COVER, TRAFFIC RATED, LONG BEACH IRON WORKS LB 513E, SOUTH BAY FOUNDRY B-6030, OR EQUAL

REQUIRED MANUFACTURER'S SPECS

MATERIAL = GREY CAST IRON, ASTM A48, CLASS 30B

FACTORY FINISH = DIPPED IN BLACK BITUMINOUS PAINT

FIELD APPLIED FINISH = BLUE PAINT

LOAD RATING = MEETS H-20 WHEEL LOAD REQUIREMENTS

GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA

WATER VALVE
BOX COVER

APPROVED

07/13/2016

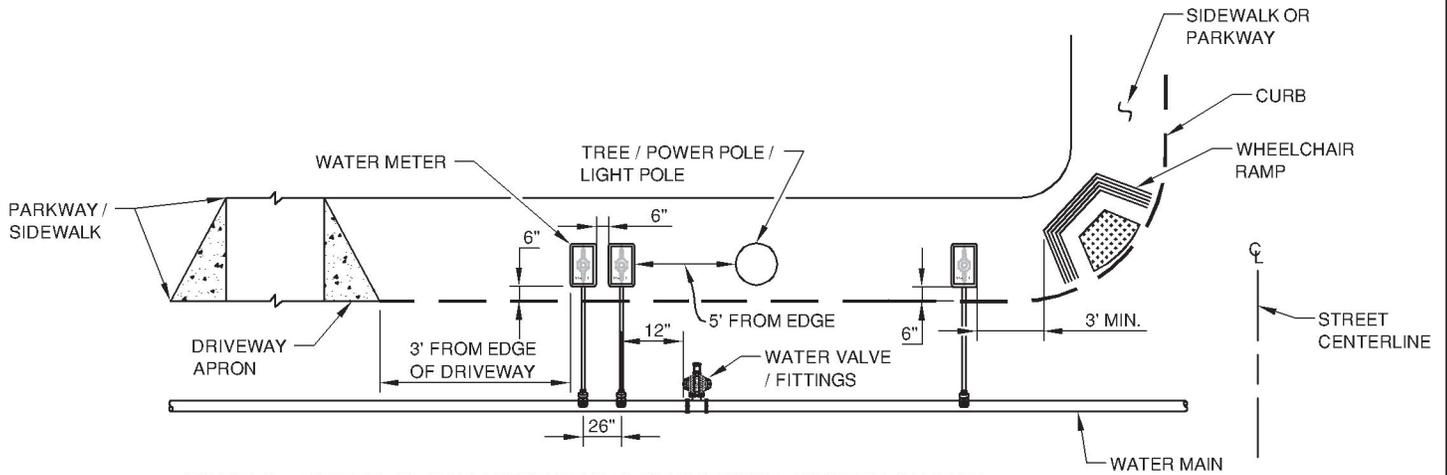
GERALD TOM, SENIOR CIVIL ENGINEER, R.C.E. No. C51209 DATE
GLENDALE WATER AND POWER - WATER DEPARTMENT

DES: LB
D: KR
C: KR

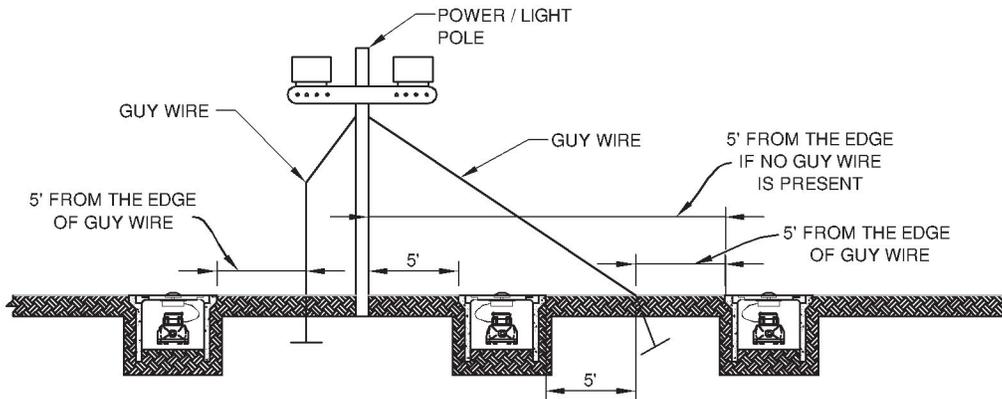
SCALE: NONE
DATE: 07/13/2016
APP: GT

SHEET No. 1 OF 1

1589-A



CASE 1: METER CLEARANCE FROM DRIVEWAY, WATER VALVE, TREE, POWER POLE, LIGHT POLE AND WHEELCHAIR



CASE 2: METER CLEARANCE FROM GUY WIRE AND POLE

NOTES

1. A MINIMUM 5'-0" HORIZONTAL CLEARANCE IS REQUIRED FROM EDGE OF WATER FACILITY TO EDGE OF TREE TRUNK, POWER POLE, LIGHT POLE AND /OR GUY WIRE.
2. A MINIMUM 3'-0" HORIZONTAL CLEARANCE IS REQUIRED FROM EDGE OF WATER FACILITY TO EDGE OF WHEELCHAIR RAMP AND/OR DRIVEWAY.
3. A MINIMUM 12" HORIZONTAL CLEARANCE IS REQUIRED FROM CENTER OF WATER SERVICE TAP TO EDGE OF WATER VALVE AND/OR FITTINGS.
4. A MINIMUM 26" HORIZONTAL CLEARANCE IS REQUIRED FROM CENTER OF WATER SERVICE TAP TO CENTER OF ADDITIONAL WATER SERVICE TAP.
5. A MINIMUM 6" HORIZONTAL CLEARANCE IS REQUIRED BETWEEN EDGES OF WATER FACILITIES.
6. A MINIMUM 6" HORIZONTAL CLEARANCE IS REQUIRED FROM EDGE OF WATER FACILITY TO BACK OF THE CURB.

LEGEND

- PL ----- PROPERTY LINE
- W ----- WIDTH
- CL ----- CENTER LINE
- WATER METER BOX

**GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA**

**STANDARD WATER METER
BOX CLEARANCES**

APPROVED

12/04/2014

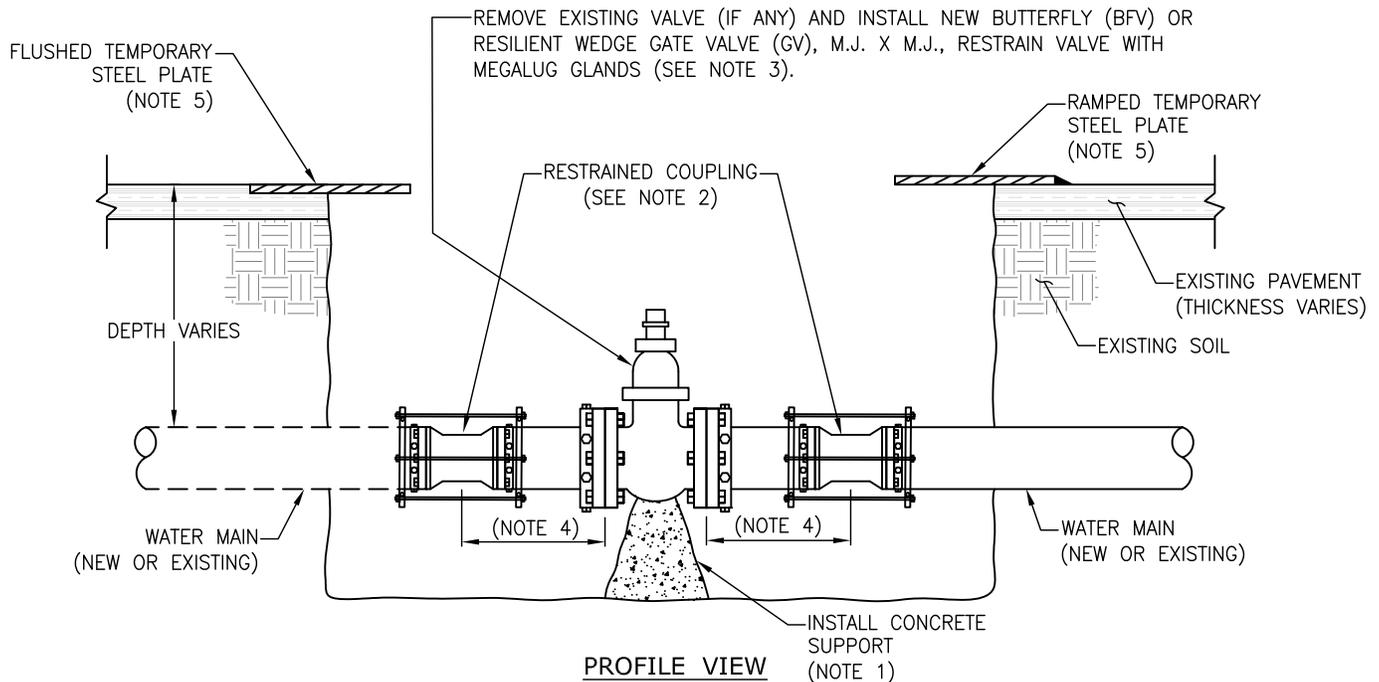
GERALD TOM, SENIOR CIVIL ENGINEER, R.C.E. No. C51209 DATE
GLENDALE WATER AND POWER - WATER DEPARTMENT

DES: LB/TV
D: TV
C: GT

SCALE: NONE
DATE: 09/23/14
APP:

SHEET No. 1 OF 1

6728-A



NOTES

1. PROVIDE SUPPORT UNDER PIPE AS REQUIRED PER GWP STD DWG NO. 6083-A.
2. CONNECT PIPES WITH EBAA IRON INC. SERIES 3800 MEGA-COUPLING RESTRAINED COUPLING, KRAUSZ USA HYMAX GRIP RESTRAINED COUPLING, OR ROMAC INDUSTRIES ALPHA RESTRAINED COUPLING (OR APPROVED EQUAL). IF CONNECTING TO EXISTING CAST IRON PIPE OF SIZE >12" DIAMETER, THEN RESTRAIN PIPE AT COUPLING WITH CLAMPS AND THREADED TIE-RODS.
3. REFER TO PLANS & SPECIFICATION FOR SIZE & TYPE OF VALVE. PROVIDE VALVE BOX, COVER AND ADJUSTABLE SLEEVE PER STANDARD DRAWING 1588-A, 1589-A AND 1590-A FOR NEW VALVE.
4. MINIMUM DISTANCE FROM VALVE FLANGE TO COUPLING CENTER SHALL BE 2' FOR 8" PIPE AND SMALLER, 3' FOR 12" AND LARGER PIPE.
5. GRIND PAVEMENT TO KEEP PLATE FLUSH WITH PAVEMENT SURFACE ON ALL ARTERIAL & COLLECTOR STREETS. RAMP THE STEEL PLATE USING ASPHALT FOR ALL RESIDENTIAL STREETS, OR AS DIRECTED BY THE ENGINEER.

*ACCOMPANYING GWP STD. DWG. No.'s 1588-A, 1589-A, 1590-A & 6071-A

**GLENDALE WATER & POWER
CITY OF GLENDALE
CALIFORNIA**

TYPICAL VALVE REPLACEMENT OR NEW
INSTALLATION ON NEW OR EXISTING
WATER MAIN

APPROVED

08/24/2015

GERALD TOM, SENIOR CIVIL ENGINEER, R.C.E. No. C51209 DATE
GLENDALE WATER AND POWER - WATER DEPARTMENT

DES: KR
D: CS
C: GT

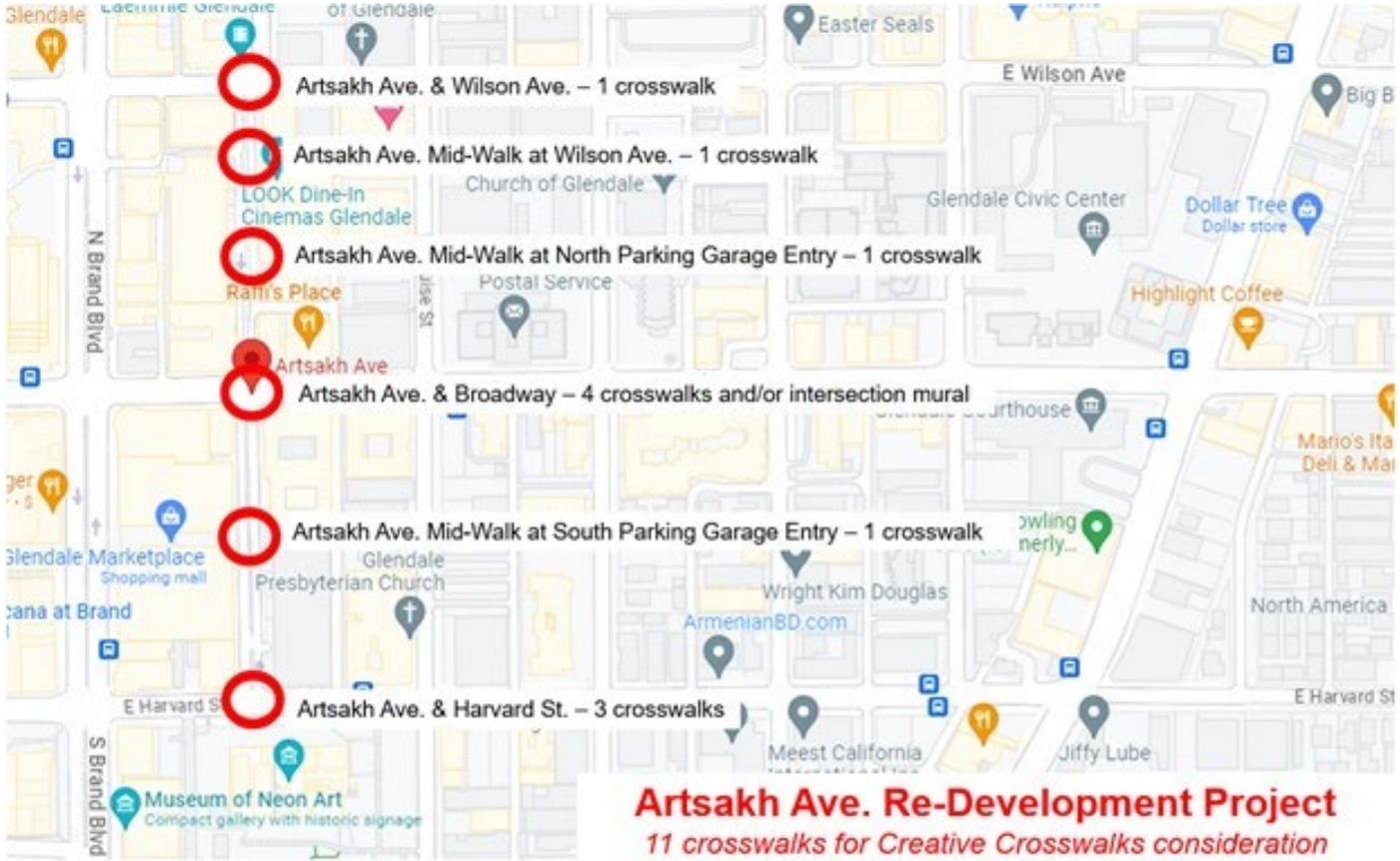
SCALE: NONE
DATE: 08/24/2015
APP: GT

SHEET No. 1 OF 1

6772-A

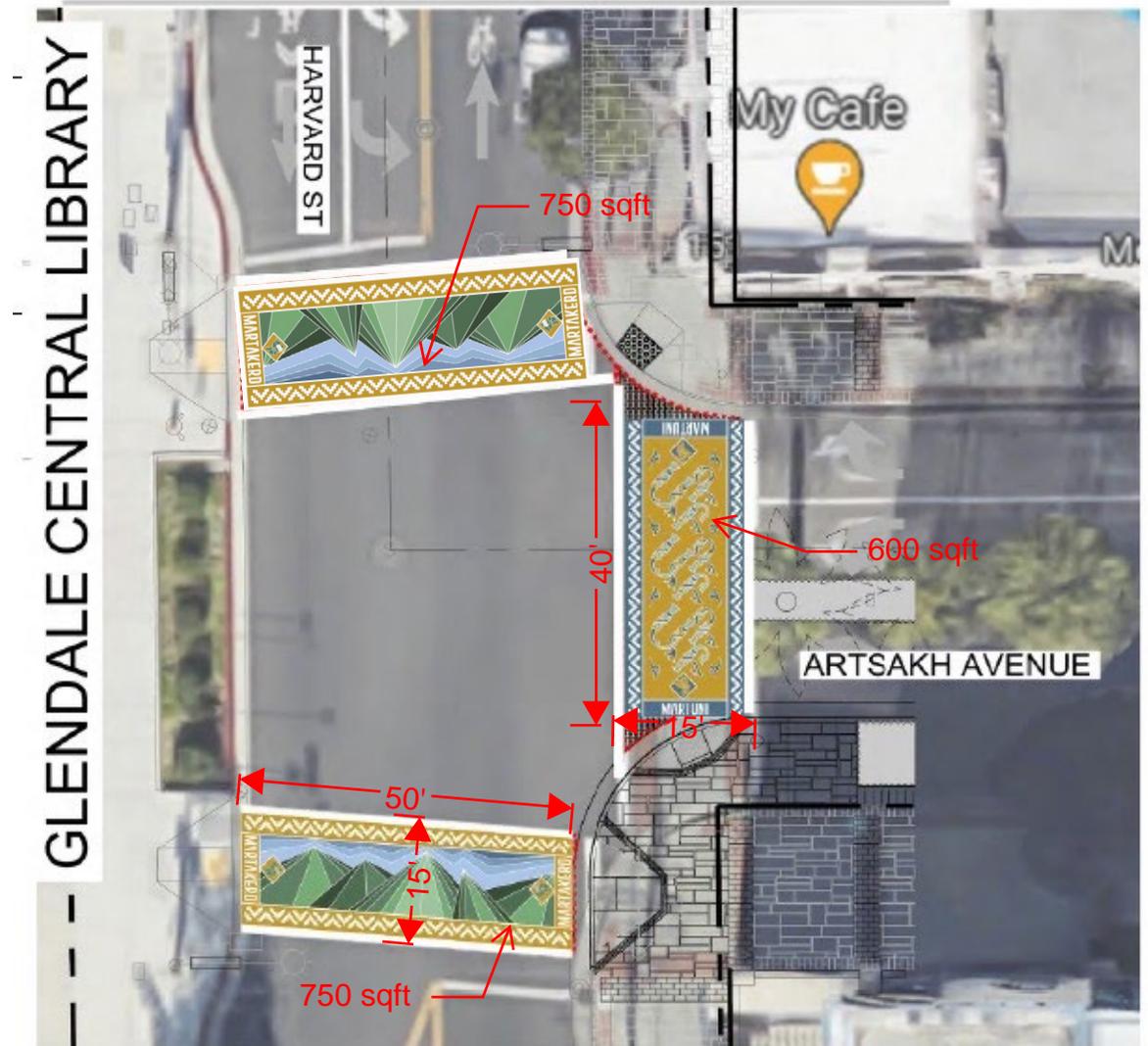
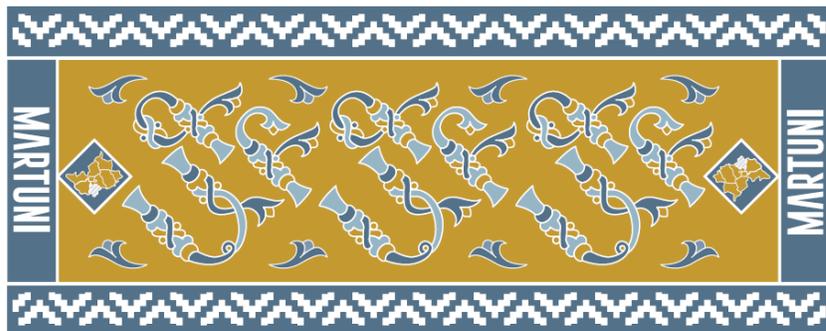
APPENDIX H
COMMISSION ART SCULPTURE DRAWINGS
(TO BE PROVIDED BY OTHERS)

PROJECT #1: Artsakh Ave. Re-Development Project

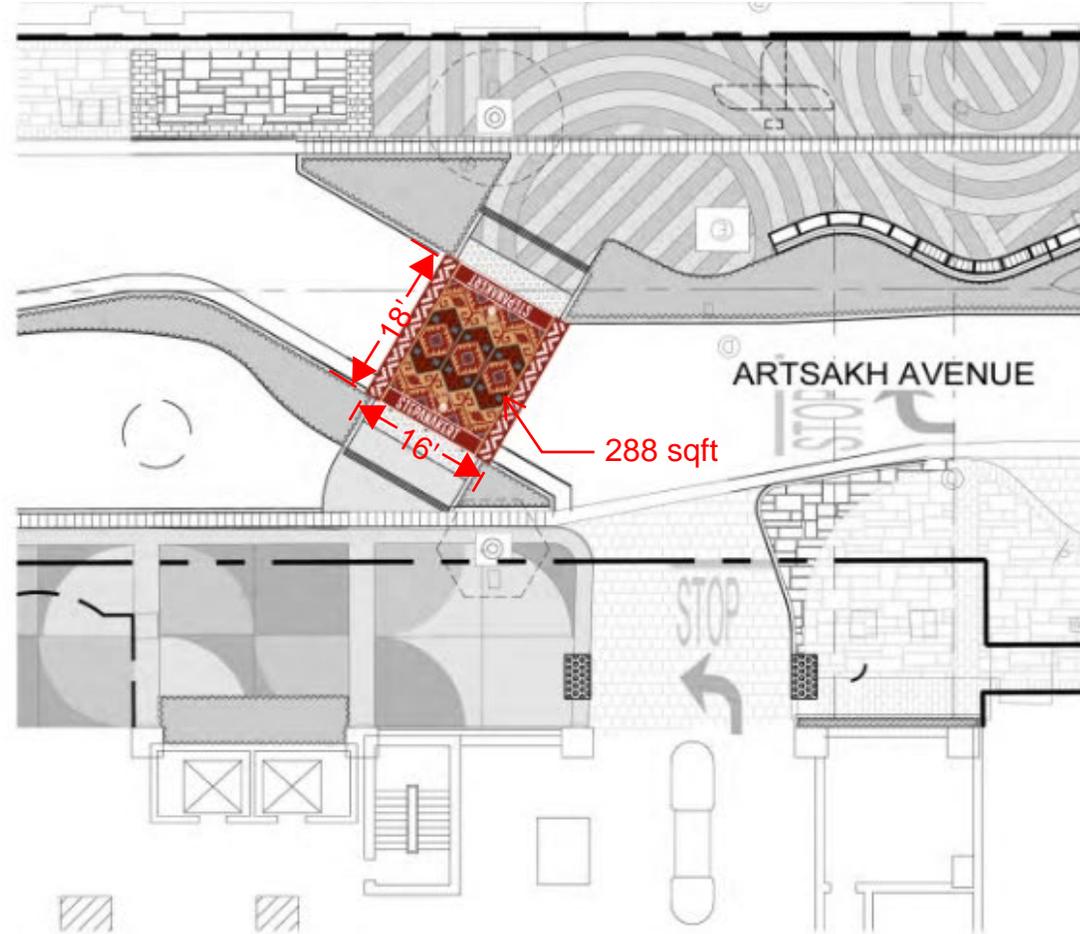
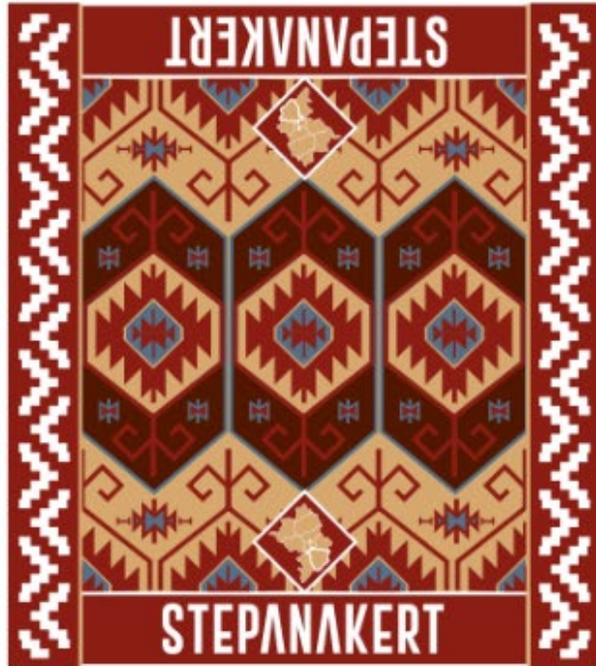


"Discover Artsakh" by Garine Yepremian

Harvard St. at Artsakh Ave.
Intersection Project



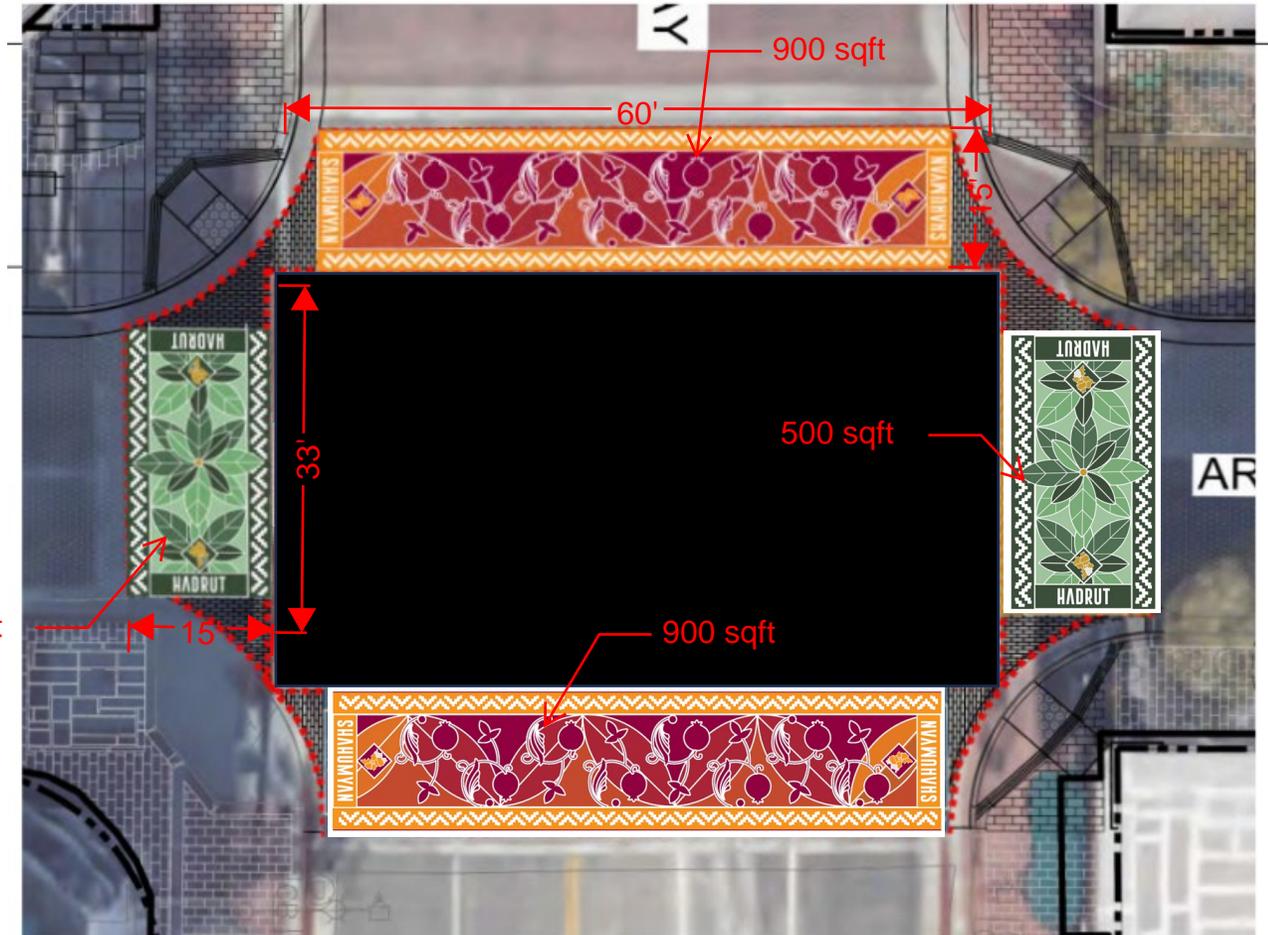
Artsakh Mid Walk at South Parking Garage



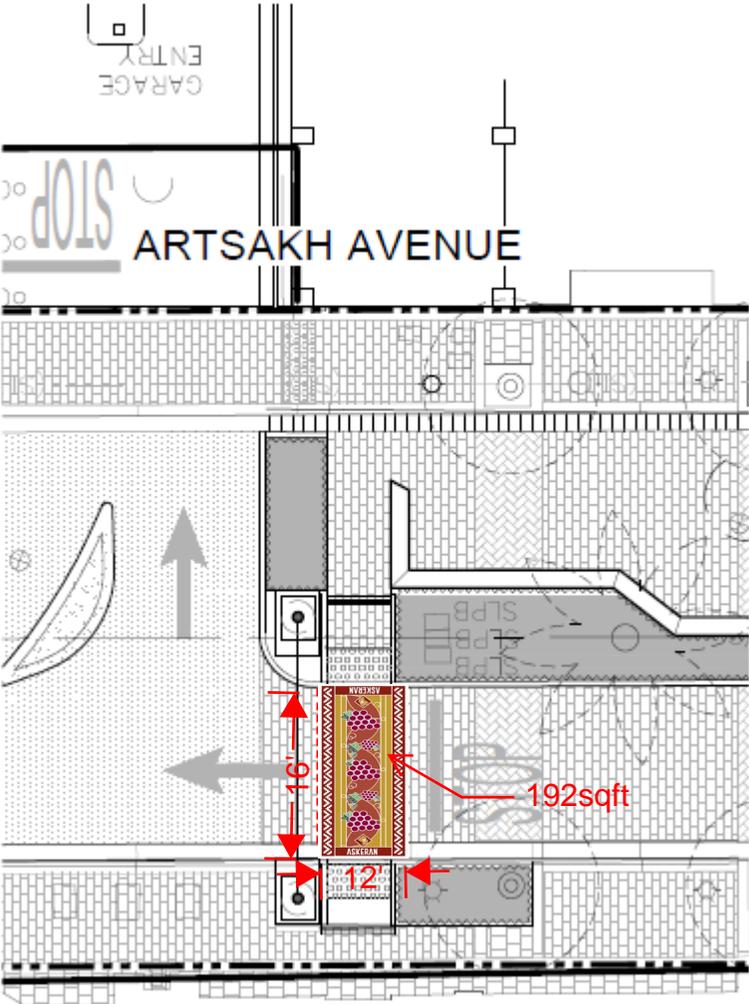
Broadway at Artsakh Ave. Intersection Project



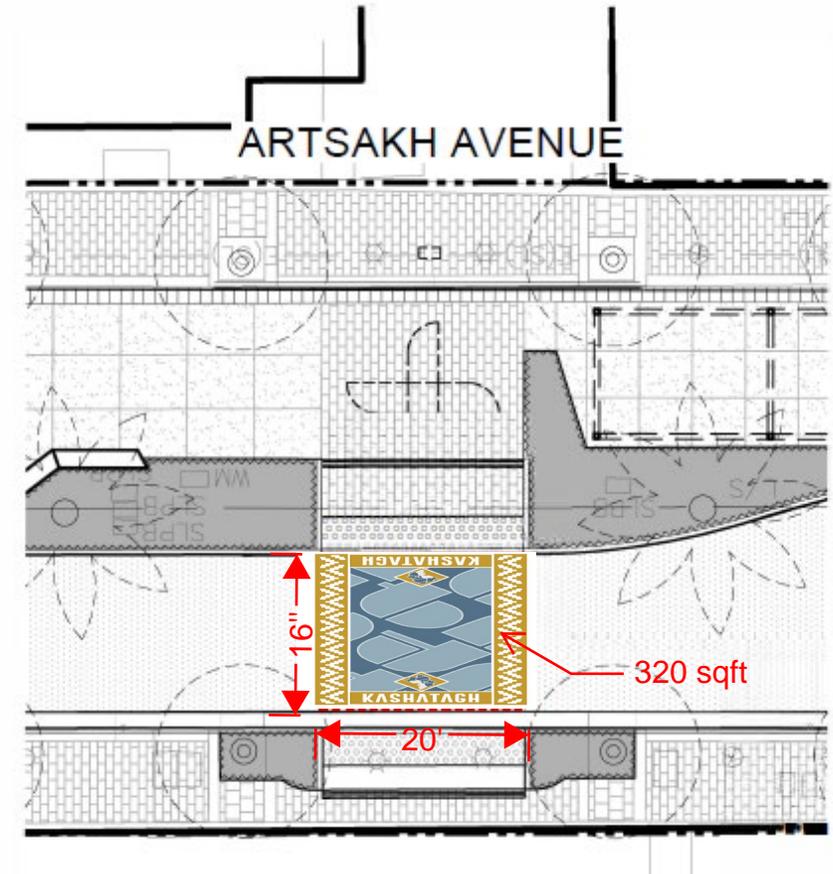
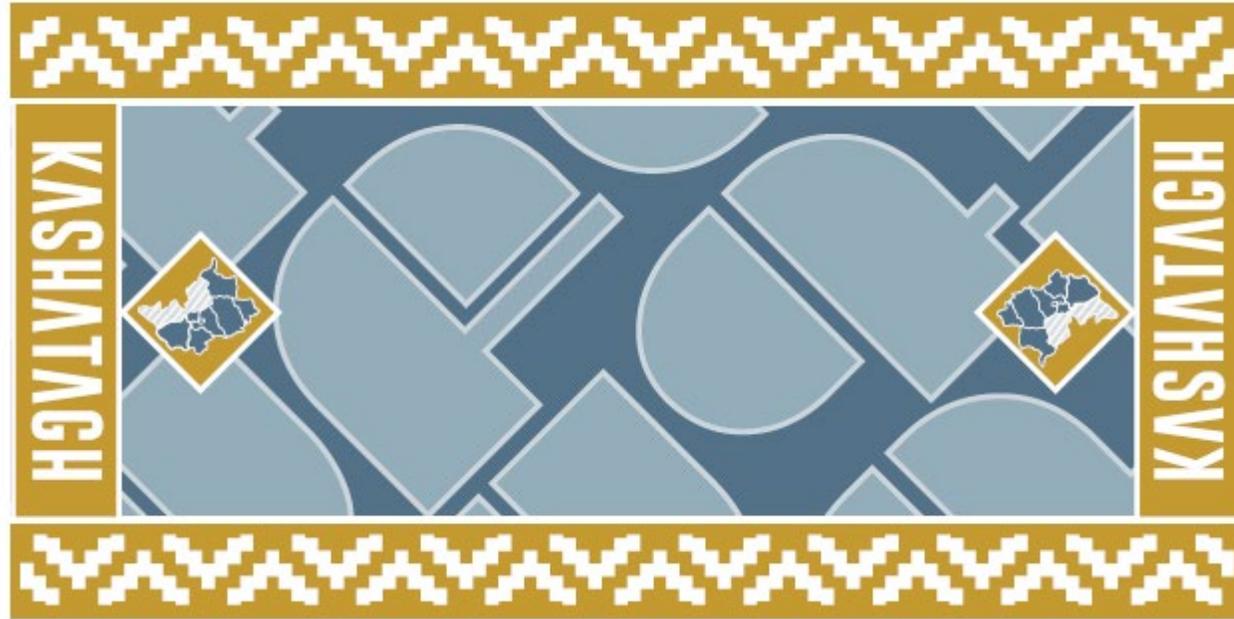
500 sqft



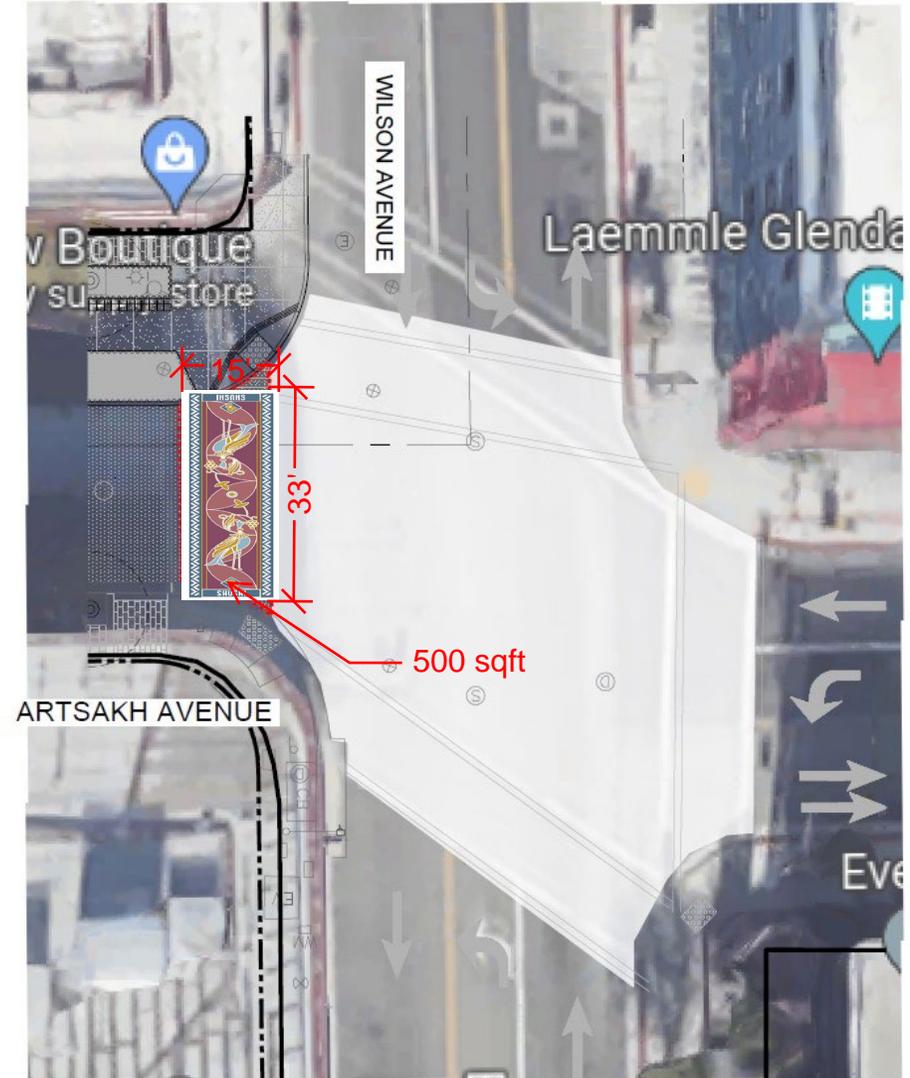
Artsakh Mid Walk at North Parking Garage Entry



Artsakh Mid Walk at Wilson Ave.



Wilson Ave. at Artsakh Ave. Intersection Project



APPENDIX I
CREATIVE CROSSWALK DRAWINGS