CITY OF EL PASO, TEXAS
AGENDA ITEM
DEPARTMENT HEAD'S SUMMARY FORM

AGENDA DATE: February 13, 2024

CONTACT PERSON(S) NAME AND PHONE NUMBER: Karina Brasgalla, 915-212-1517, Daniela Quesada, 915-212-1826

DISTRICT(S) AFFECTED: District 8

STRATEGIC GOAL: Goal 1 – Cultivate an Environment Conducive to Strong Economic Development
Goal 3 – Promote the Visual Image of El Paso

SUBGOAL: 3.1 Improve the visual impression of the community
3.2 Set one standard for infrastructure across the city

SUBJECT:
That the City Manager, or designee, be authorized to sign a Tax Increment Reinvestment Zone Reimbursement Agreement between the City of El Paso and Jordan Foster Construction ("Contractor"), to reimburse Contractor for the construction, installation, and implementation of street improvements contained within the public right-of-way and generally located on W. Main Drive between N. Santa Fe Street and N. El Paso Street (the "Project"). Said reimbursement is limited to costs incurred by Contractor in connection with the Project and shall not exceed $830,000.00.

BACKGROUND / DISCUSSION:
This is the first implementation project of the Downtown Street Tree Masterplan, a planning study also funded by the TIRZ 5, that addresses critical infrastructure improvements on Main Street, directly abutting the new Children's Museum, La Nube. Improvements include creating a woonerf on Main, introducing street landscaping, and wayfinding components to provide a safe and inviting pedestrian environment for visitors to the museum, and ensuring the success of a major QoL project and investment.

PRIOR COUNCIL ACTION:
On March, 28, 2023, City Council approved and ordinance allocating $830,000.00 for the construction of Phase 1 of the Downtown Street Tree Master Plan.

AMOUNT AND SOURCE OF FUNDING:
$830,000 was allocated from the TIRZ 5 Fund to

HAVE ALL AFFECTED DEPARTMENTS BEEN NOTIFIED? _X_ YES ___NO

PRIMARY DEPARTMENT: Economic and International Development
SECONDARY DEPARTMENT: CID – Planning

********************REQUIRED AUTHORIZATION*********************

DEPARTMENT HEAD:

Karina Brasgalla, Interim Director of Economic and International Development

Revised 04/09/2021

RESOLUTION

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF EL PASO:

THAT the City Manager, or designee, be authorized to sign a Tax Increment Reinvestment Zone Reimbursement Agreement between the City of El Paso and Jordan Foster Construction ("Contractor") to reimburse Contractor for the construction, installation, and implementation of street improvements contained within the public right-of-way and generally located on W. Main Drive between N. Santa Fe Street and N. El Paso Street (the "Project"). Said reimbursement is limited to costs incurred by Contractor in connection with the Project and shall not exceed $830,000.00.

APPROVED this _____ day of _____, 2024.

THE CITY OF EL PASO:

_____
Oscar Leeser
Mayor

ATTEST:

_____
Laura D. Prine
City Clerk

APPROVED AS TO FORM:

Roberta Brito
Senior Assistant City Attorney

APPROVED AS TO CONTENT:

Yvette Hernandez, City Engineer
Capital Improvement Department

TAX INCREMENT REINVESTMENT
ZONE REIMBURSEMENT AGREEMENT

This **Tax Increment Reinvestment Zone Reimbursement Agreement** ("Agreement") is entered into between the City of El Paso (the "City"), a Texas home-rule municipal corporation, and Jordan Foster Construction ("Contractor"), a Texas limited liability company, for the purposes and considerations stated below. The City and Contractor are collectively referred to as "Parties" and each separately shall be referred to as a "Party."

WHEREAS, in accordance with the Tax Increment Financing Act, Texas Tax Code Chapter 311 (the "Act"), on December 19, 2006, the City through Ordinance No. 016528, established Tax Reinvestment Zone Number 5, El Paso Texas ("TIRZ"); and

WHEREAS, the City and the TIRZ Board of Directors (the "Board") recognize the importance of their continued role in development activities and funding of project that enhance the value of all taxable real property in the TIRZ and benefit the City; and

WHEREAS, on February 16, 2023, in accordance with Section 311.011(e) of the Act, the Board approved a motion supporting an amendment to the TIRZ Project Plan (the "Project Plan") to include the downtown street tree master plan effort to support improvements to West Main Drive between North Santa Fe Street and North El Paso Street, located within the TIRZ ("West Main Drive Project"); and

WHEREAS, on February 16, 2023, the Board further recommended that $830,000.00 be allocated from the Fund to pay for the construction of West Main Drive; and

WHEREAS, construction of West Main Drive (referred to herein as the "Project") will benefit the City, enhance the value of taxable real property in the TIRZ, and promote pedestrian safety and vehicular access to downtown amenities; and

WHEREAS, on March 28, 2023, in accordance with the Board's recommendation and Section 311.011(e) of the Act, the City, through Ordinance No. 019449, amended the TIRZ Project Plan to include West Main Drive and allocated $830,000.00; and

WHEREAS, the Contractor is building the El Paso Children's Museum ("La Nube"), which is adjacent to the West Main Drive project; and

WHEREAS, in the interest of fiscal responsibility and to ensure that the completion of West Main Drive coincides with the opening of La Nube, the Contractor has committed to construction of all aspects of the Project; and

WHEREAS, pursuant to Section 311.008 (b) (3) of the Act, the City Council has authority to enter into agreements that the Council deems necessary or convenient to implement the Project Plan and to achieve the purpose of the Project Plan; and

WHEREAS, pursuant to Section 311.010 (g) of the Act, the bidding requirements of Chapter 252, Texas Local Government Code, do not apply to a dedication, pledge, or other use of revenue in the tax increment fund for a reinvestment zone; and

WHEREAS, pursuant to the Act, the City and Contractor agree to enter a binding agreement to ensure the Contractor is reimbursed for eligible Project Costs that it incurs for the completion of the Project in an amount not to exceed $830,000.00 for West Main Drive.

NOW, THEREFORE, in consideration of the mutual promises, covenants, obligations, and benefits contained in this Agreement, the Parties agree as follows:

ARTICLE I. AGREEMENT PURPOSE

Contractor shall undertake the development and completion of the Project. Upon Project Completion, City agrees to reimburse Contractor subject to the terms and conditions of this Agreement and incorporated exhibits.

ARTICLE II. EFFECTIVE DATE AND TERM

2.1. **Effective Date.** The Effective Date of this Agreement shall be the date that the El Paso City Council approves this Agreement.

2.2. **Term.** The term of this Agreement shall commence on the Effective Date and end on whichever of the following occurs first: (i) the date the City pays the final Reimbursement for completing the Project; (ii) the date this Agreement is terminated as provided in Article XII; or (iii) the date of TIRZ termination.

ARTICLE III. DEFINITIONS

3.1. **Act** means the Tax Increment Financing Act, Texas Tax Code Chapter 311, as may be amended from time to time.

3.2. **Agreement** means this Tax Increment Reinvestment Zone Reimbursement Agreement entered into between the City of El Paso and Contractor.

3.3. **Architect** means a person or entity providing design services for the City for all or a portion of the Work and is lawfully licensed to practice architecture in the applicable jurisdiction.

3.4. **Available TIRZ Revenue** means the total revenue in the TIRZ Fund less obligations preexisting this Agreement as defined in the approved Project Plan.

3.5. **Board** means Board of Directors for the TIRZ.

3.6. **Captured Appraised Value** means the total taxable value of all real property taxable by the City and located in the TIRZ less the total taxable value of all real property taxable by the City and located in the TIRZ for the year in which the TIRZ was designated.

3.7. **Change Order** means an amendment or written modification of the Agreement signed by the City that changes the scope of work in Exhibit C. A potential change order be considered only if it is the result of an unforeseen condition.

3.8. **City** means the City of El Paso, a Texas home-rule municipal corporation.

3.9. **City Council** means the governing body of the City.

3.10. **Construction Documents** means the specifications, the accompanying plans, special provisions and supplemental agreements, and exhibits.

3.11. **Construction Schedule** means the specific timetable for starting and achieving Project Completion, as further described in Article I Exhibit A.

3.12. **Consultant** means a person or entity providing professional services for the Contractor for all or a portion of the Work. To the extent required by the relevant jurisdiction, the Consultant shall be lawfully licensed to provide the required professional services.

3.13. **Contingency** means $4,743.68 from the overall total amount of $830,000.00 for West Main Drive that must be set aside to cover any unexpected costs that arises throughout construction. Refer to Exhibit A Article 8 D. i., for requirements.

3.14. **Contractor** means Jordan Foster Construction, a Texas limited liability company.

3.15 **Effective Date** has the meaning found in Section 2.1 of this Agreement.

3.16 **Final Completion** means the Contractor has fully completed the Project and list of remaining work in accordance with the Contract Documents. City will conduct a walkthrough to determine that the Work has been completed and the Contractor's obligations have been fulfilled. Certificate of Final Completion shall be issued only by the City and only after the City has certified Final Completion.

3.17 **Project** has the meaning found in Article 4.1 of this Agreement and as further described in the attached Exhibit "C" ("Project Description").

3.18 **Project Completion** means Contractor has fully completed the Project and provided all close out documents as defined in Section 4.4 of this Agreement.

3.19 **Project Costs** means the expenditures made and monetary obligations incurred by the Contractor in connection with the Project, limited to those expenditures and monetary obligations eligible for Reimbursement as approved by the City Engineer following Project Completion.

3.20 **Reimbursement** means the payment made by the City to Contractor under the terms and conditions of this Agreement computed with reference to Project Costs, subject to the

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limits of Available TIRZ Revenue and the Reimbursement Cap. Under no circumstances shall the Reimbursement payment(s) exceed the Available TIRZ Revenue.

3.21 **Reimbursement Cap** means the total Reimbursement amount payable by the City to the Contractor under this Agreement, which shall not exceed the total of the actual cost of the Project which cost shall not exceed $830,000.00.

3.22 **Reimbursement Submittal Package** means the documentation required to be supplied to the City by the Contractor as a condition of receipt of Reimbursement as further described in Exhibit B, attached hereto.

3.23 **Submittal** means any submission to the City or the designer on record for review and approval demonstrating how the Contractor proposes to conform to the Construction Documents for those portions of the Work for which the Construction Documents require a Submittal. Submittals include, but are not limited to, shop drawings, product data, and samples.

3.24 **Substantial Completion** means the Project is substantially complete in accordance with the Contract Documents, so that the City may occupy or utilize the Work or designated portion thereof for the use for which it is intended as expressed in the Contract Documents. City will conduct a walkthrough upon receipt of notice from Contractor, that Project is ready for inspection. A list of remaining work, referred to as a "Punch List," and a Certificate of Substantial Completion shall be issued only by the City and only after the City has certified Substantial Completion.

3.25 **Tax Increment** means the amount of property taxes levied and collected by the City on the Captured Appraised Value of real property taxable by the City and located in the TIRZ.

3.26 **Term** has the meaning found in Section 2.2 of this Agreement.

3.27 **TIRZ** means Tax Increment Reinvestment Zone Number Five, City of El Paso, Texas, known as the Downtown TIRZ and created pursuant to the authority of the Act, by Ordinance No. 016528 on December 19, 2006, as amended.

3.28 **TIRZ Fund** means the fund created by the City for the deposit of Tax Increment for the TIRZ.

3.29 **Work** means the construction and related services required to fulfill the Contractor's obligations under the Agreement and Construction Documents, whether completed or partially completed, and includes all labor, materials equipment and services provided or to be provided by the Contractor. The Work may constitute the whole or part of a Project.

ARTICLE IV. PROJECT AND PROJECT COMPLETION

4.1. **Project**. The Project consists of the construction, installation, and implementation of street improvements which are completely contained within the public right-of-way and generally located on West Main Drive between North Santa Fe Street and North El Paso Street, as further described in Exhibit "C": and

4.2 In constructing, installing, implementing, and completing the Project, Contractor shall comply with all the terms and conditions of this Agreement, and its exhibits, including the "General Conditions", attached hereto as Exhibit "A."

4.3 The Parties agree and acknowledge that Contractor's submitted proposal serves as a basis for the Agreement. Contractor's proposal is attached as Exhibit "F" and is incorporated herein by this reference ("Proposal"). Contractor agrees to adhere to the attached Proposal (Exhibit "F") and undertake all work in conformity with said Proposal. Contractor agrees to furnish all equipment, tools, materials, labor, and all other things necessary to complete the Project as described in said Proposal and perform in accordance with the terms and conditions of this Agreement, including all exhibits, including the General Conditions and Contractor's Proposal.

4.4 **Project Completion**. Project Completion shall not occur until all of the following are satisfied.

4.4.1 Documents and Approvals**.** Submission and approval of all documents required to be supplied by Contractor to City pursuant to this Agreement, including (i) all approved construction plans, as-built drawings, and inspections (material lab reports, and certificate of completions from Planning and Inspections Department); (ii) copies of the payment and performance bond in accordance with the executed Agreement; and (iii) certificates of substantial and final completion; (iv) City Engineer certifying the Project improvements were constructed and accepted in accordance with Construction Documents.

4.4.2 Lien and Material Releases. Contractor shall ensure that all contractors and subcontractors provide lien and material releases for the Project and provide copies of such lien and material releases to the City Engineer. Alternatively, with City's approval, which shall not be unreasonable withheld, Contractor may ensure that bonds are provided in a form reasonably acceptable to City in lieu of the lien and material releases.

4.5 **Transfer of Ownership.** If not already transferred or dedicated, Contractor shall transfer the ownership of the Project and the property underlying the Project.

4.6 **Project Budget.** The budget for the Project to be provided by Contractor is $830,000.00 for the construction of West Main Drive.

4.7 **Initial Costs.** Contractor shall pay all costs associated with the Project, including costs to furnish all materials, supplies, machinery, equipment, tools, superintendence, labor procurement, performance testing services, insurance, and other accessories and services necessary to complete the Project, and shall seek reimbursement of costs upon Project completion.

4.8 **Reimbursement.** Reimbursement to Contractor from the TIRZ Fund shall not exceed Reimbursement Cap. Contractor will not be responsible for unforeseen conditions; City changes; consultant changes; and City or consultant delays. Costs associated with unforeseen condition; City changes; consultant changes; and City or consultant changes will be at City's expense.

ARTICLE V. DUTIES AND OBLIGATIONS OF CONTRACTOR

5.1 **General Obligations.** Contractor must comply with all terms and conditions of the Agreement; with the General Conditions, attached hereto as Exhibit A and with all other exhibits. Contractor is responsible for coordination with all applicable authorities having jurisdiction within the Project limits and all areas adjacent to the Project limits such as Art Museum, Trolley, Theater, etc.

5.2 **Duty to Commence and Complete.** Contractor agrees to commence and complete the construction of the Project, for the sum not to exceed of $830,000.00 under the terms as stated in, and inferable from, the Contract Documents, including the General Conditions, (**Exhibit A)**. Contractor shall pay all costs associated with the Project, including costs to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, procurement, performance testing services, insurance and other accessories and services necessary to complete the Project. Contractor also agrees to obtain or cause to be obtained, all necessary permits and approvals from the City and/or all other governmental agencies having jurisdiction over the construction of improvements.

5.3 **Commencement of Construction.** Contractor warrants and acknowledges that Project construction shall not commence until the plans and specifications for the Project are approved by the appropriate City department(s) and the requirements of all applicable federal, state, and local laws are met.

5.4 **Payment and Performance Bonds.** In accordance with Chapter 2253 of the Texas Government Code, Contractor shall cause its general contractor(s) to obtain performance and payment and bonds naming the City as the beneficiary or oblige of the bonds for all phases of the construction of the Project. Said bonds for each phase shall be in an amount sufficient to cover the entire contract cost of the construction and completion of the Project. Contractor shall maintain and make available for inspection all original payment and performance bonds with copies to the City.

5.5 **Payment of Applicable Fees.** Contractor is responsible for paying all applicable permit fees and licenses in connection with the Project which have not been lawfully waived to

the City and all governmental agencies. Contractor is responsible for paying all utility bills associated with the Project improvements until Project Completion. Note: A utility transfer is required upon completion of the project. This requires: Utility Transfer Form (for each utility) the Owner has. A Copy of the utility bill for each utility must be provided. Contractor must provide: Certificate of completion. Contractor must provide documentation to Planning and Inspections, including Backflow testing (Water) and Certificate of Completion for new utilities.

5.6 **Infrastructure Maintenance.** At its own expense, Contractor shall maintain or cause to be maintained. the Project until Project Completion. Upon Project Completion, the cost of the repair, replacement, reconstruction and maintenance of the Project shall be the responsibility of the City.

5.7 **Project Site Inspection.** Contractor shall be responsible for 24-hour minimum coordination with assigned inspector for any required inspections or material testing. Contractor shall allow the City reasonable access to the Project Site for inspections such as Capital Improvement Department inspections and Planning and Inspection Department inspections, which shall be conducted separately, during and upon completion of construction of the Project. Contractor shall also allow access to documents and records considered necessary to assess the Project and Contractor's compliance with this Agreement.

ARTICLE VI. DUTIES AND OBLIGATIONS OF CITY

6.1. **No Increment Revenue Bonds.** The City shall not issue any Tax Increment revenue bonds to cover any costs directly or indirectly related to Contractor's improvement of the TIRZ under this Agreement.

6.2. **Pledge and Source of Funds.** The City pledges to use Available TIRZ Revenue, as Reimbursement to Contractor for Project Costs, up to the Reimbursement Cap and subject to: (i) the terms and conditions contained herein and (ii) termination of the TIRZ. The sole source of funds to reimburse Contractor shall be the Available TIRZ Revenue.

6.3. **Reimbursements.** City shall reimburse Contractor for Project Costs contingent on: (i) Project Completion; and (ii) submission of a complete Reimbursement Submittal Package.

6.4. **Reimbursement Process.** The City shall review the Reimbursement Submittal Package for completeness within 30 calendar days' receipt of the package. Upon a determination by the City of package completeness, the City shall promptly remit Reimbursement to Contractor according to the following schedule and amounts:

6.4.1. **Reimbursement Payment.** Within 30 calendar days' receipt of a complete Reimbursement Submittal Package and ending at termination of this Agreement or termination of the TIRZ, whichever comes first, and subject to the terms and

conditions contained herein, the City shall remit to Contractor from the Available TIRZ Revenue the single Reimbursement payment computed as the Project Costs. Under no circumstances shall the Reimbursement payment exceed the Available TIRZ Revenue at the time the payment is due.

6.4.2. **Invalid Payments.** If any payment to Contractor is held invalid, ineligible, illegal or unenforceable under applicable federal, state or local laws, then and in that event, Contractor shall repay such payment in full to the City for deposit into the TIRZ Fund.

6.4.3 **Requests for Reimbursement.** Upon Project Completion, Contractor shall initiate Reimbursement request of Project Costs by submitting to the City applicable invoices and a Reimbursement Submittal Package, as detailed in attached Exhibit "B". Contractor understands it shall pay for all construction costs associated with the project and then seek reimbursement. The Reimbursement Submittal Package shall be submitted to the City no later than 30 calendar days after Project Completion. Should there be discrepancies in the Reimbursement Submittal Package or if more information is required, Contractor shall have 30 calendar days upon notice by the City to correct any discrepancy or submit additional requested information. Failure to timely submit the Reimbursement Submittal Package or, if applicable, the additional information requested by the City may result in the delay of Contractor's requested Reimbursement.

ARTICLE VII. INSURANCE AND INDEMNIFICATION

7.1. **Insurance Required.** Contractor shall require that the insurance requirements contained in this Article be included in all of its contracts or agreements for Project design and construction, unless specifically exempted in writing by the City.

7.2. **Insurance Requirements.** The Contractor shall comply with all of the following insurance requirements through Project Completion. Any gaps in insurance coverage are considered a breach of the requirements of this Agreement.

7.2.1. **Commercial Liability Insurance.** The Contractor shall procure Commercial Liability Insurance in the minimum amounts of $1,000,000 per occurrence for bodily injury or wrongful death and $1,000,000 for property damage. The Contractor shall ensure that the liability insurance provides coverage for premises liability, operations liability, products and completed operations liability, personal and advertising injury, contractual liability, broad form property damage liability, and independent contractor liability. If the Contractor is performing services near any railroad or streetcar track, then the Contractor shall provide liability insurance that provides railroad protective liability insurance in the amount of $1,000,000 Bodily Injury/$1,000,000 Property Damage Liability per occurrence.

7.2.2. **Workers Compensation Insurance.** Contractor shall procure workers compensation insurance as required by law.

7.2.3. **Flood Insurance.** Contractor shall maintain, during the term of the Agreement, and provide the City on an annual basis, proof of flood insurance in the amount of flood insurance coverage required by the Flood Disaster Protection Act of 1973, as amended by the National Flood Insurance Reform Act of 1994, which is the lesser of the following: (i) the maximum amount of National Flood Insurance (NFPI) coverage available for the particular property type; or (ii) the insurable value of the Project.

7.2.4. **Automobile Liability Insurance.** The Contractor shall procure automobile liability insurance in the minimum amounts of $1,000,000 for bodily injury per occurrence and $1,000,000 property damage per occurrence.

7.2.5. **Builder's Risk.** Until the Project Completion in accordance with all of the terms and conditions of this Agreement, Contractor is required to maintain Builder's Risk Insurance (fire and extended coverage) on a one hundred percent (100%) completed value basis on the insurable portion of the project for the benefit of Owner, Contractor, and Subcontractor(s), as their interests may appear. This provision shall not release Contractor from his obligation to complete, according to plans and specifications, the Project covered by this Agreement, and Contractor and his Surety shall be obligated to full performance of Contractor's undertaking.

7.2.6. **Hazard.** Contractor shall keep the improvements now existing or hereafter erected on the Project Site insured against loss by fire, hazards included within the term "extended coverage" and any other hazards, including floods or flooding, for which the City requires insurance. This insurance shall be maintained in the amounts and for the periods that the City requires under this Agreement. If Contractor fails to maintain coverage described above, City may, at City's option, obtain coverage to protect City's rights on the Project Site.

7.2.7 **Payment and Performance Bonds.** Contractor shall obtain, in accordance with Chapter 2253 of the Texas Government Code: (i) a performance bond for all contracts in excess of $100,000 which shall be for 100% of the Agreement amount and conditioned on the faithful performance of work in accordance with the plans, specifications, and Agreement documents; and (ii) a payment bond for Public Works contracts in excess of $50,000 which shall be for 100% of the contract price for the protection and use of the payment bond beneficiaries who have direct contractual relationship with the Contractor or subcontractor to provide work labor or material.

7.2.8 **Additional Insured.** With the exception of the workers compensation insurance, the Contractor shall add the City as an additional insured to all insurance policies required under this Agreement.

7.2.9 **Notification of Changes/Cancellations.** The Contractor shall procure all insurances with an endorsement that requires notification to the additional insured prior to any changes or cancellations in coverage.

7.2.10 **Deductibles.** The Contractor shall obtain prior approval of the City for any deductibles.

7.2.11 **Issuer of Policy.** The Contractor shall procure all insurances from businesses authorized to do business in Texas. The issuer of any policy must have a certificate of authority to transact insurance business in the State of Texas. Each issuer must be responsible, reputable, and have financial capability consistent with the risks covered. The City may reject an issuer of an insurance policy in the City's sole discretion.

7.2.12 **Additional Endorsements.** Each policy must contain: (i) an endorsement to the effect that the issuer waives any claim or right in the nature of subrogation to recover against the City, their elected and appointed officials, officers, agents or employees; and (ii) an endorsement that such policy is primary insurance to any other insurance available to the additional insured with respect to claims arising hereunder and that the insurance applies separately to each insured.

7.3. **Proof of Insurance.** The Contractor shall provide the City proof of compliance with all insurance requirements in this Agreement. Proof provided by the Contractor to the City must be in the form of a certificate of insurance accompanied by all endorsements. Following a written request by the City, the Contractor shall provide the City a complete copy of all insurance policies required under this Agreement.

7.4. **Indemnification. THE CONTRACTOR WILL INDEMNIFY, DEFEND, AND HOLD HARMLESS THE OWNER AND ITS AGENTS AND EMPLOYEES FROM ALL SUITS, ACTIONS, OR CLAIMS AND FROM ALL LIABILITY AND DAMAGES FOR ANY INJURY OR DAMAGE TO ANY PERSON OR PROPERTY DUE TO THE CONTRACTOR'S NEGLIGENCE IN THE PERFORMANCE OF THE WORK AND FROM ANY CLAIMS ARISING OR AMOUNTS RECOVERED UNDER ANY LAWS, INCLUDING WORKERS' COMPENSATION AND THE TEXAS TORT CLAIMS ACT. THE CONTRACTOR WILL INDEMNIFY AND HOLD HARMLESS THE OWNER AND ASSUME RESPONSIBILITY FOR ALL DAMAGES AND INJURY TO PROPERTY OF ANY CHARACTER OCCURRING DURING THE PROSECUTION OF THE WORK RESULTING FROM ANY ACT, OMISSION, NEGLECT, OR MISCONDUCT ON THE CONTRACTOR'S PART IN THE MANNER OR METHOD OF EXECUTING THE WORK; FROM**

FAILURE TO PROPERTY EXECUTE THE WORK; OR FROM DEFECTIVE WORK OR MATERIAL.

PIPELINES AND OTHER UNDERGROUND INSTALLATIONS THAT MAY OR MAY NOT BE SHOWN ON THE PLANS MAY BE LOCATED WITHIN THE RIGHT OF WAY. THE CONTRACTOR WILL INDEMNIFY AND HOLD HARMLESS THE OWNER FROM ANY SUITS OR CLAIMS RESULTING FROM DAMAGE BY THE CONTRACTOR'S OPERATIONS TO ANY PIPELINE OR UNDERGROUND INSTALLATION. THE CONTRACTOR WILL COORDINATE WITH RESPECTIVE UTILITY OWNERS IN REGARDS TO THE PROPOSED WORK.

7.5 **The Contractor's obligations under this Section commence upon receipt of notice of a claim from the City to the Contractor.** The Contractor is responsible for all costs associated with handling a claim forwarded by the City, including and not limited to, attorney costs, court costs, and judgments. The obligations under this Section survive the term of the Agreement.

7.6 **Damage to City Property.** The Contractor shall pay the costs of repairing any damages to City property (including public right of way) caused by the Contractor or the Contractor's contractors, subcontractors, or agents. The Contractor shall make payment for any damages within 30 calendar days of receiving an invoice from the City.

ARTICLE VIII. LIABILITY

8.1. **Contractor.** As between the City and Contractor, Contractor shall be solely responsible for compensation payable to its employee, or subcontractor of the Contractor, and none of Contractor's employees, contractors, or subcontractors shall be deemed to be employees, contractors, or subcontractors of the City as a result of the Agreement.

8.2. **City.** To the extent permitted by Texas law, no director, officer, employee or agent of the City shall be personally responsible for any liability arising under or growing out of this Agreement.

ARTICLE X. NOTICE

9.1.1 Addresses and Notices. Any notice or communication required or contemplated by this Agreement (a "Notice") shall be deemed to have been delivered, given, or provided: (i) five business days after being deposited in the United States mail, CERTIFIED MAIL or REGISTERED MAIL, postage prepaid, return receipt requested; (ii) when delivered to the Notice address by a nationally recognized, overnight delivery (such as FedEx or UPS) as evidenced by the signature of any person at the Notice address (whether or not such person is the named recipient of the Notice); or (iii) when otherwise hand delivered to the Notice

address as evidenced by the signature of any person at the Notice address (whether or not such person is the named recipient for the purpose of the Notice); and addressed to the named recipient as follows:

If to the City:	The City of El Paso, Texas Attn: City Manager P.O. Box 1890 El Paso, Texas 79950-1890 Phone (915) 212-0023
	The City of El Paso, Texas Attn: City Attorney P.O. Box 1890 El Paso, Texas 79950-1890 Phone: (915) 212-0033
	The City of El Paso, Texas Attn: City Engineer P.O. Box 1890 El Paso, Texas 79950-1890 Phone: (915) 212-0065
If to the Contractor:	Jordan Foster Construction 7700 CF Jordan Drive, El Paso, Texas 79912

9.1.2 Change of Address. A Party may change its address for notices under this Agreement by giving written notice to the other Party, specifying the Party's new address. Each Party agrees to keep the other informed at all times of its current address.

ARTICLE 10. REPRESENTATIONS

10.1.1 City's Authority. City represents that it is a home-rule municipality located in El Paso County, Texas, and has authority to carry out the obligations contemplated by this Agreement.

10.1.2 Contractor's Authority. Contractor represents that it has the right to enter into this Agreement and perform the requirements set forth herein. Contractor's performance shall be lawful and shall not violate any applicable judgement, order, or regulation nor result in the creation of any claim against the City for money or performance, any lien, charge, encumbrance or security interest upon any asset of the City, except that this Agreement shall constitute a claim against the TIRZ Fund only from Available Tax Increment to the extent provided herein. Contractor shall have sufficient capital to perform all of its obligations under this Agreement when it needs to have said capital.

10.1.3 No Increment Revenue Bonds. The City shall not issue any Tax Increment revenue bonds to cover any costs directly or indirectly related to Contractor's improvement of the TIRZ under this Agreement.

10.1.4 Reasonable Efforts. Each party to this Agreement will cooperate and make reasonable efforts to expedite the subject matter hereof and acknowledge that successful performance of this Agreement requires their continued cooperation.

10.1.5 Consents. Each Party represents that the execution, delivery, and performance of this Agreement requires no consent or approval of any person that has not been obtained.

10.1.6 Duty to Complete Improvements. Each Party understands and agree that Contractor shall ensure the successful completion of the Project at no additional cost to the City and/or the TIRZ in accordance with the terms of this Agreement, even after the TIRZ terminates.

10.1.7 Licenses and/or Certifications. Contractor warrants and certifies that, to its knowledge, any person providing services hereunder has the requisite training, license, and/or certification to provide said services and meets the competence standards promulgated by all other authoritative bodies, as applicable to the services provided herein. \

10.1.8 Right to Assign Payment. Contractor may rely upon the payments to be made to them out of the TIRZ Fund as specified in this Agreement and Contractor may assign its rights to such payments, either in full or in trust, for the purposes of financing its obligations related to this Agreement, but the Contractor's right to such payments is subject to the other limitations of this Agreement. Notwithstanding the forgoing, the City shall issue a check(s) or other form of payment made payable only to Contractor.

ARTICLE XI. INDEPENDENT CONTRACTORS

11.1 **No Agency.** The Parties expressly agree that in performing their services, the Contractor at no time shall be acting as agents of the City and that all consultants or contractors engaged by the Contractor shall be independent contractors of the Contractor. The Parties hereto understand and agree that the City shall not be liable for any claim that may be asserted by any third party occurring in connection with services performed by Contractor.

11.2 **No Authority.** The Parties further understand and agree that no party has authority to bind the others or to hold out to third parties that it has the authority to bind the others.

ARTICLE XII. TERMINATION

12.1.1 Termination. For purposes of this Agreement, termination means the expiration of the Term as provided by Section 2.2. In addition, the City may terminate this Agreement in the

following manners: (i) termination without cause pursuant to Section 13.2; (ii) termination for cause pursuant to Section 13.3; and 3) termination by law pursuant to Section 13.4.

12.1.2 Termination without Cause. City may, at any time, at will and without cause, terminate any part of the Work to be performed or all remaining work for any reason whatsoever by giving seven (7) days prior written notice to the Contractor. City shall incur no liability to the Contractor by reason of such termination, except that the Contractor shall be entitled to payment for work properly performed in accordance with this Agreement up to and including the effective date of the termination. In the event that only part of the work is terminated, the Contractor shall continue in full force and effect as to all remaining work to be completed. The City shall not be responsible for compensation or damages for delay, damages for loss of anticipated profits on work not performed, demobilization or cancellation costs or charges on account of any termination.

12.1.3 Termination for Cause or Default. Upon written notice, which must be provided in accordance with Article IX of the Agreement, the City shall have the right to terminate this Agreement for cause, in whole or in part, if Contractor: (i) defaults and (ii) fails to cure such default.

12.1.4 Events of Default. Each of the following shall constitute an "Event of Default":

a. If the Contractor fails to begin the work under the contract within the time specified in the Notice to Proceed, or

b. If the Contractor fails to perform the work with sufficient workmen and equipment or with sufficient materials to assure the prompt completion of said work, or

c. If the Contractor fails to perform the work in accordance with the contract requirements and/or refuses to remove and replace rejected materials or unacceptable work, or

d. If the Contractor discontinues the prosecution of the work, or

e. If the Contractor fails to resume work that has been discontinued within a reasonable time after notice to do so, or

f. If Contractor fails to complete any remaining punch list items for the project after notice to do so, or

g. If the Contractor becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or

h. If the Contractor allows any final judgment to remain unsatisfied for a period of 10 days, or

i. If the Contractor makes an assignment for the benefit of creditors, without obtaining the written consent of the Owner and the Surety or Sureties, or

j. If the Contractor fails to comply with contract requirements regarding minimum wage payments or EEO requirements, or

k. If the Contractor, for any other cause whatsoever, fails to carry on the work in an acceptable manner, or

l. If the Contractor violates any local, state, or federal laws, rules or regulations that relate to the performance of this Agreement.

12.2.1 Notice of Default. In the event of a default by Contractor, the City Engineer shall provide written notice of default to Contractor and the Surety in accordance with Article X of this Agreement. After sending a written notice of default, the City shall not distribute TIRZ funds to Contractor until the default is cured.

12.2.2 **Cure.** Contractor shall have 10 calendar days after receipt of the notice of default to cure the default ("Cure Period") or contest the allegation of default. However, if a default exists that cannot be cured by Contractor within the Cure Period, the Cure Period shall be extended so long as reasonably necessary to cure the default so long as Contractor is diligently pursuing the cure thereof. If, however, there are no reasonable means to cure the default, Contractor shall be apprised of that as well as the facts leading to that conclusion in the notice of default and said notice of default may serve as notice of termination.

12.3 Failure to Cure. In the event Contractor commits a breach of its obligations under this Agreement and fails to cure that breach within the 10-day Cure Period (or extended period), the City will have full power and authority without violating the Agreement to take the prosecution of the work out of the hands of the Contractor. The City may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the City will be required for the completion of said contract in an acceptable manner.

12.3.1 Other Remedies. City shall have the right to seek any remedy in law or equity to which it may be entitled in addition to termination and repayment of funds, if Contractor defaults under this Agreement.

12.3.2 Termination by Law. If any applicable state or federal law or regulation is enacted or promulgated which prohibits the performance of the duties herein, or, if any law interpreted to prohibit such performance, this Agreement shall automatically terminate as of the effective date of such prohibition. Contractor shall be entitled to payment for Work performed in accordance with the Agreement up to and including the effective date of termination

12.3.3 Close-Out. Regardless of how this Agreement is terminated, Contractor will affect an orderly transfer to City, at no additional cost to the City, copies of all completed or partially completed documents, records, or reports produced as a result of or pertaining to this Agreement, regardless of storage medium, if requested by the City Reimbursement due to Contractor will be conditioned upon delivery of all such documents, records, or reports, if requested by the City.

ARTICLE XIII. CHANGES AND AMENDMENTS

13.1.1 Amendment Required. Except when the terms of this Agreement expressly provide otherwise, any alterations, additions, or deletions to the terms hereof shall be by amendment in writing executed by both Parties.

13.1.2 Construction Schedule. Notwithstanding the above, the Construction Schedule may be amended by approval of the City Engineer or designee. In the event an amendment to the Construction Schedule will result in a material change to this Agreement, then such amendment shall comply with the requirements of Section 13.1, above. No change under this section may result in an increase in the maximum contribution of the City. Contractor shall rely on the determination of the City Engineer whether a change in the Construction Schedule would result in a material change to the overall Project requirements.

13.1.3 Automatic Incorporation of Laws. Changes in local, state and federal rules, regulations or laws applicable to the Contractor's services under this Agreement may occur during the term of this Agreement and for review and approval for any resulting increase in costs and will be automatically incorporated into this Agreement without written amendment to this Agreement, and shall become a part as of the effective date of the rule, regulation or law.

13.1.4 In the event of an unforeseen condition, the contractor shall bring to the City's attention an RFI within 2 days, which the City will address within 3 days to reach resolution, including the potential for a Potential Change Order.

ARTICLE XIV. LITIGATION EXPENSES

14.1.1 Except to the extent prohibited by law, persons who are engaged in litigation or adversarial proceedings related to tax increment financing against the City are ineligible to obtain or continue the use of tax increment financing as principals or participants for the duration of the litigation. A principal or participant includes the tax increment financing applicants and the tax increment financing applicant's Contractors, partners, affiliates, sponsors, payroll employees, or relatives of the first degree of consanguinity. Accordingly, the City shall not consider a project proposing the use of tax increment financing, designate a tax increment financing zone, enter into any tax increment financing contracts or agreements with, or authorize or make any tax increment reinvestment zone payment to persons engaged in litigation or adversarial proceedings related to tax increment financing with the City. Ineligible persons shall be excluded from participating as either participants or principals in all tax increment reinvestment zone project during the term of their litigation.

14.1.2 During the term of this Agreement, if Contractor files or pursues an adversarial proceeding regarding this Agreement against the City without first engaging in good faith mediation of the dispute, then all access to funding provided hereunder shall be withheld and Contractor will be ineligible for consideration to receive any future tax increment funding while any adversarial proceedings remain unresolved.

14.1.3 Under no circumstances will the Available TIRZ Revenue received under this Agreement be used, either directly or indirectly, to pay costs or attorney fees incurred in any adversarial proceeding against the City. Nothing contained in this Article shall affect the indemnity provisions contained in Article VII.

ARTICLE XV. MISCELLANEOUS

15.1.1 Applicable Law and Venue. This Agreement shall be governed by and construed in accordance with the laws of the State of Texas, and all obligations of the Parties created hereunder are performable in El Paso County, Texas. Venue for any action arising under this Agreement shall lie in the state district courts of El Paso County, Texas.

15.1.2 Assignment. Contractor shall not sell, transfer, assign, or convey, in any way, rights associated with this Agreement to anyone.

15.1.3 Computation of Time. If any date or time period provided for in this Agreement is or ends on a Saturday, Sunday or federal, state or legal holiday, then such date shall automatically be extended until 5:00 p.m., Mountain Standard Time, of the next day which is not a Saturday, Sunday or federal, state or legal holiday.

15.1.4 Confidentiality. The confidentiality of records related to this Agreement will be maintained in accordance with and subject to all applicable laws, including the Public Information Act, Chapter 552, Texas Government Code.

15.1.5 Counterparts. This Agreement may be executed in multiple counterparts, each of which shall be deemed an original, and such counterparts, when taken together, shall constitute one instrument.

15.1.6 Force Majeure. If the performance of any obligations hereunder is delayed by reason of war, terrorism or the imminent threat thereof, insurrection, civil commotion, riots, labor disputes, strikes, lockouts, embargoes, hurricanes or named windstorms, unusual weather, fire, casualty, disruption to local, national or international transport services or exceptional or abnormal lack of availability of construction materials/supplies, epidemics, pandemics, quarantine, any other public health restrictions or advisories, unavoidable casualties or other causes beyond the reasonable control of a Party hereto, the Party so obligated or permitted shall be excused from doing or performing the same during such period of delay, so that the time period applicable to such obligation or requirement shall be extended for a period of time equal to the period such Party was delayed.

15.1.7 Headings. The Article headings contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement.

15.1.8 Legal Authority. Each person executing this Agreement on behalf of each Party, represents, warrants, assures, and guarantees that s/he has full legal authority to execute this Agreement on behalf of the City and/or Contractor, respectively and to bind the City

and/or Contractor to all the terms, conditions, provisions, and obligations of this Agreement.

15.1.9 No Joint Venture. The Parties agree that the terms hereof are not intended to and shall not be deemed to create any partnership or joint venture between the Parties. The City, its past, present and future officers, elected officials, employees and agents of the City, do not assume any responsibilities or liabilities to any third party in connection with the Project.

15.1.10 Severability. If any provision of this Agreement shall be determined by any court of competent jurisdiction to be invalid or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

15.1.11 Survival of Agreement. This and all provisions hereof shall survive the completion of the Project except as expressly set forth herein to the contrary.

15.1.12 Time is of the Essence. Time is of the essence in the performance of the obligations of this Agreement and its Exhibits.

ARTICLE XVI. ENTIRE AGREEMENT

16.1.1 No Contradictions. This written Agreement embodies the final and entire Agreement between the Parties hereto and may not be contradicted by evidence of prior, contemporaneous, or subsequent oral agreements of the Parties.

16.1.2 Incorporation of Exhibits. Each exhibit referenced below shall be incorporated herein for all purposes as an essential part of this Agreement, which governs the rights and duties of the parties, except that if there is a conflict between an Exhibit and a provision of this Agreement, the provision of this Agreement shall prevail over the Exhibit.

Exhibit A: General Conditions
Exhibit B: Reimbursement Package
Exhibit C: Drawings and Specifications
Exhibit D: Project Cost Template
Exhibit E: Letter of Justification for Liquidated Damages
Exhibit F: Contractor's Proposal

IN WITNESS WHEREOF, the Parties have executed this Agreement on this _____ day of _____, 2024.

(Signatures Begin on the Following Page)

Jordan Foster Construction, LLC
a Texas limited liability company

By: _____

Title: John Goodrich, PE, Executive Vice President

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF EL PASO §

This instrument was acknowledged before me on the 31st day of January, 2024 by JOHN GOODRICH, as EXECUTIVE VICE PRESIDENT of Jordan Foster Construction.

_____
Notary Public, State of Texas

My Commission Expires:

CAMILLA KAMMY VILLALOBOS
Notary Public, State of Texas
Comm. Expires 03-23-2024
Notary ID 124869259

_____

(Signatures Continue on the Following Page)

CITY OF EL PASO, TEXAS

By: _____
Cary Westin
Interim City Manager

STATE OF TEXAS §
§
COUNTY OF EL PASO §

This instrument was acknowledged before me on the ____ day of _____, 2024 by Cary Westin, Interim City Manager of the City of El Paso, Texas, on behalf of the City of El Paso, Texas.

_____

Notary Public, State of Texas

My Commission Expires:

_____

APPROVED AS TO FORM:

_____
Roberta Brito
Senior Assistant City Attorney

APPROVED AS TO CONTENT

_____
Yvette Hernandez, P.E., City Engineer
Capital Improvement Development

Exhibit A

ARTICLE 1 - GENERAL PROVISIONS

1.01 Project, Budget, Milestone Dates

A. The City's Construction Schedule:

1. Construction Phase NTP……..…….NTP Issuance
2. Substantial Completion ……..….60 calendar days after NTP start
3. Final Completion……...….30 calendar days after Substantial Completion

B. The City requires Contractor to retain the following consultants and subcontractors at Contractor's cost:

1. Consultants: Certified material testing laboratory, RAS (registered accessibility specialist) and all necessary consultants to fulfill the Scope or Work of the Project ("SOW") "Exhibit C "of the Project.

2. Subcontractors: Site work, concrete, pavement, licensed irrigator, landscaping, and all necessary contractors to comply with SOW.

C. Definitions

Unless otherwise stated in this Exhibit A, the words and terms used in this Exhibit A will have the meanings stated in the Tax Increment Reinvestment Zone Reimbursement Agreement ("Agreement").

ARTICLE 2 - GENERAL REQUIREMENTS OF THE WORK

2.01 General

A. Contractor shall comply with any applicable licensing requirements in the jurisdiction where the Project is located.

B. Contractor shall designate in writing a representative who is authorized to act on Contractor's behalf with respect to the Project.

C. Neither Contractor nor any subcontractor, Consultant, Engineer or Architect shall be obligated to perform any act, which they believe will violate any applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

D. Contractor shall be responsible to the City for acts and omissions of Contractor's employees, Consultants, subcontractors, and their agents and employees, and other persons or entities performing portions of the Work. In addition, Contractor represents that all subcontractors performing services under the Agreement and this Exhibit A have all applicable licenses by the State to perform such services.

E. Contractor shall retain overall responsibility for the Project. Contractor shall provide a list of key personnel and resumes for who will be working and/or consulting on the Project (example: Project Manager; superintendent; subcontractors; certified payroll officer; accounting officer; etc.)

F. Contractor shall schedule and conduct progress meetings with the City, on a weekly basis, to review matters such as procedures, progress in design and/or construction, coordination and scheduling of the Work.

G. Contractor, shall prepare and file all documents required to obtain necessary approvals of governmental authorities having jurisdiction over the Project.

H. Progress Reports

1. Contractor shall keep the City informed of the progress and quality of the Work during construction phases. On a bi-weekly basis, or otherwise as agreed to by the City and Contractor, Contractor shall submit written progress reports to the City, showing estimated percentages of completion on each project and other information identified below:

   a. Work completed for the period;
   b. Project schedule status;
   c. Submittal schedule and status report, including a summary of outstanding Submittals;
   d. Responses to requests for information to be provided by the City;
   e. Approved Change Orders and Change Directives;

f. Pending Change Order and Change Directive status reports;
g. Tests and inspection reports;
h. Deficiencies report;
i. Cumulative total of the Cost of the Work to date including Contractor's compensation and Reimbursable Expenses (see Exhibit B)
j. Current Project cash-flow and forecast reports; and
k. Additional information as agreed to by the City and Contractor.

2. In addition, where the Agreement Price is the Cost of the Work, Contractor shall include the following additional information in its progress reports:

a. Contractor's work force report;
b. Equipment utilization report;
c. Cost summary, comparing actual costs to updated cost estimates.
d. Constructability report, and
e. Value Engineering (if applicable)

I. Contractor's Schedule

Contractor shall submit their finalized schedule for the project within 10 days after execution of the Agreement. The schedule, including the time required for construction, shall not exceed time limits set within the completion of the La Nube opening. Project Schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project, shall provide for expeditious and practicable execution of the Work, and shall include allowances for periods of time required for the City's review and for approval of submissions by authorities having jurisdiction over the Project. In no circumstance shall the preparation and presentation of a schedule extend the completion beyond the time limits contained in the Tax Increment Reinvestment Zone Reimbursement Agreement.

Contractor shall perform the Work in general accordance with the most recent schedules submitted to the City. The schedules shall be updated regularly and in advance of periodic Project meetings with the City. Such schedules shall be posted at the Project meetings in a convenient location for review and approval by the City. Contractor shall at all times carry out its duties and responsibilities as expeditiously as possible and in accordance with the project schedule. Time is of the essence in the performance of this project.

J. Building Permits

Upon the City's written request, Contractor shall obtain from the Architect, Engineer, Consultants, and Subcontractors, and furnish to the City, procured permits and approvals with respect to the documents and services provided by the Architect, Engineer, Consultants, and subcontractors (a) that, to the best of their knowledge, information and belief, the documents or services to

which the certifications relate (i) are consistent with the Construction Documents, except to the extent specifically identified in the certificate, and (ii) comply with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities governing the design of the Project; and (b) that the City and its consultants shall be entitled to rely upon the accuracy of the representations and statements contained in the certifications.

K. Contractor's Submittals

1. Prior to submission of any Submittal, Contractor shall prepare a Submittal schedule indicating construction submittals, and shall submit the schedule for the City and/or designer's approval. The Submittal schedule shall (1) be coordinated with Contractor's schedule provided in this Section, (2) allow the City and/or designer reasonable time to review Submittals, and (3) be periodically updated to reflect the progress of the Work.

2. By providing Submittals, the Contractor represents to the City that it has

1. reviewed and approved them,
2. determined and verified materials, field measurements and field construction criteria related thereto, and
3. checked and coordinated the information contained within such Submittals with the requirements of the Work and of the Construction Documents.
4. Contractor shall perform no portion of the Work for which the Construction Documents require Submittals until the City and/or its designer has approved the respective Submittal.
5. The Work shall be in accordance with approved Submittals. Work done in compliance of an approved Submittal does not relieve Contractor of its responsibility to perform the Work consistent with the requirements of the Construction Documents and the design intent if the Work subject to an approved Submittal fails or is deemed defective by the City. The Work may deviate from the Construction Documents only if the Contractor has notified the City in writing of a deviation from the Construction Documents at the time of the Submittal and a Modification is executed authorizing the identified deviation. Contractor shall not be relieved of responsibility for errors or omissions in Submittals or by the Owner's approval of the Submittals.

L. Preparation/Sufficiency of Site

Before commencing the construction work, Contractor shall:

1. visit and thoroughly inspect the Project Site and any structure(s) or other man-made features to be modified and become familiar with local conditions under which the Project will be constructed and operated,
2. familiarize itself with the Construction Documents including drawings and specifications. Claims by Contractor resulting from Contractor's failure to familiarize itself with the site or pertinent documents shall be deemed waived.

M. Warranty

Contractor's warranty obligations shall be one year after final completion of the Project.

ARTICLE 3- CONTRACTOR'S PROPOSAL

The Parties agree and acknowledge that Contractor's submitted proposal serves as a basis for the Agreement. Contractor's proposal is attached as Exhibit "F" and is incorporated hereto and to the Agreement by this reference ("Proposal"). Contractor hereby agrees to adhere to the attached Proposal and undertake all work in conformity with the Proposal, Contractor agrees to furnish all equipment, tools, materials, labor, and all other things necessary to complete the Project listed in Exhibit "F" and perform in accordance with the terms and conditions of this Agreement, including all Exhibits, and Contractor's Proposal. Time is of the essence in the performance of each obligation under this Agreement. Any changes to the Scope of Work and associated costs must be mutually agreed to in a formal written amendment approved by the City and Contractor prior to being performed by Contractor.

ARTICLE 4 - CONSTRUCTION SERVICES

4.01 General

Unless otherwise specified herein, all work performed pursuant to this Article shall be governed in accordance with the Tax Increment Reinvestment Zone Reimbursement Agreement

The City shall provide "Exhibit C" to Contractor.

4.02 Construction

A. **Commencement.** Except as otherwise permitted in this Section, construction shall not commence prior to execution of the Tax Increment Reinvestment Zone Reimbursement Agreement.

B. **General Intent.** Contractor shall perform all Work and construction administration services necessary to construct the Project in accordance with the Construction Documents and to render the Project and all of its components operational and functionally and legally usable.

C. **Duty to Complete.** Contractor agrees to complete the Scope of Work in accordance construction documents and specifications for the project.

D. **Construction Supervision**. Commencing with the Effective Date of the Agreement and terminating on the date of Final Completion, the Contractor shall provide the services described herein.

1. Contractor shall provide/ generate redlines during construction, and provide administration of the Construction Documents.

2. Contractor shall supervise and direct the Work at the site. Contractor shall, at a minimum, staff the Project site with personnel who shall:

- supervise and coordinate Contractor's personnel and act as its primary liaison with the City;
- coordinate trade contractors and suppliers, and supervise site construction management services;
- be familiar with all trade divisions and trade contractors' scopes of Work, all applicable building codes and standards
- check, review, coordinate and distribute shop drawings and check and review materials delivered to the Site, regularly review the Work to determine its compliance with the Construction Documents, confer with the appropriate City's consultant(s) as necessary to assure acceptable levels of quality;
- prepare and maintain Project records and process documents;

- schedule and conduct weekly progress meetings with subcontractors to review such matters as jobsite safety, job procedures, construction progress, schedule, shop drawing status, submittal log, Request for information logs, and other information as necessary and provide notification of, and minutes from, such meetings to City;
- schedule and conduct weekly progress meetings with the City to review such matters as construction progress, schedule, expenditures, and other information as necessary; and
- make provision for Project security to protect the Project site and materials stored off-site against theft, vandalism, fire and accidents.

ARTICLE 5 - CHANGES IN THE WORK

5.01 **General**

A Change Order may accomplish a change or modification in the Work after execution of the Agreement, and without invalidating the Agreement, subject to the limitations stated in the contingency allocation and allocated budget of $830,000.00. In the event of an unforeseen condition, the contractor shall bring to the city's attention a Request for information within 2 days, which The

City will address within 3 days to reach resolution, including the potential for a Potential Change Order.

ARTICLE 6 - CONTRACT TIME AND COMPLETION

6.01 General

The Contractor's obligations with respect to the timeline is to abide by the Construction Schedule in accordance with the agreed timeline as specified in the Agreement. Construction Schedule shall be governed in accordance with the Agreement, unless otherwise stated in this Article.

A. Contractor shall not, except by agreement of the City in writing, commence the Work prior to the effective date of insurance, other than property insurance. The Construction Schedule shall not be adjusted as a result of the Contractor's failure to obtain insurance required under this Contract.

B. Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Construction Schedule.

C. The date of commencement for the Work shall be stated in a Notice to Proceed issued by the City ("Date of Commencement").

D. The Construction Schedule shall be measured from the date of commencement.

E. **Substantial Completion.** Contractor shall achieve Substantial Completion of the entire Work not later than 60 calendar days from the Date of Commencement subject to adjustments of this Construction Schedule as provided in the Contract Documents and change orders modifying and extending this Agreement. It is specifically understood and agreed to by and between City and Contractor that time is of the essence in the Substantial Completion of the Work, and that failure to substantially complete the Work within the designated period, or as it may be extended, shall be construed as a breach of the Agreement.

F. **Final Completion.** Contractor shall achieve Final Completion of the entire Work not later than 30 calendar days from the Date of Substantial Completion subject to adjustments of the schedule as provided in the Contract Documents and change orders modifying and extending this Agreement. It is specifically understood and agreed to by and between City and Contractor that time is of the essence in the Final Completion of the Work, and that failure to achieve Final Completion of the Work within the designated period, or as it may be extended, shall be construed as a breach of the Agreement.

G. Utility transfer to the City of El Paso shall not take place until Final Completion.

6.02 Delays and Extensions of Time:

A. Contractor is responsible for the Project's construction. Project Completion shall occur no later than 90 calendar days from Date of Commencement. If Project Completion is delayed by reason(s) beyond the Contractor's control, then at the reasonable discretion of the City Engineer, the completion deadline set forth in this Agreement may be extended by no more than 30 calendar days. Other than as a result of a force majeur, the Contractor's failure to complete the Project in compliance with the Construction Schedule (or extended Construction Schedule) constitutes a material breach.

B. Contractor shall receive no financial compensation for delay or hindrance of the Work. In no event shall the City be liable to Contractor for any damages arising out of or associated with any delay or hindrance to the Work, regardless of the source of the delay or hindrance. Contractor's sole remedy for delay or hindrance shall be an extension of time, provided the delay must be beyond the control and without the fault of negligence of the Contractor.

C. The procedure for the determination of time extensions for unusually severe weather must be satisfied in order for the City to award a time extension under this clause.

1. The weather experienced at the Project site during the Contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the Project location during any given month.

2. The unusually severe weather must actually cause a delay to the completion of the Project.

D. For the duration of the Contract, Contractor shall maintain in its daily reports an accurate and contemporaneous record of the occurrence of adverse weather and resultant impact to normally scheduled Work. Delay from adverse weather unless Work on the overall Project's critical activities is prevented for 50 percent or more of Contractor's scheduled work day. The number of actual adverse weather days shall be calculated monthly. If the number of actual adverse weather delay days in a month exceed the number of days for that month as referenced above, the City upon notification by Contractor, will convert any qualifying delays to calendar days, giving full consideration for equivalent fair-weather work days, and a modification shall be issued in accordance with the Contract.

E. **Liquidated Damages**

Contractor acknowledges and recognizes that the City is entitled to full and beneficial occupancy and use of the completed work following expiration of the construction contract. Contractor further acknowledges and agrees that, if Contractor fails to meet the Substantial Completion or Final Completion deadlines for the completion of any portion of the Work, the City will sustain actual damages as a result of such failure. The exact amount of such damages will be difficult to ascertain. Therefore, the City and Contractor agree that, if Contractor shall neglect, fail, or refuse to achieve substantial completion of the Work by the Substantial Completion or Final Completion

date, subject to proper extension granted by the City, then Contractor agrees to pay the Owner the sum stipulated herein for each day in which such Work is not completed, not as penalty, but as liquidated damages, for the damages ("Liquidated Damages") that would be suffered by City as a result of delay for each and every calendar day that Contractor shall have failed to have completed the Work as required herein. The Liquidated Damages shall be in lieu of any and all other damages which may be incurred by City as a result of the failure of Contractor to complete within the Construction contract completion. See Exhibit "E" Letter of Justification for Liquidated Damages.

1. Contractor agrees to pay, as Liquidated Damages, the sum of $335.00 for each consecutive calendar day after the date of Substantial Completion.
2. Contractor agrees to pay, as Liquidated Damages, the sum of $197.50 for each consecutive calendar days after the date of Final Completion.

ARTICLE 7 – CONTRACT PRICE

7.01 **General**

The City shall pay Contractor in accordance with the Tax Increment Reinvestment Zone Reimbursement Agreement.

7.02 **Cost of the Work**

The term Cost of the Work shall mean costs reasonably incurred by Contractor in the proper performance of the Work. The Cost of the Work shall include only the following:

A. Fees for Contractor's supervisory and administrative personnel engaged in the performance of the Work and who are located at the site or working off-site to assist in the production or transportation of material and equipment necessary for the Work.

B. Payments properly made by the Contractor to Subcontractors and Consultants for performance of portions of the Work, including any insurance and bond premiums incurred by Subcontractors and Contractor Consultants.

C. Costs, including transportation, inspection, testing, storage and handling, of materials, equipment and supplies incorporated or reasonably used in completing the Work.

D. Costs less salvage value of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by the workers that are not fully consumed in the performance of the Work and which remain the property of contractor, including the costs of transporting, inspecting, testing, handling, installing, maintaining, dismantling and removing such items.

E. Costs of removal of debris and waste from the Site.

F. Rental charges and the costs of transportation, installation, minor repairs and replacements, dismantling and removal of temporary facilities, machinery, equipment and hand tools not customarily owned by the workers, which are provided by contractor at the site, whether rented from Contractor or others, and incurred in the performance of the Work.

G. Premiums for insurance and bonds purchased specifically for this Project as required by the performance of the Work.

H. All utility costs incurred in the performance of the Work, including the installation of water meter, and monthly billing until Final completion of the project.

I. Sales, use, or similar taxes, tariffs or duties incurred in the performance of the Work. Provided that if the City is exempt from such taxes and provides a tax exemption certificate or certificates to the Contractor that effect, no such taxes shall apply.

J. Costs for permits, licenses, tests and inspections incurred by the contractor.

K. Accounting and data processing costs related to the Work.

L. Other costs reasonably and properly incurred in the performance of the Work to the extent approved in writing by Owner.

M. Costs incurred by the contractor to provide the payment and performance bonds, warranties and guarantees with respect to the Work as provided herein.

N. **Non-Reimbursable Costs** The following shall be excluded from the Cost of the Work:

1. Compensation for Contractor's personnel stationed at Contractor's principal or branch offices, except as provided for in Sections 9.03.A, 9.03.B and 9.03.C.

2. Overhead and general expenses, except as provided for in Section 9.03 hereof, or which may be recoverable for changes to the Work.

3. The cost of Contractor's capital used in the performance of the Work.

4. Any and all costs incurred by Contractor, including but not limited to costs for project management and costs to comply with the General requirements to complete the work. s, to the extent that such costs would cause the upon agreed cost to be exceeded.

O. **The Project Price**

1. Contractor guarantees that the total charge to City for completion of all Work shall not exceed the agreed project price of $830,000.00 ("Project Price"). Additional detail regarding the Project is included in Exhibit C .

ARTICLE 8 - COMPENSATION AND REIMBURSEMENT PAYMENTS PROCESS

8.01 General

Payments to Contractor are governed in accordance with this Article and the Agreement

A. Contractor shall submit to City current project cost breakdown on the tenth (10th) day of each month, beginning with the first month after the Date of Commencement. The current project cost breakdown will be provided to the City for tracking and review purposes only.

B. City will pay Contractor in accordance with the Reimbursement provisions found in Article VI of the Agreement. The Reimbursement Submittal Package submitted by Contractor shall comply with the requirements outlined in the Agreement and **Exhibit B** thereto.

C. All payments to Contractor exclusive of those made directly by City to any vendor to the Contractor will be made by electronic transfer to Contractor's bank account. The Contactor shall promptly provide City with wire transfer instructions for the making of such wire transfers to the Contractor's bank account.

D. Contingency.

- Contractor can utilize contingency during construction. The contingency can be utilized to clarify design as necessary to provide a fully functioning street improvement that meets all scope requirements. Contingencies shall not be used to correct construction deficiencies, rework, quality control issues or warranty, for internal staffing necessary for contractor-controlled delays and shall not be utilized to cover costs of liquidated damages. Contingency can also be utilized to address any differing site conditions identified during construction.

- Contingency can be utilized for changes in market conditions, and issues that occur through no fault of the contractor, including supplementing subcontractors and suppliers to assure an on-time completion of the project and full scope. Contingencies shall not be used to correct construction deficiencies, rework, quality control issues or warranty, for internal staffing necessary for contractor-controlled delays and shall not be utilized to cover costs of liquidated damages.

- If upon completion of 100% of the work, the remaining amount of contingency shall be divided between the contractor and the City, at a 100% for contractor.

ARTICLE 9 - FINAL COMPLETION

9.01 Final completion shall be governed in accordance with the **Tax Increment Reinvestment Zone Reimbursement Agreement**, except as otherwise set forth in this Article.

A. Timely Final Completion is an essential condition of this Agreement. Contractor agrees to achieve Final Completion of the Work within 30 days of the Substantial Completion date. The date of Substantial Completion shall be fixed by this Agreement, unless modified by change order, and memorialized by a Certificate of Substantial Completion.

Exhibit B

Reimbursement Submittal Package

Jordan Foster Construction ("Contractor") believes that is has substantially met its obligations under the Tax Increment Reinvestment Zone Reimbursement Agreement dated the ____ day of _____, 20_____ and signed by _____ of Jordan Foster Construction. Pursuant to the Agreement, Contractor submits this Reimbursement Submittal Package in compliance with the Agreement and in anticipation of receiving the reimbursement payment(s) reference in the Agreement in consideration for its obligations met therein.

As required by the Agreement, the following information must be submitted:

1. Approved Construction plans, Redlines, record (as-built) drawings, material testing reports, and RAS Inspection report.
2. Certificate of Substantial Completion and Certificate of Final Completion certifying the improvements are constructed and accepted in accordance with the construction documents.
3. Copies of the payment and performance bond in accordance with the executed agreement.
4. Copies of lien and material releases from all subcontractors and prime contractor.
5. Verification of project costs incurred for Project Completion. Contractor will utilize and submit template provided on Exhibit D.

It is understood by Contractor that the City of El Paso has up to 30 days to process this request and reserves the right to deny the Reimbursement request if Contractor has not complied with the terms of this Agreement.

EXHIBIT C

Following Drawings and Specifications

LANDSCAPE ARCHITECTURE DRAWINGS FOR:

W MAIN DRIVE STREETSCAPE

CITY OF EL PASO, TX
BID SET

100% CONSTRUCTION DOCUMENTS FOR BID

CLIENT

COMPANY: CITY OF EL PASO
CONTACT: DANIELA QUESADA
PHONE: 915.979.56580
EMAIL: QuesadaDR@elpasotexas.gov

DESIGN TEAM

LANDSCAPE ARCHITECT

surroundings
landscape
architecture
urbanism

SURROUNDINGS STUDIO LLC.
1611 PASEO DE PERALTA
SANTA FE, NM 87501
PHONE: 505.982.3454
CONTACT: KENNETH FRANCIS
EMAIL: KENNETH@SURROUNDINGS.STUDIO

CIVIL ENGINEER

SER GROUP LLC
221 N KANSAS ST SUITE 700
EL PASO, TX 79901
PHONE: 915.875.1990
CONTACT: SERGIO CASTILLO
EMAIL: SC@SERGROUPUSA.COM

IRRIGATION SPECIALIST

CONTACT: VALERIA LOPEZ
EMAIL: VALERIA.LOPEZ2408@GMAIL.COM

CIVIL SHEET INDEX

LANDSCAPE ARCHITECT SHEET INDEX

surroundings
landscape
architecture
urbanism

1611 Paseo de Peralta
Santa Fe, NM 87501

t: 505 982 3454
www.surroundings.studio

100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE

REGISTERED LANDSCAPE ARCHITECT
KENNETH E. FRANCIS
2771
STATE OF TEXAS

1.18.2023

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	JC

COVER
L.001

GENERAL NOTES

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE **CITY OF EL PASO** (COEP) STANDARDS. REFERENCE COEP ORDINANCE TITLE 18 (BUILDING AND CONSTRUCTION), TITLE 13 (STREETS, SIDEWALKS AND PUBLIC PLACES) AND DESIGN STANDARDS FOR CONSTRUCTION (DSC).
2. UTILITIES SHOWN ON THE PLANS WERE TAKEN FROM FIELD SURVEYS AND INFORMATION PROVIDED BY THE UTILITY COMPANIES. THE COMPLETENESS AND THE ACCURACY OF THIS DATA IS NOT GUARANTEED. CONTACT THE UTILITY COMPANIES BEFORE BEGINNING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES AND PROTECTING THEM FROM DAMAGE DURING CONSTRUCTION. CONTACT ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE FOUND.
3. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS (TCP) THAT COMPLY WITH REQUIREMENTS BY THE **CITY OF EL PASO**. CONTRACTOR SHALL SUBMIT A TCP FOR APPROVAL. COORDINATE WITH SAM–TRAFFIC ENGINEERING 2 WEEKS BEFORE COMMENCING ANY ACTIVITY.
4. WORK SHALL NOT BE BACKFILLED OR COVERED UNTIL IT HAS BEEN INSPECTED AND APPROVED BY A CITY INSPECTOR.
5. MATERIAL TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY APPROVED BY THE COEP AND PAID FOR BY THE OWNER.
6. FINISHED SLOPES OR PUBLIC RIGHT–OF–WAY AND EASEMENTS SHALL NOT BE STEEPER THAN 3:1. ALL SLOPES STEEPER THAN 6:1 SHALL BE HYDRO–MULCHED AND MAINTAINED BY THE CONTRACTOR UNTIL GRASS COVERS ALL PARTS OF THE SLOPE.
7. ALL TRENCH AND EXCAVATION SHALL BE IN ACCORDANCE WITH OSHA STANDARDS. ANY TRENCH AND EXCAVATION WITHIN 25 FEET OF STREETCAR TRACK CENTERLINE WILL NEED TO COMPLY WITH THE TRACK ACCESS PROGRAM POLICY STANDARDS FOR TRENCHING AND EXCAVATION.
8. CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL AND MAINTAIN SWPPP SYSTEM FOR DURATION OF PROJECT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION/SEDIMENT CONTROL. THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER IF THERE ARE ANY SIGNS THAT SEDIMENT HAS LEFT THE PROPOSED WORK AREA.
10. THE CONTRACTOR SHALL FURNISH TO THE **CITY OF EL PASO** PROOF OF SATISFACTORY COVERAGE OF INSURANCE IN ACCORDANCE WITH STANDARD REQUIREMENTS PRIOR TO BEGINNING OF CONSTRUCTION.
11. TOPOGRAPHICAL INFORMATION BASED ON SURVEY BY **SLI ENGINEERING INC.** TOPO IS INCOMPLETE. EXISTING CONDITIONS NOT SHOWN ON PLANS. EXISTING CONDITION SURVEY INFORMATION IS PART OF CONTRACT DOCUMENT.
12. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH GAS, OIL, PROPANE, ELECTRIC, TELEPHONE, FIBER OPTIC, CABLE TV OWNERS ETC. FOR ANY RELOCATION AND/OR PROTECTION OF EXISTING LINES, POLES OR CABLES AS REQUIRED, DUE TO CONSTRUCT ION ACTIVITIES. CONTRACTOR TO MAINTAIN A MINIMUM COVER OF TWO (2') FEET UNDER TELEPHONE/CABLE/FIBER OPTIC AND GAS LINES. CONTRACTOR TO EXERCISE CAUTION WHEN PERFORMING WORK IN VICINITY OF OVERHEAD POWER LINES THROUGHOUT THE DURATION OF THE PROJECT. CITY OF EL PASO IS NOT PART OF THE "ONE CALL", COORDINATE AT LINESPOTS@CITYOFELPASO.GOV.
13. CONTRACTOR TO COMPACT SOIL NOT LESS THAN 95% OF MAXIMUM DENSITY, IN ACCORDANCE WITH ASTM D1557.
14. THE CONTRACTOR SHALL FIELD VERIFY ELEVATIONS, MEASUREMENTS, EXISTING CONDITIONS AND STAKE THE RIGHT–OF–WAY TO ENSURE PROPER OFFSET TO NEW IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. NOTIFY THE ENGINEER AT LEAST 14 DAYS PRIOR TO CONSTRUCTION OF ANY OMISSIONS, ERRORS, OR DISCREPANCIES FOUND SO THAT NECESSARY CORRECTIONS AND INTERPRETATIONS BE MADE PRIOR TO CONSTRUCTION.
15. THE CONTRACTOR SHALL NOTIFY THE CITY OF EL PASO IN WRITING, OF ANY PROPOSED DUMP SITE(S) FOR OVERBURDEN AND ANY CONSTRUCTION DEBRIS FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL OBTAIN APPROVAL OF ITS HAUL ROUTE TO THE DUMP SITE, AS WELL AS FOR THE MATERIALS IT SHALL BE HAULING BEFORE REMOVAL OF OVERBURDEN FROM PROJECT SITE.
16. THE CONTRACTOR SHALL NOTIFY ALL RESIDENTS AND BUSINESS OWNERS THAT MAY BE AFFECTED BY THE CONSTRUCTION FOURTEEN (14) DAYS PRIOR TO CONSTRUCTION.
17. PEDESTRIAN AND VEHICULAR ACCESS TO ALL RESIDENTS AND COMMERCIAL SITES SHALL BE PROVIDED AT ALL TIMES. COORDINATION FOR THIS ACTIVITY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. INSTALLATION OF THE STORMWATER & SANITARY SEWER LINES SHALL BE COORDINATED WITH, AND ALL RESTORATION INSPECTIONS WILL BE BY THE CITY OF EL PASO AND/OR EL PASO WATER DURING CONSTRUCTION.
19. THE PROPERTY OWNERS, EP WATER, AND THE CITY OF EL PASO MUST BE NOTIFIED 48 HOURS PRIOR TO COMMENCING ANY WORK IN AREAS WITHIN THEIR JURISDICTION.
20. ALL EXISTING ROADWAYS, CURB & GUTTER, SIDEWALKS, SIGNS, LANDSCAPING, DRAINAGE AND IRRIGATION STRUCTURES AND DRIVEWAYS AFFECTED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER BY CONTRACTOR AT NO COST TO THE OWNER. ALL BUSINESSES, RESIDENCES, SCHOOLS, ETC. SHALL BE PROVIDED WITH FULL ACCESS AT ALL TIMES, INCLUDING ALL DRIVEWAYS.
21. CONTRACTOR SHALL KEEP ALL DEBRIS AND SPOIL OUT OF DRAINS, CULVERTS, AND DROP INLETS AND ENSURE THAT THEY DO NOT BECOME CLOGGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
22. THE CONTRACTOR SHALL PRESERVE, DURING CONSTRUCTION, ALL STOP SIGNS, SPEED LIMIT SIGNS, UNDERGROUND SIGN AL CONDUITS AND ALL OTHER TRAFFIC REGULATORY SIGNS, COORDINATION SHALL BE WITH THE CITY OF EL PASO. CONTRACTOR SHALL COORDINATE WITH STREET & MAINTENANCE DEPARTMENT THE ABOVE ENTITY FOR THE LOCATION AND SPOTTING OF TRAFFIC SIGNAL CONDUITS.
23. CONTRACTOR IS REPONSIBLE FOR INSTALLING AND MAINTAINING THE TRAFFIC CONTROL DEVICES.
24. THE CONTRACTOR SHALL NOTIFY THE CITY'S ENGINEERING AND MUNICIPAL SERVICES (ENVIRONMENTAL DIVISION) DEPARTMENTS IMMEDIATELY, IF SUBSURFACE CONTAMINATION IS ENCOUNTERED OR SUSPECTED DURING POT HOLING, EXCAVATION OR BORING. ALL EXCAVATION AND CONSTRUCTION OPERATIONS SHALL BE CEASED UNTIL FURTHER NOTICE FROM THE MUNICIPAL SERVICES DEPARTMENT.
25. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING IMPROVEMENTS IN THE PROJECT AREA AND ITS VICINITY. ANY DAMAGES RESULTING FROM CONTRACTOR'S WORK, SHALL BE REPAIRED TO ITS ORIGINAL CONDITION BY CONTRACTOR AT NO COST TO THE OWNER.
26. CONTACT STREETS AND MAINTENANCE DEPARTMENT FOR THE TEMPORARY RELOCATION OF EXISTING SIGNS AND ANY STORAGE OF SIGNS. RE–INSTALL AND REMOVED SIGNS. ANY SIGNS DAMAGED OR FALLEN NEEDS TO BE REINSTALLED BY THE CONTRACTOR.
27. CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS DURING CONSTRUCTION ACTIVITY.
28. CID INSPECTIONS AND PLANNING AND INSPECTIONS DEPARTMENT INSPECTIONS FOR PERMITS ARE CONDUCTED SEPARATELY.

GENERAL DEMOLITION NOTES:

A. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF THE EXISTING STRUCTURES, RELATED UTILITIES, PAVING, AND ANY OTHER EXISTING IMPROVEMENTS AS NOTED. EXISTING GAS MAINS CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING GAS MAIN INCLUDING SERVICE LINES FROM DAMAGE AS A RESULT OF THE CONSTRUCTION ACTIVITIES.

B. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL DEBRIS, RUBBISH AND OTHER MATERIALS RESULTING FROM PREVIOUS AND CURRENT DEMOLITION OPERATIONS. DISPOSAL WILL BE IN ACCORDANCE WITH ALL LOCAL, STATE AND/OR FEDERAL REGULATIONS GOVERNING SUCH OPERATION

C. THE GENERAL CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.

D. IF DEMOLITION OR CONSTRUCTION ON SITE WILL INTERFERE WITH THE TRAFFIC FLOW, THE CONTRACTOR SHALL COORDINATE WITH THE PROPERTY OWNER, TO MINIMIZE THE IMPACT ON TRAFFIC FLOW. TEMPORARY RE–ROUTING OF TRAFFIC IS TO BE ACCOMPLISHED BY USING DOT–APPROVED TRAFFIC BARRICADES, BARRELS, AND/OR CONES. TEMPORARY SIGNAGE AND FLAGMEN MAY ALSO BE NECESSARY.

E. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND LANDSCAPE PLANS FOR UTILITY RELOCATION AND REMOVAL (UNDERGROUND, UTILITY STRUCTURES, ETC.).

F. CONTRACTOR IS ADVISED THAT AN EXISTING IRRIGATION MAY BE IN PLACE ON SITE, CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF IRRIGATION LINE IN FIELD PRIOR TO THE CONSTRUCTION AND DEMOLITION.

G. CONTRACTOR TO PROTECT EXISTING LANDSCAPE/IRRIGATION MATERIAL. CONTRACTOR SHALL FOLLOW LANDSCAPE PLANS AND LANDSCAPE "TREE PROTECTION AND REMOVAL PLAN".

H. EXISTING TREES AND SHRUBS TO REMAIN UNLESS OTHERWISE NOTED.

I. CONTRACTOR SHALL PATCH AND MATCH EXISTING CONDITIONS IF ANY DAMAGE IS DONE. CONTRACTOR SHALL ALSO PATCH AND REPAIR AFFECTED ADJACENT AREAS TO MATCH EXISTING CONDITIONS.

Texas 811
Know what's below. Call before you dig.
TEXAS EXCAVATION SAFETY SERVICES CALL 811

NOTE:
ALL EXISTING AND PROPOSED SIDEWALKS, BARRIER FREE RAMPS, HANDICAP PARKING, DRIVEWAY CROSSWALKS, DRIVEWAYS AND ACCESSIBLE ROUTES SHALL COMPLY WITH A.D.A., T.A.S. AND **CITY OF EL PASO** REQUIREMENTS. EXISTING INFRASTRUCTURE NOT COMPLYING SHALL BE REMOVED AND REPLACED TO MEET STANDARDS.

LEGAL DESCRIPTION

W MAIN DR. ROW, STATION 0+19.37 TO 3+17.37, CITY OF EL PASO, EL PASO COUNTY, TEXAS

FLOOD ZONE DESIGNATION

ZONE C, PANEL NUMBER 480214 0039 B, DATED OCTOBER 15, 1982.

VERTICAL DATUM

BENCHMARK: EXISTING CHISELED "X" LOCATED ON THE WESTERLY R.O.W. OF SANTA FE STREET. ELEVATION: 3730.30' (NAD83 DATUM–CONUS)

18.44.200 - ENGINEERING CONTROLS FOR GRADING

CONSTRUCTION ACTIVITY REQUIREMENTS.
THE FOLLOWING OPERATIONAL GUIDELINES MUST BE FOLLOWED DURING THE GRADING OF THE SITE.
THEY ARE REQUIRED TO BE INCLUDED AS "GENERAL NOTES" ON THE APPROVED GRADING PLAN.

1. NO ON–SITE PROCESSING OF MATERIAL FOR COMMERCIAL OR RETAIL SALES SHALL BE ALLOWED. ON–SITE PROCESSING OF MATERIALS TO BE USED FOR PREPARATION OR CONSTRUCTION OF IMPROVEMENTS WITHIN THE SITE COVERED BY THE GRADING PERMIT SHALL BE ALLOWED.
2. WORK SHALL BE CONDUCTED IN A MANNER THAT PRESERVES AND DOES NOT OBSTRUCT, IMPEDE, OR INTERFERE WITH THE FLOW OF STORMWATER IN NATURAL DRAINAGE WAYS, UNIMPROVED CHANNELS OR WATERCOURSES, OR IMPROVES DITCHES, CHANNELS, OR CANALS IN SUCH A MANNER AS TO CAUSE FLOODING WHERE IT WOULD NOT OTHERWISE OCCUR.
3. CONSTRUCTION EQUIPMENT AND FENCING SHALL BE KEPT OUT OF WATERCOURSES EXCEPT WHEN NECESSARY TO PERFORM WORK ON THE APPROVED PLANS. ADEQUATE BY–MASS MEASURES SHALL BE INSTALLED WHERE TEMPORARY DRAINAGE BLOCKADES WILL OCCUR. WHERE WORK WITHIN A CHANNEL IS DESIGNATED ON APPROVED PLANS, PRECAUTIONS SHALL BE TAKEN TO STABILIZE THE WORK AREA DURING CONSTRUCTION TO MINIMIZE EROSION AS SHOWN ON THE PLANS. THE CHANNEL, INCLUDING THE BED AND BANKS, SHALL ALWAYS BE RESTORED/RESTABILIZED IMMEDIATELY AFTER WORK IN THE CHANNEL IS COMPLETED.
4. WHERE A DRAINAGE WAY WILL BE CROSSED BY CONSTRUCTION VEHICLES REGULARLY DURING CONSTRUCTION, A TEMPORARY CROSSING SHALL BE CONSTRUCTED AS REQUIRED IN THE APPROVED GRADING PLANS.
5. MATERIAL STOCKPILING SHALL NOT BE ALLOWED WHEN GRADING OPERATIONS ARE IDLE FOR MORE THAN SEVEN CONSECUTIVE CALENDAR DAYS. STOCKPILING SHALL BE LIMITED TO TEN FEET HIGH WHEN GRADING OPERATIONS ARE BEING EXECUTED.
6. A TRAFFIC CONTROL PERMIT SHALL BE REQUIRED IF THE GRADING OPERATION WILL IMPACT THE TRAFFIC.
7. ANY USE OF VIBRATORY EQUIPMENT SHALL NOT BE ALLOWED, UNLESS APPROVED IN WRITING BY THE PERMIT OFFICIAL IN ADVANCE FOR SUCH USE.
8. THE PERMIT OFFICIAL MUST BE NOTIFIED NO LATER THAN 4:00 PM THE DAY IN ADVANCE OF ANY GRADING WORK. ADDITIONAL ACTIVITY REQUIREMENTS/RESTRICTIONS MAY BE SPECIFIED BY THE DESIGN ENGINEER OF RECORD.

AS PER CITY GRADING ORDINANCE 18.44

1. NO GRADING AND/OR SPILLING BEYOND THE CONSTRUCTION LIMITS.
2. ANY SPILLING THAT CAUSES ADVERSE EFFECTS TO THE SLOPES AND/OR OPEN SPACE AREAS SHOULD BE "IMMEDIATELY RESTORED TO IT'S NATURAL ESTATE".

PERMIT CLOSEOUT:

18.44.220 – Permit closeout procedure.

After the permittee completes the grading under the permit, the permit shall be closed. As part of the closeout procedure, the applicant must submit the following to the city:

A. A statement from the engineer of record that states, "the grading operation has been substantially completed and generally conforms to the approved set of plans". The permittee shall call the permit official to establish the beginning of the warranty period and to notify the permit official that the GSP has been implemented.
B. A copy of the notice of termination filed with the state or dated construction site notice, if applicable, in accordance with Chapter 15.

The city will issue a letter stating general conformance to the permit has been met and that the warranty period requirements will continue to be in effect.

(Ord. No. 17516, § 1, 3–29–2011)

18.44.090 – Warranty.

Any person issued a permit shall agree warrant and maintain the area described in the permit for a period of two years after the permit is closed by the city pursuant to Section 18.44.220, or until a building permit is issued for the purpose of maintaining a stabilized site in accordance with the approved GSP, whichever first occurs (the "warranty" or "warranty period"). The city may conduct inspections of the permitted area throughout the warranty period and require maintenance and correction of the work by the permit holder. Failure of the permit holder to correct the work shall constitute a failure to comply with the provisions of this chapter.

(Ord. No. 17516, § 1, 3–29–2011)

UTILITIES CONTACT INFORMATION:

EL PASO STREETCAR:	TERESA DAVILA (T) 915–212–3451 (E) teresa.davila@elpasotexas.gov
El PASO WATER (STORMWATER):	ELSA OCHOA (T) 915–594–5650 (E) eochoa@epwater.org
EL PASO WATER (UTILITIES):	MAYRA VILLALOBOS (T) 915–594–5564 (E) mvillalobos@epwater.org
TEXAS GAS SERVICE:	JORGE SEJERA (T) 915–680–7216 (E) jorge.sejera@txgas.com
FLŌ NETWORKS:	VICTOR ESPINOZA (T) 915–857–9500 (E) vet@flo.net

GENERAL LEGENDS

EXISTING CONDITIONS:

	EXISTING BUILDING	UTILITY UNDER GROUND TELEPHONE (PUBLIC)	UGT
G	GAS METER	POWER POLE	
WM	WATER METER	ELECTRIC POLE W/TRANSFORMER	
EM	ELECTRIC METER	POWER POLE W/ LIGHT	
WV	WATER VALVE	CITY MONUMENT	
GV	GAS VALVE	BENCHMARK	
S	SANITARY SEWER MANHOLE	CENTER LINE	
D	STORM SEWER MANHOLE	IRON PIN FOUND	
E	ELECTRIC MANHOLE	GUARD POST	GP
T	TELEPHONE MANHOLE	CAR STOPPER	
TB	TELEPHONE BOX	HOSE BIBB	
WB	WATER BOX (Hot Box)	BUILDING OVERHANG	
EB	ELECTRIC BOX	CANOPY	
WB	WATER BOX	CHAIN LINK FENCE	
E	ELECTRIC TRANSFORMER	IRON FENCE	
	ELECTRIC PIPE	HANDRAIL	
	WALL LIGHT	BENCH	
SCO	SEWER CLEAN OUT	TABLE	
ICV	IRRIGATION CONTROL VALVE	BUSH	
ICV	IRRIGATION CONTROL BOX	TREE	
W	UTILITY WATER LINE	PALM	
S	UTILITY SEWER LINE	LIGHT POST	
W	UTILITY WATER LINE (PUBLIC)	TREE TRUNK DIAMETER	Ø
S	UTILITY SEWER LINE (PUBLIC)	HANDICAP SYMBOL	
	FIRE HYDRANT	SIGN	
	GUY WIRE	FLAG POLE	
3907	MINOR CONTOUR LINE	RAMP	
3907	MAJOR CONTOUR LINE	FINISH FLOOR ELEV.	FF=3907'
FO	FIBER OPTIC	BOUNDARY SYMBOL	
	SETBACK LINE	BOUNDARY LINE	
	EASEMENT LINE	EXISTING FENCE	
UGE	UTILITY UNDER GROUND ELECTRIC (PUBLIC)	STORM WATER LINE	
UGT	UTILITY UNDER GROUND TELEPHONE (PUBLIC)	WOOD POLE	

PROPOSED CONDITIONS:

	4000 PSI CONCRETE PAVEMENT (ROAD, BUS STOP, SIDEWALK & DRIVEWAY AT PARKING GARAGE)
	RECYCLED CONCRETE PAVERS (REFER TO DETAIL 1.5, SHT. L.403)
	3000 PSI CONCRETE PAVEMENT (SIDEWALK)
	ADA DETECTABLE WARNING STRIP
	FLUME GRATE
	TREE GRATE (SEE LANDSCAPE)
74	PROP. CONTOURS IN FEET
TS 3741.85	NEW TOP OF SLAB ELEV.
TP 3741.85	NEW TOP OF PAVEMENT ELEV.
TC 3741.85	NEW TOP OF CURB ELEV.
TG 3741.85	NEW TOP OF GROUND ELEV.
G 3741.85	NEW GUTTER ELEV.
TW 3741.85	NEW TOP OF WALL ELEV.
SW 3741.85	NEW TOP OF SWALE
FL 3741.85	NEW FLOW LINE ELEV.
1.0%	SLOPE PERCENTAGE AND DIRECTION
	WATER RUNOFF FLOW ARROW
	HIGH POINT ELEVATION
	LOW POINT ELEVATION
	SWALE
	WATERSHED PERIMETER LINE
DA–1 3.05	WATERSHED IDENTIFICATION # AREA (AC.)
X C.X.Y	DETAIL NUMBER SHEET NUMBER
	TRUE NORTH
E.J.	EXPANSION JOINT
C.J.	CONTROL JOINT
	PAVERS OVER 4000 PSI CONCRETE PAVEMENT

PROPOSED CONDITIONS BY EPCM/LA NUBE PROJECT:

	EASEMENT
4"W	4" WATER LINE
6"V	6" WATER LINE
6"SS	6" SAN. SWR. LINE
4"SS	4" SAN. SWR. LINE
GAS	GAS LINE
GM	GAS METER
	WATER METER
	BACKFLOW PREVENTER
	GATE VALVE
	SOIL MARKER (WATER) (700 SERIES RHINOPOLY OR APPROVED EQUAL)
	WATER METER BOX
74	PROP. CONTOURS IN FEET
TS 3741.85	NEW TOP OF SLAB ELEV.
TP 3741.85	NEW TOP OF PAVEMENT ELEV.
TC 3741.85	NEW TOP OF CURB ELEV.
TG 3741.85	NEW TOP OF GROUND ELEV.
G 3741.85	NEW GUTTER ELEV.
TW 3741.85	NEW TOP OF WALL ELEV.
SW 3741.85	NEW TOP OF SWALE
FL 3741.85	NEW FLOW LINE ELEV.
1.0%	SLOPE PERCENTAGE AND DIRECTION

INDEX OF SHEETS:

surroundings
landscape architecture urbanism
1611 Paseo de Peralta, Santa Fe, NM 87501 | t: 505 982 3454 | www.surroundings.studio

SER Group, Llc
Sustainable Engineering Resource Group, LLC
221 N. Kansas St., Suite 700 | El Paso, TX 79901
T 915.875.5900 | F 915.638.4290
www.sergroupusa.com
ENGINEERING FIRM NO.- F-13625

100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE

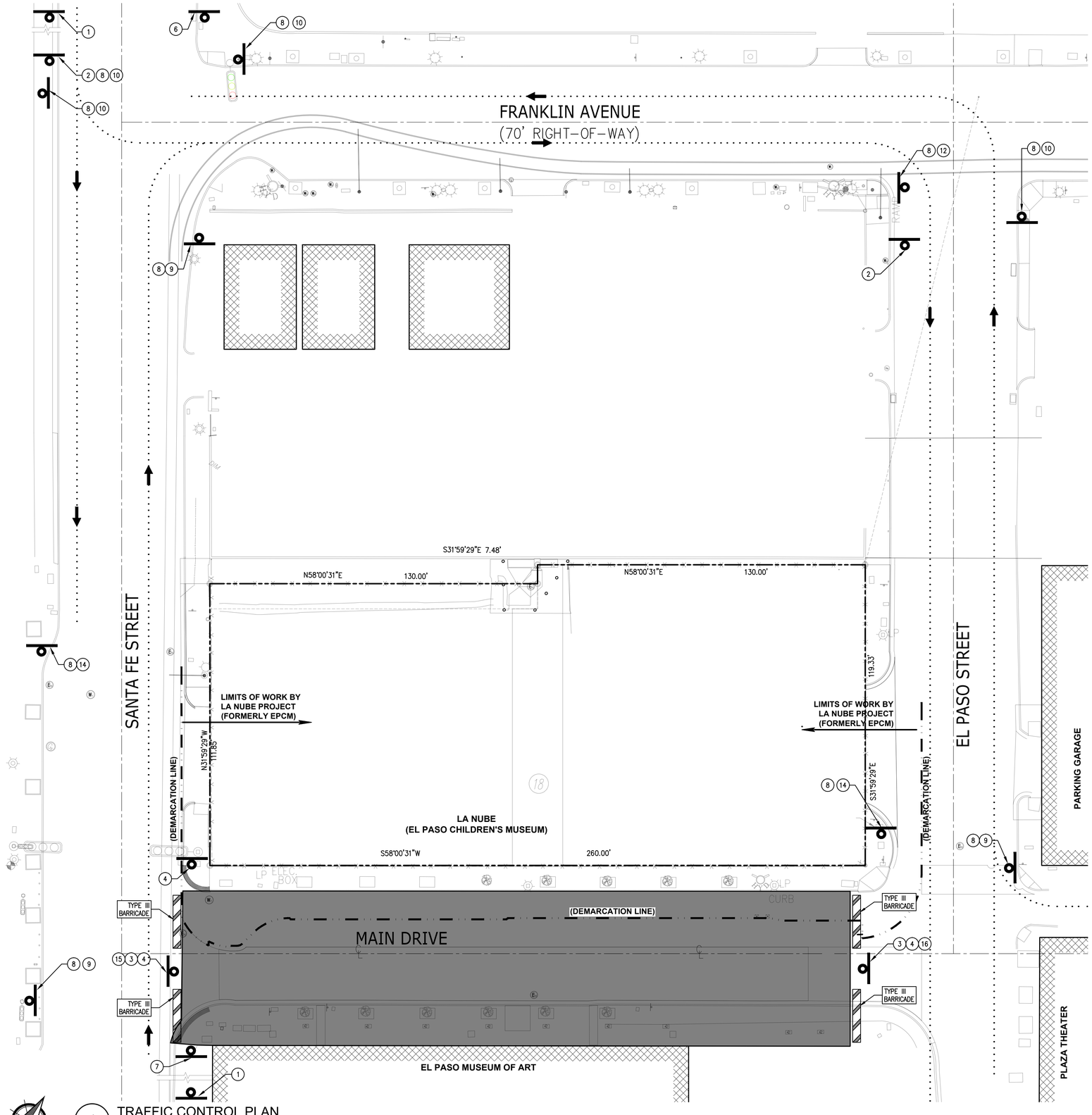
STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED
PROFESSIONAL ENGINEER
01/18/2024

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

GENERAL NOTES
C-001



1 TRAFFIC CONTROL PLAN
SCALE: 1"=20'-0"

SYMBOLS LEGEND:

DETOUR DIRECTION

DETOUR PATH

CONSTRUCTION SIGNING

SECTION UNDER CONSTRUCTION

TYPE III BARRICADE

GENERAL NOTES:

1. REFER TO CORRESPONDING TRAFFIC CONTROL SHEETS FOR ADDITIONAL SIGNAGE NOT SHOWN ON THIS PLAN.

1 — ROAD WORK AHEAD — CW20-1D 36"x36"

2 — ROAD CLOSED AHEAD — CW20-3D 36"x36"

3 — ROAD CLOSED — R11-2 30"x48"

4 — SIDEWALK CLOSED — R9-9 12"x18"

5 — SIDEWALK CLOSED / USE OTHER SIDE — R9-10 12"x24"

6 — SIDEWALK CLOSED AHEAD / CROSS HERE — R9-11R 36"x48"

7 — SIDEWALK CLOSED AHEAD / CROSS HERE — R9-11L 36"x48"

8 — W. MAIN DR. — M4-9N 30"x12"

9 — DETOUR — M4-9R 30"x24"

10 — DETOUR — M4-9L 30"x24"

11 — DETOUR — M4-9AS 30"x30"

12 — DETOUR — M4-9AR 30"x30"

13 — DETOUR — M4-9AL 30"x30"

14 — END DETOUR — M4-8A 24"x18"

15 — DETOUR — M4-10L 18"x48"

16 — DETOUR — M4-10R 18"x48"

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T 915.875.5990 | F 915.638.4290
www.sergroupusa.com
ENGINEERING FIRM NO.: F-13629

100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE
1		
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7		

STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED
PROFESSIONAL ENGINEER
01/18/2024

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

TRAFFIC CONTROL PLAN

C-002

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE **CITY OF EL PASO** (COEP) STANDARDS. REFERENCE COEP ORDINANCE TITLE 18 (BUILDING AND CONSTRUCTION), TITLE 13 (STREETS, SIDEWALKS AND PUBLIC PLACES) AND DESIGN STANDARDS FOR CONSTRUCTION (DSC).
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7. ALL TRENCH AND EXCAVATION SHALL BE IN ACCORDANCE WITH OSHA STANDARDS. ANY TRENCH AND EXCAVATION WITHIN 25 FEET OF STREETCAR TRACK CENTERLINE WILL NEED TO COMPLY WITH THE TRACK ACCESS PROGRAM POLICY STANDARDS FOR TRENCHING AND EXCAVATION.
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10. THE CONTRACTOR SHALL FURNISH TO THE **CITY OF EL PASO** PROOF OF SATISFACTORY COVERAGE OF INSURANCE IN ACCORDANCE WITH STANDARD REQUIREMENTS PRIOR TO BEGINNING OF CONSTRUCTION.
11. TOPOGRAPHICAL INFORMATION BASED ON SURVEY BY **SLI ENGINEERING INC.** TOPO IS INCOMPLETE. EXISTING CONDITIONS NOT SHOWN ON PLANS. EXISTING CONDITION SURVEY INFORMATION IS PART OF CONTRACT DOCUMENT.
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18. INSTALLATION OF THE STORMWATER & SANITARY SEWER LINES SHALL BE COORDINATED WITH, AND ALL RESTORATION INSPECTIONS WILL BE BY THE CITY OF EL PASO AND/OR EL PASO WATER DURING CONSTRUCTION.
19. THE PROPERTY OWNERS, EP WATER, AND THE CITY OF EL PASO MUST BE NOTIFIED 48 HOURS PRIOR TO COMMENCING ANY WORK IN AREAS WITHIN THEIR JURISDICTION.
20. ALL EXISTING ROADWAYS, CURB & GUTTER, SIDEWALKS, SIGNS, LANDSCAPING, DRAINAGE AND IRRIGATION STRUCTURES AND DRIVEWAYS AFFECTED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER BY CONTRACTOR AT NO COST TO THE OWNER. ALL BUSINESSES, RESIDENCES, SCHOOLS, ETC. SHALL BE PROVIDED WITH FULL ACCESS AT ALL TIMES, INCLUDING ALL DRIVEWAYS.
21. CONTRACTOR SHALL KEEP ALL DEBRIS AND SPOIL OUT OF DRAINS, CULVERTS, AND DROP INLETS AND ENSURE THAT THEY DO NOT BECOME CLOGGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
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24. THE CONTRACTOR SHALL NOTIFY THE CITY'S ENGINEERING AND MUNICIPAL SERVICES (ENVIRONMENTAL DIVISION) DEPARTMENTS IMMEDIATELY, IF SUBSURFACE CONTAMINATION IS ENCOUNTERED OR SUSPECTED DURING POT HOLING, EXCAVATION OR BORING. ALL EXCAVATION AND CONSTRUCTION OPERATIONS SHALL BE CEASED UNTIL FURTHER NOTICE FROM THE MUNICIPAL SERVICES DEPARTMENT.
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26. CONTACT STREETS AND MAINTENANCE DEPARTMENT FOR THE TEMPORARY RELOCATION OF EXISTING SIGNS AND ANY STORAGE OF SIGNS. RE–INSTALL AND REMOVED SIGNS. ANY SIGNS DAMAGED OR FALLEN NEEDS TO BE REINSTALLED BY THE CONTRACTOR.
27. CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS DURING CONSTRUCTION ACTIVITY.
28. CID INSPECTIONS AND PLANNING AND INSPECTIONS DEPARTMENT INSPECTIONS FOR PERMITS ARE CONDUCTED SEPARATELY.

PERMIT CLOSEOUT:

18.44.220 – Permit closeout procedure.

After the permittee completes the grading under the permit, the permit shall be closed. As part of the closeout procedure, the applicant must submit the following to the city:

A. A statement from the engineer of record that states, "the grading operation has been substantially completed and generally conforms to the approved set of plans". The permittee shall call the permit official to establish the beginning of the warranty period and to notify the permit official that the GSP has been implemented.
B. A copy of the notice of termination filed with the state or dated construction site notice, if applicable, in accordance with Chapter 15.

The city will issue a letter stating general conformance to the permit has been met and that the warranty period requirements will continue to be in effect.

(Ord. No. 17516, § 1, 3–29–2011)

18.44.090 – Warranty.

Any person issued a permit shall agree warrant and maintain the area described in the permit for a period of two years after the permit is closed by the city pursuant to Section 18.44.220, or until a building permit is issued for the purpose of maintaining a stabilized site in accordance with the approved GSP, whichever first occurs (the "warranty" or "warranty period"). The city may conduct inspections of the permitted area throughout the warranty period and require maintenance and correction of the work by the permit holder. Failure of the permit holder to correct the work shall constitute a failure to comply with the provisions of this chapter.

(Ord. No. 17516, § 1, 3–29–2011)

LEGAL DESCRIPTION

W MAIN DR. ROW, STATION 0+19.37 TO 3+17.37, CITY OF EL PASO, EL PASO COUNTY, TEXAS

FLOOD ZONE DESIGNATION

ZONE C, PANEL NUMBER 480214 0039 B, DATED OCTOBER 15, 1982.

VERTICAL DATUM

BENCHMARK: EXISTING CHISELED "X" LOCATED ON THE WESTERLY R.O.W. OF SANTA FE STREET. ELEVATION: 3730.30' (NAD83 DATUM–CONUS)

EL PASO STREETCAR (EPSC) NOTES:

1. ANY WORK THAT IS WITHIN 10 FT OF STREETCAR INFRASTRUCTURE OR WITHIN THE ZONE OF INFLUENCE (25 FT FOR TRENCHING/EXCAVATIONS) WILL NEED TO COMPLY WITH SUN METRO'S TRACK ACCESS PROGRAM POLICY. THIS INCLUDES ALL TRENCHING/EXCAVATION STANDARDS AND REQUIREMENTS. GENERAL CONTRACTOR TO COORDINATE WITH SUN METRO.
2. EPSC DETAIL FOR CURB PLACEMENT ADJACENT TO TRACK SLAB ALONG SANTA FE ST. SHALL BE FOLLOWED.
3. COORDINATION WITH EPSC REQUIRED PRIOR TO PLACEMENT OF SIDEWALK. SIDEWALK SUBGRADE TO BE IN ACCORDANCE WITH EPSC DESIGN STANDARDS.

EXISTING CONDITIONS:

- EXISTING BUILDING
- GAS METER
- WATER METER
- ELECTRIC METER
- WATER VALVE
- GAS VALVE
- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- TELEPHONE BOX
- WATER BOX (Hot Box)
- ELECTRIC BOX
- WATER BOX
- ELECTRIC TRANSFORMER
- ELECTRIC PIPE
- WALL LIGHT
- SEWER CLEAN OUT
- IRRIGATION CONTROL VALVE
- IRRIGATION CONTROL BOX
- UTILITY WATER LINE
- UTILITY SEWER LINE
- UTILITY WATER LINE (PUBLIC)
- UTILITY SEWER LINE (PUBLIC)
- FIRE HYDRANT
- GUY WIRE
- MINOR CONTOUR LINE
- MAJOR CONTOUR LINE
- FIBER OPTIC
- SETBACK LINE
- EASEMENT LINE
- UTILITY UNDER GROUND ELECTRIC (PUBLIC)
- UTILITY UNDER GROUND TELEPHONE (PUBLIC)
- UTILITY UNDER GROUND TELEPHONE (PUBLIC)
- POWER POLE
- ELECTRIC POLE W/TRANSFORMER
- POWER POLE W/ LIGHT
- CITY MONUMENT
- BENCHMARK
- CENTER LINE
- IRON PIN FOUND
- GUARD POST
- CAR STOPPER
- HOSE BIBB
- BUILDING OVERHANG
- CANOPY
- CHAIN LINK FENCE
- IRON FENCE
- HANDRAIL
- BENCH
- TABLE
- BUSH
- TREE
- PALM
- LIGHT POST
- TREE TRUNK DIAMETER
- HANDICAP SYMBOL
- SIGN
- FLAG POLE
- RAMP
- FINISH FLOOR ELEV.
- BOUNDARY SYMBOL
- BOUNDARY LINE
- EXISTING FENCE
- STORM WATER LINE
- WOOD POLE

NOTE:
ALL EXISTING AND PROPOSED SIDEWALKS, BARRIER FREE RAMPS, HANDICAP PARKING, DRIVEWAY CROSSWALKS, DRIVEWAYS AND ACCESSIBLE ROUTES SHALL COMPLY WITH A.D.A., T.A.S. AND **CITY OF EL PASO** REQUIREMENTS. EXISTING INFRASTRUCTURE NOT COMPLYING SHALL BE REMOVED AND REPLACED TO MEET STANDARDS.

Texas 811
Know what's below.
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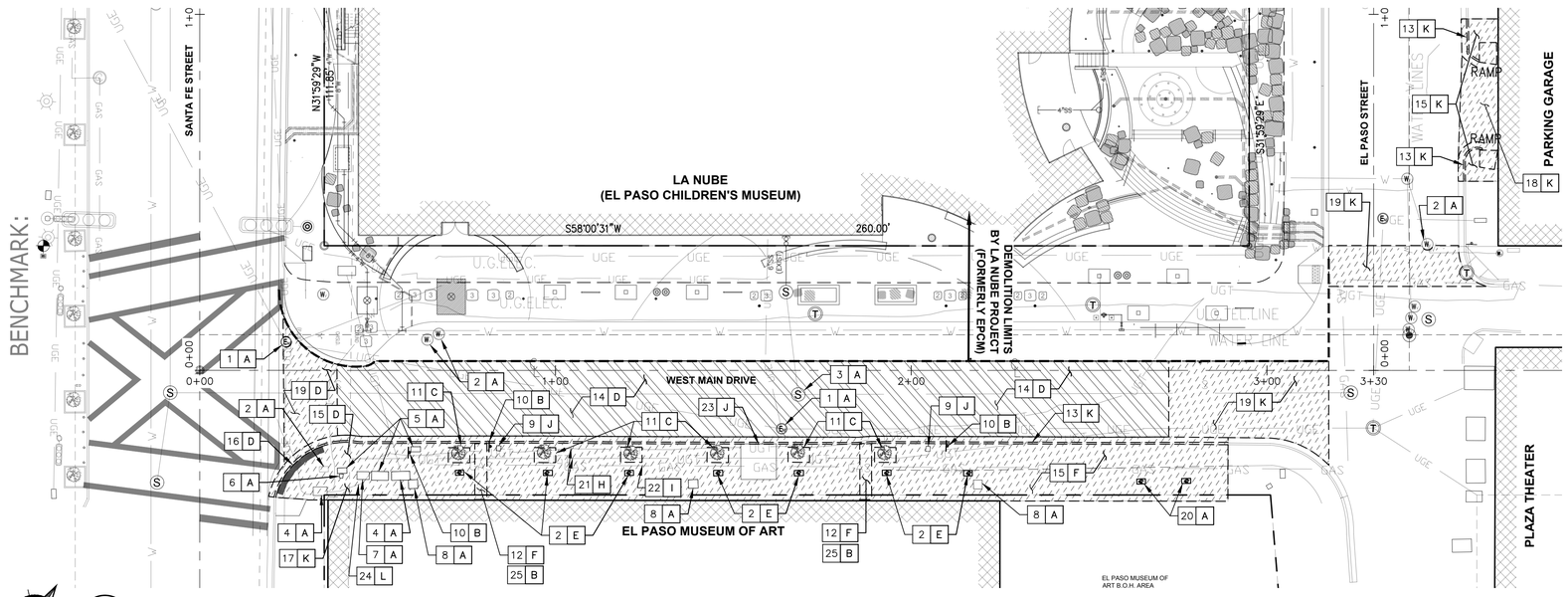

1 DEMOLITION PLAN
SCALE: 1"=20'–0"

DEMOLITION LEGEND

- EXISTING CONCRETE PAVEMENT TO BE REMOVED
- EXISTING ASPHALT PAVEMENT TO BE REMOVED
- EXISTING CONCRETE CURB AND GUTTER TO BE REMOVED
- EXISTING ITEM TO BE DEMOLISHED
- [1] "ITEM" KEYED NOTE
- [X] "ACTION" KEYED NOTE

DEMOLITION KEYED NOTES

DEMOLITION ITEM [1]

1. EXISTING ELECTRIC METER.
2. EXISTING WATER VALVE.
3. EXISTING SANITARY SEWER MANHOLE.
4. EXISTING TELEPHONE/TELECOMMUNICATION BOX.
5. EXISTING ELECTRIC BOX.
6. EXISTING TRAFFIC WALK LIGHT.
7. EXISTING WATER BOX (HOT BOX).
8. EXISTING METAL LID.
9. EXISTING LIGHT POLE.
10. EXISTING SIGN.
11. EXISTING TREE, TREE GRATE & TREE GRATE LIGHT.
12. EXISTING FLUME.
13. EXISTING CURB AND GUTTER.
14. EXISTING ASPHALT STREET PAVEMENT.
15. EXISTING PUBLIC SIDEWALK.
16. EXISTING RAMP & DETECTABLE WARNING STRIP.
17. EXISTING STAIRS.
18. EXISTING CONCRETE DRIVEWAY.
19. EXISTING CONCRETE STREET PAVEMENT.
20. EXIISTING WATER METER.
21. EXISTING TELECOMMUNICATION LINES.
22. EXISTING GAS LINE.
23. EXISTING TRANSFORMER ENCLOSURE.
24. EXISTING RAIL.
25. FLUME COVER PLATE.

DEMOLITION ACTION [A]

A. PROTECT DURING DEMOLITION AND RAISE/LOWER AS REQUIRED TO ACCOMMODATE NEW PROPOSED PAVEMENT ELEVATION. CONTRACTOR TO COORDINATE ALL WORK WITH ALL CITY ENTITIES AND ALL DISCIPLINES PRIOR TO COMMENCING ANY WORK.

B. REMOVE AND SALVAGE TO CITY OF EL PASO STREET AND MAINTENANCE DEPARTMENT.

C. TREE GRATES & GRATE LIGHTS TO BE SALVAGED TO JESUS YAMAGUCHI AT ENVIRONMENTAL SERVICES. FOR TREES REFER TO SHEET L.002.

D. REMOVE AS INDICATED AND PROPERLY DISPOSE AS REQUIRED TO ACCOMMODATE PROPOSED LAYOUT.

E. REMOVE IRRIGATION VALVE. COORDINATE WITH LANDSCAPE.

F. CONCRETE TO BE SAWCUT AND SALVAGED FOR REUSE. REFER SHEET L.002.

G. NOT USED.

H. COORDINATE ANY RELOCATION WITH TELECOMMUNICATION CO.

I. COORDINATE ANY RELOCATION WITH TEXAS GAS CO.

J. PROTECT DURING DEMOLITION.

K. REMOVE CONCRETE AND PROPERLY DISPOSE OF.

L. REMOVE RAIL AND MODIFY TO ACCOMMODATE NEW STAIR LAYOUT.

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www.sergroupusa.com
ENGINEERING FIRM NO - F-13629

100% CONSTRUCTION DOCUMENTS FOR BID

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NO	DATE	NOTE
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SERGIO CASTILLO
95621
LICENSED
PROFESSIONAL ENGINEER
01/18/2024

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

DEMOLITION PLAN
C-100

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LEGAL DESCRIPTION

W MAIN DR. ROW, STATION 0+19.37 TO 3+17.37, CITY OF EL PASO, EL PASO COUNTY, TEXAS

FLOOD ZONE DESIGNATION

ZONE C, PANEL NUMBER 480214 0039 B, DATED OCTOBER 15, 1982.

VERTICAL DATUM

BENCHMARK: EXISTING CHISELED "X" LOCATED ON THE WESTERLY R.O.W. OF SANTA FE STREET.
ELEVATION: 3730.30' (NAD83 DATUM–CONUS)

EXISTING CONDITIONS:

- EXISTING BUILDING
- GAS METER
- WATER METER
- ELECTRIC METER
- WATER VALVE
- GAS VALVE
- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- TELEPHONE BOX
- WATER BOX (Hot Box)
- ELECTRIC BOX
- WATER BOX
- ELECTRIC TRANSFORMER
- ELECTRIC PIPE
- WALL LIGHT
- SEWER CLEAN OUT
- IRRIGATION CONTROL VALVE
- IRRIGATION CONTROL BOX
- UTILITY WATER LINE
- UTILITY SEWER LINE
- UTILITY WATER LINE (PUBLIC)
- UTILITY SEWER LINE (PUBLIC)
- FIRE HYDRANT
- GUY WIRE
- MINOR CONTOUR LINE
- MAJOR CONTOUR LINE
- FIBER OPTIC
- SETBACK LINE
- EASEMENT LINE
- UTILITY UNDER GROUND ELECTRIC (PUBLIC)
- UTILITY UNDER GROUND TELEPHONE (PUBLIC)
- UTILITY UNDER GROUND TELEPHONE (PUBLIC)
- POWER POLE
- ELECTRIC POLE W/TRANSFORMER
- POWER POLE W/ LIGHT
- CITY MONUMENT
- BENCHMARK
- CENTER LINE
- IRON PIN FOUND
- GUARD POST
- CAR STOPPER
- HOSE BIBB
- BUILDING OVERHANG
- CANOPY
- CHAIN LINK FENCE
- IRON FENCE
- HANDRAIL
- BENCH
- TABLE
- BUSH
- TREE
- PALM
- LIGHT POST
- TREE TRUNK DIAMETER
- HANDICAP SYMBOL
- SIGN
- FLAG POLE
- RAMP
- FINISH FLOOR ELEV.
- BOUNDARY SYMBOL
- BOUNDARY LINE
- EXISTING FENCE
- STORM WATER LINE
- WOOD POLE

PROPOSED CONDITIONS:

- 4000 PSI CONCRETE PAVEMENT (ROAD, BUS STOP, SIDEWALK & DRIVEWAY AT PARKING GARAGE)
- RECYCLED CONCRETE PAVERS (REFER TO DETAIL 1.5, SHT. L.403)
- 3000 PSI CONCRETE PAVEMENT (SIDEWALK)
- ADA DETECTABLE WARNING STRIP
- FLUME GRATE
- TREE GRATE (SEE LANDSCAPE)
- DETAIL NUMBER / SHEET NUMBER
- TRUE NORTH
- EXPANSION JOINT
- CONTROL JOINT
- PAVERS OVER 4000 PSI CONCRETE PAVEMENT

Texas 811 — Know what's below. Call before you dig.
TEXAS EXCAVATION SAFETY SERVICES CALL 811

EL PASO STREETCAR (EPSC) NOTES:

1. ANY WORK THAT IS WITHIN 10 FT OF STREETCAR INFRASTRUCTURE OR WITHIN THE ZONE OF INFLUENCE (25 FT FOR TRENCHING/EXCAVATIONS) WILL NEED TO COMPLY WITH SUN METRO'S TRACK ACCESS PROGRAM POLICY. THIS INCLUDES ALL TRENCHING/EXCAVATION STANDARDS AND REQUIREMENTS. GENERAL CONTRACTOR TO COORDINATE WITH SUN METRO.
2. EPSC DETAIL FOR CURB PLACEMENT ADJACENT TO TRACK SLAB ALONG SANTA FE ST. SHALL BE FOLLOWED.
3. COORDINATION WITH EPSC REQUIRED PRIOR TO PLACEMENT OF SIDEWALK. SIDEWALK SUBGRADE TO BE IN ACCORDANCE WITH EPSC DESIGN STANDARDS.

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100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE

STATE OF TEXAS — SERGIO CASTILLO — 95621 — LICENSED — PROFESSIONAL ENGINEER
01/18/2024

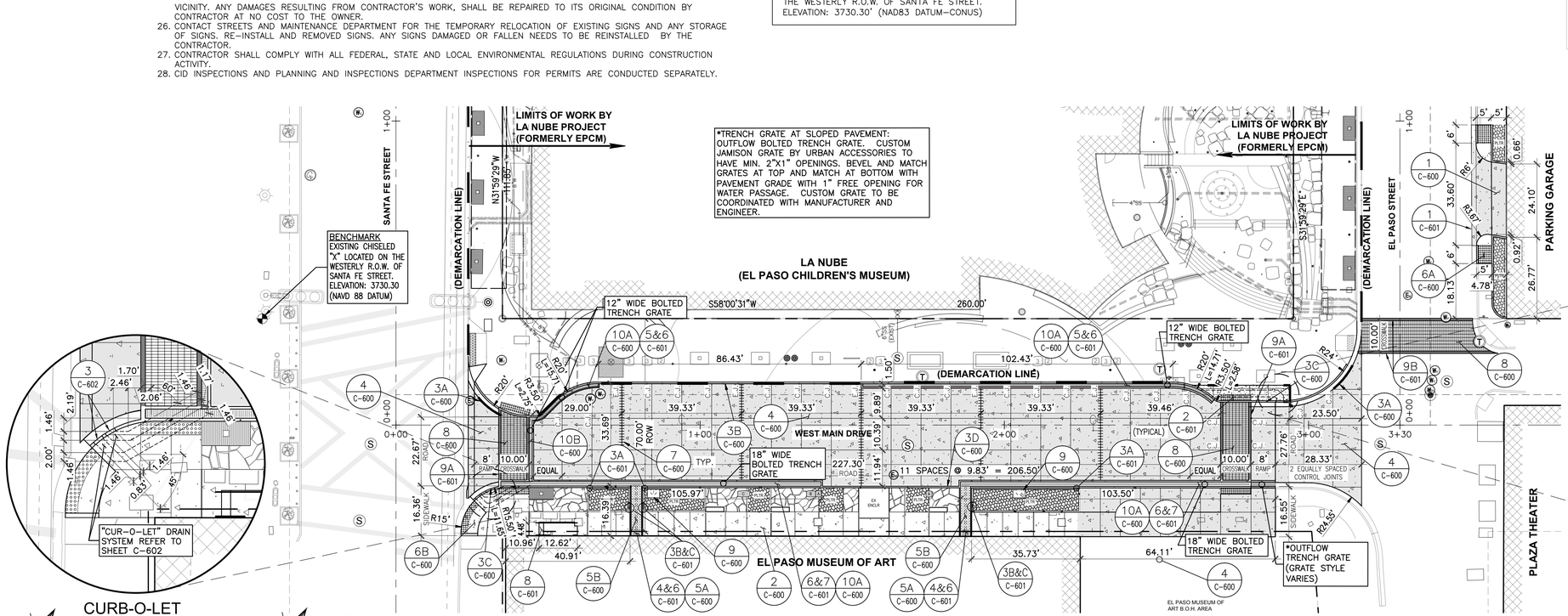
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE: AS NOTED
DATE: 18 JANUARY 2024
PROJECT: 1568
DRAWN BY: SC

DIMENSIONAL CONTROL & PAVEMENT PLAN

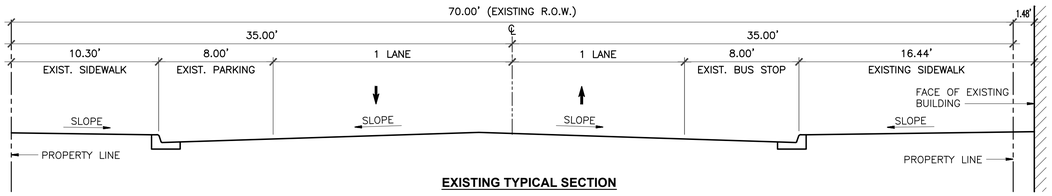
C-101



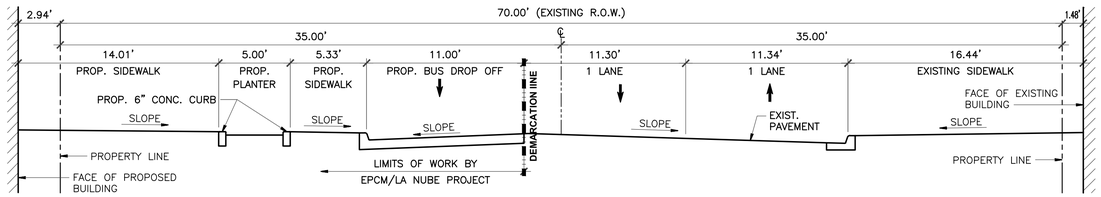
CURB-O-LET ENLARGED VIEW
SCALE: 1"=10'–0"

1 DIMENSIONAL CONTROL AND PAVEMENT PLAN
SCALE: 1"=20'–0"

CURB-O-LET ENLARGED VIEW
SCALE: 1"=10'–0"



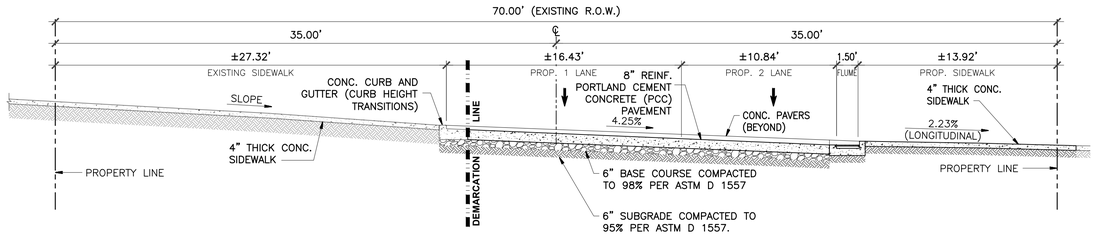
EXISTING TYPICAL SECTION



ORIGINALLY PROPOSED TYPICAL SECTION BY EPCM/LA NUBE PROJECT

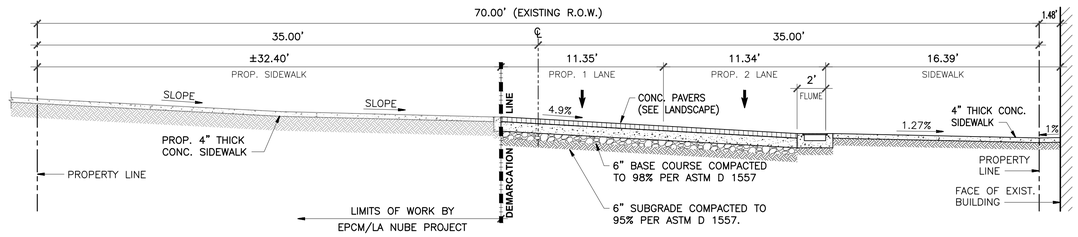
1 WEST MAIN DRIVE - TYPICAL SECTIONS (STA. 00+34.50 TO 2+81.07)

SCALE: 1"=5'-0"



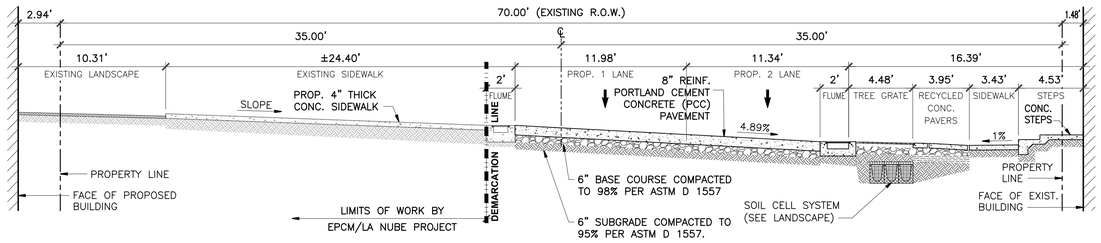
2 WEST MAIN DRIVE - TYPICAL SECTION (STA. 00+25.75 TO 0+34.96)

SCALE: 1"=5'-0"



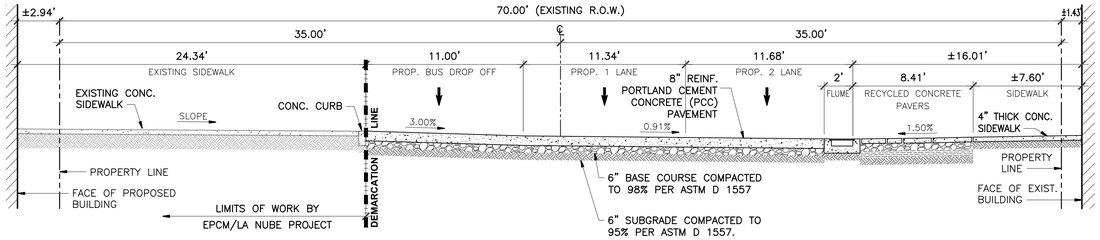
3 WEST MAIN DRIVE - TYPICAL SECTION (STA. 00+34.96 TO 0+44.32)

SCALE: 1"=5'-0"



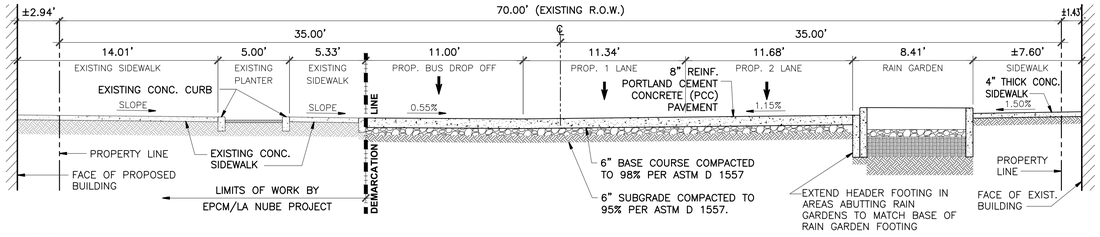
4 WEST MAIN DRIVE - TYPICAL SECTION (STA. 00+44.32 TO 0+66.47)

SCALE: 1"=5'-0"



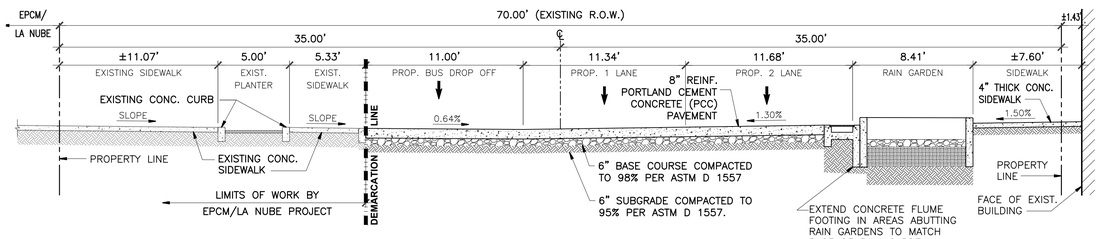
5 WEST MAIN DRIVE - TYPICAL SECTION (STA. 00+66.47 TO 1+40.36)

SCALE: 1"=5'-0"



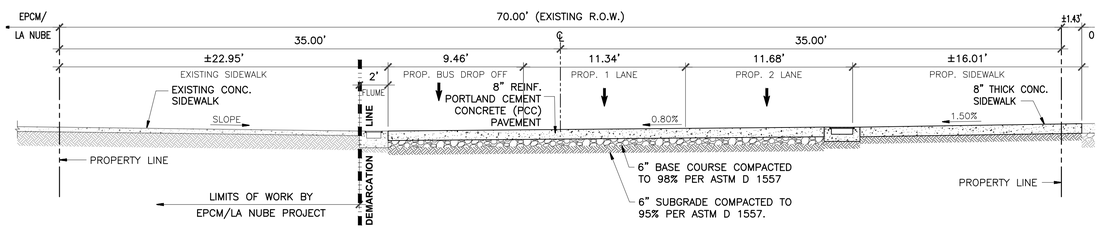
6 WEST MAIN DRIVE - TYPICAL SECTION (STA. 01+40.36 TO 1+87.39)

SCALE: 1"=5'-0"



7 WEST MAIN DRIVE - TYPICAL SECTION (STA. 01+87.39 TO 2+32.84)

SCALE: 1"=5'-0"



8 WEST MAIN DRIVE - TYPICAL SECTION (STA. 02+32.84 TO 2+55.80)

SCALE: 1"=5'-0"

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100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE
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STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED PROFESSIONAL ENGINEER
01/18/2024

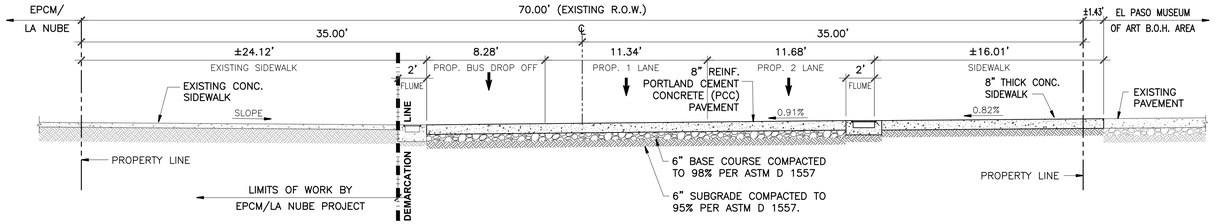
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

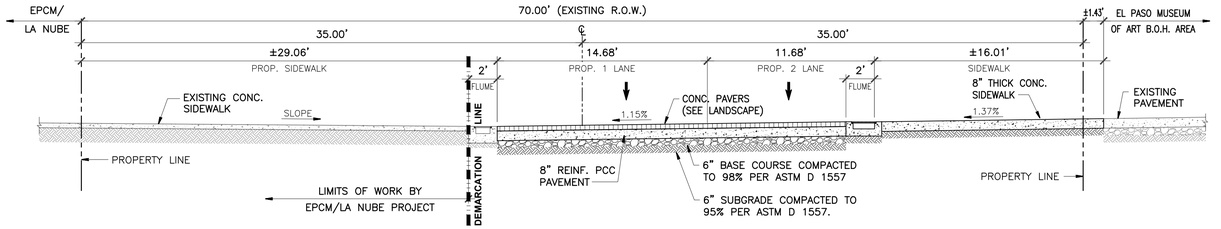
TYPICAL SECTIONS

C-102



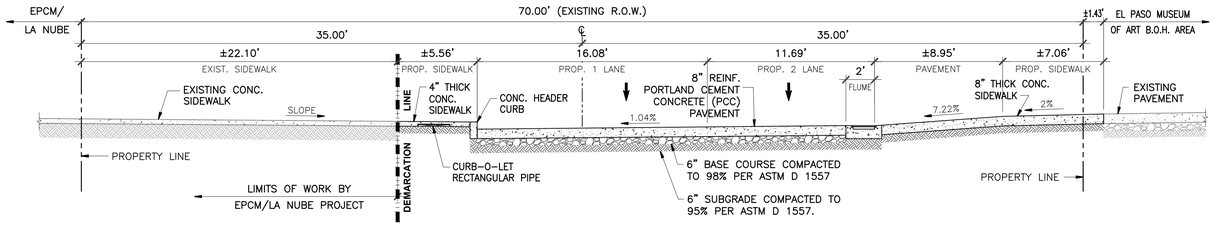
1 WEST MAIN DRIVE - TYPICAL SECTION (STA. 02+55.80 TO 2+71.80)

SCALE: 1"=5'-0"



2 WEST MAIN DRIVE - TYPICAL SECTION (STA. 02+71.80 TO 2+81.05)

SCALE: 1"=5'-0"



3 WEST MAIN DRIVE - TYPICAL SECTION (STA. 02+81.05 TO 2+89.24)

SCALE: 1"=5'-0"

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STATE OF TEXAS
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01/18/2024

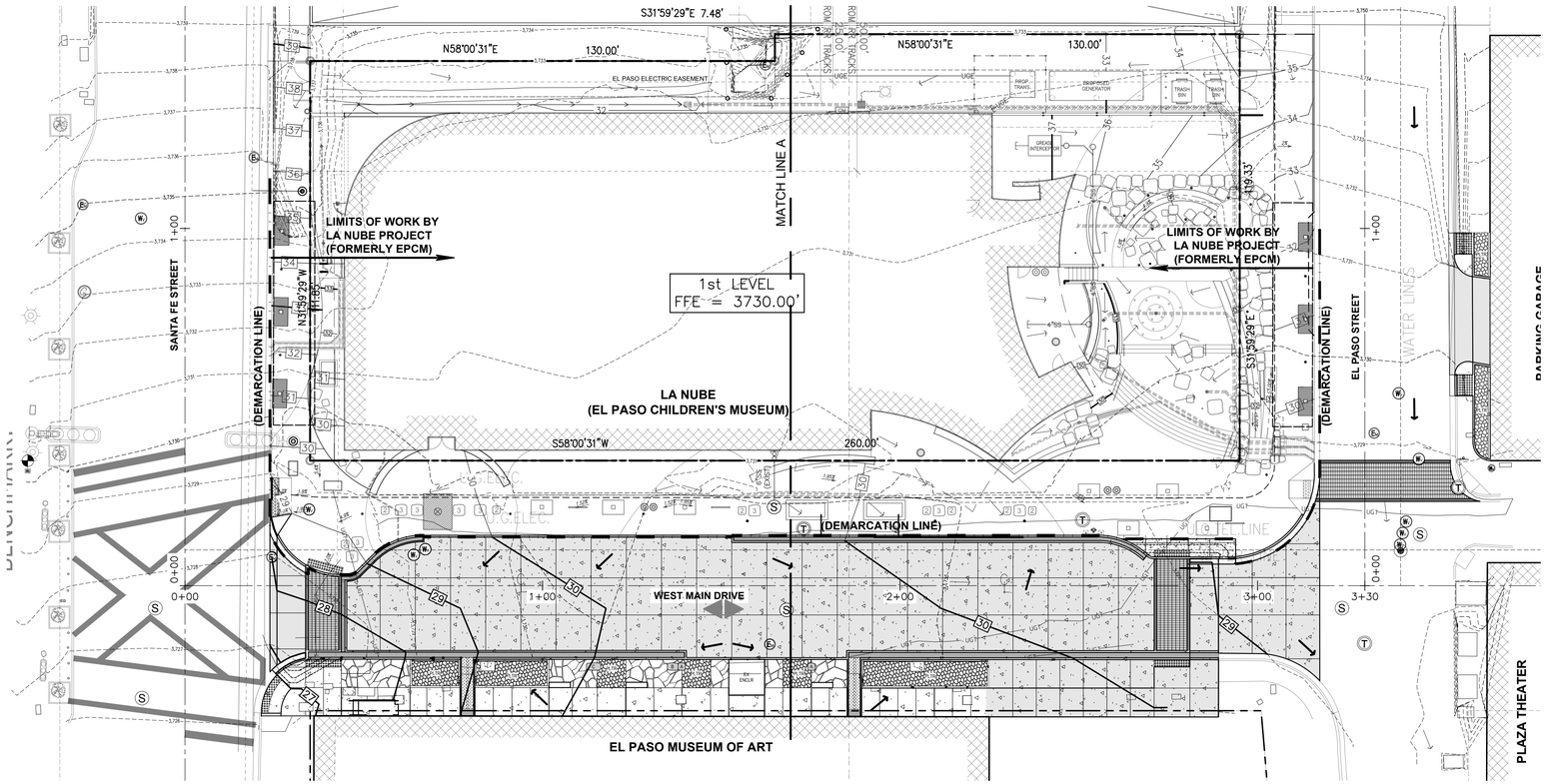
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

TYPICAL SECTIONS

C-103



1 GRADING PLAN

SCALE: 1"=20'-0"

EL PASO STREETCAR (EPSC) NOTES:

1. ANY WORK THAT IS WITHIN 10 FT OF STREETCAR INFRASTRUCTURE OR WITHIN THE ZONE OF INFLUENCE (25 FT FOR TRENCHING/EXCAVATIONS) WILL NEED TO COMPLY WITH SUN METRO'S TRACK ACCESS PROGRAM POLICY. THIS INCLUDES ALL TRENCHING/EXCAVATION STANDARDS AND REQUIREMENTS. GENERAL CONTRACTOR TO COORDINATE WITH SUN METRO.
2. EPSC DETAIL FOR CURB PLACEMENT ADJACENT TO TRACK SLAB ALONG SANTA FE ST. SHALL BE FOLLOWED.
3. COORDINATION WITH EPSC REQUIRED PRIOR TO PLACEMENT OF SIDEWALK. SIDEWALK SUBGRADE TO BE IN ACCORDANCE WITH EPSC DESIGN STANDARDS.

EXISTING CONDITIONS:

	EXISTING BUILDING	UGT	UTILITY UNDER GROUND TELEPHONE (PUBLIC)
G	GAS METER		POWER POLE
WM	WATER METER		ELECTRIC POLE W/TRANSFORMER
EM	ELECTRIC METER		POWER POLE W/ LIGHT
WV	WATER VALVE		CITY MONUMENT
GV	GAS VALVE		BENCHMARK
S	SANITARY SEWER MANHOLE		CENTER LINE
D	STORM SEWER MANHOLE		IRON PIN FOUND
E	ELECTRIC MANHOLE	GP	GUARD POST
T	TELEPHONE MANHOLE		CAR STOPPER
TB	TELEPHONE BOX		HOSE BIBB
WB	WATER BOX (Hot Box)		BUILDING OVERHANG
EB	ELECTRIC BOX		CANOPY
WB	WATER BOX		CHAIN LINK FENCE
E	ELECTRIC TRANSFORMER		IRON FENCE
	ELECTRIC PIPE		HANDRAIL
	WALL LIGHT		BENCH
SCO	SEWER CLEAN OUT		TABLE
ICV	IRRIGATION CONTROL VALVE		BUSH
ICV	IRRIGATION CONTROL BOX		TREE
w	UTILITY WATER LINE		PALM
s	UTILITY SEWER LINE		LIGHT POST
w	UTILITY WATER LINE (PUBLIC)		TREE TRUNK DIAMETER
s	UTILITY SEWER LINE (PUBLIC)		HANDICAP SYMBOL
	FIRE HYDRANT		SIGN
	GUY WIRE		FLAG POLE
3907	MINOR CONTOUR LINE		RAMP
3907	MAJOR CONTOUR LINE	FF=3907'	FINISH FLOOR ELEV.
FO	FIBER OPTIC		BOUNDARY SYMBOL
	SETBACK LINE		BOUNDARY LINE
	EASEMENT LINE		EXISTING FENCE
UGE	UTILITY UNDER GROUND ELECTRIC (PUBLIC)		STORM WATER LINE
UGT	UTILITY UNDER GROUND TELEPHONE (PUBLIC)		WOOD POLE

PROPOSED CONDITIONS:

- 4000 PSI CONCRETE PAVEMENT (ROAD, BUS STOP, SIDEWALK & DRIVEWAY AT PARKING GARAGE)
- RECYCLED CONCRETE PAVERS (REFER TO DETAIL 1.5, SHT. L.403)
- 3000 PSI CONCRETE PAVEMENT (SIDEWALK)
- ADA DETECTABLE WARNING STRIP
- FLUME GRATE
- 74 PROP. CONTOURS IN FEET
- TS 3741.85 NEW TOP OF SLAB ELEV.
- TP 3741.85 NEW TOP OF PAVEMENT ELEV.
- TC 3741.85 NEW TOP OF CURB ELEV.
- 1.0% SLOPE PERCENTAGE AND DIRECTION
- WATER RUNOFF FLOW ARROW
- HIGH POINT ELEVATION
- LOW POINT ELEVATION
- X / CXX DETAIL NUMBER / SHEET NUMBER
- TRUE NORTH

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100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE

STATE OF TEXAS
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PROFESSIONAL
ENGINEER
01/18/2024

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

GRADING PLAN

C-200

EL PASO STREETCAR (EPSC) NOTES:

1. ANY WORK THAT IS WITHIN 10 FT OF STREETCAR INFRASTRUCTURE OR WITHIN THE ZONE OF INFLUENCE (25 FT FOR TRENCHING/EXCAVATIONS) WILL NEED TO COMPLY WITH SUN METRO'S TRACK ACCESS PROGRAM POLICY. THIS INCLUDES ALL TRENCHING/EXCAVATION STANDARDS AND REQUIREMENTS. GENERAL CONTRACTOR TO COORDINATE WITH SUN METRO.
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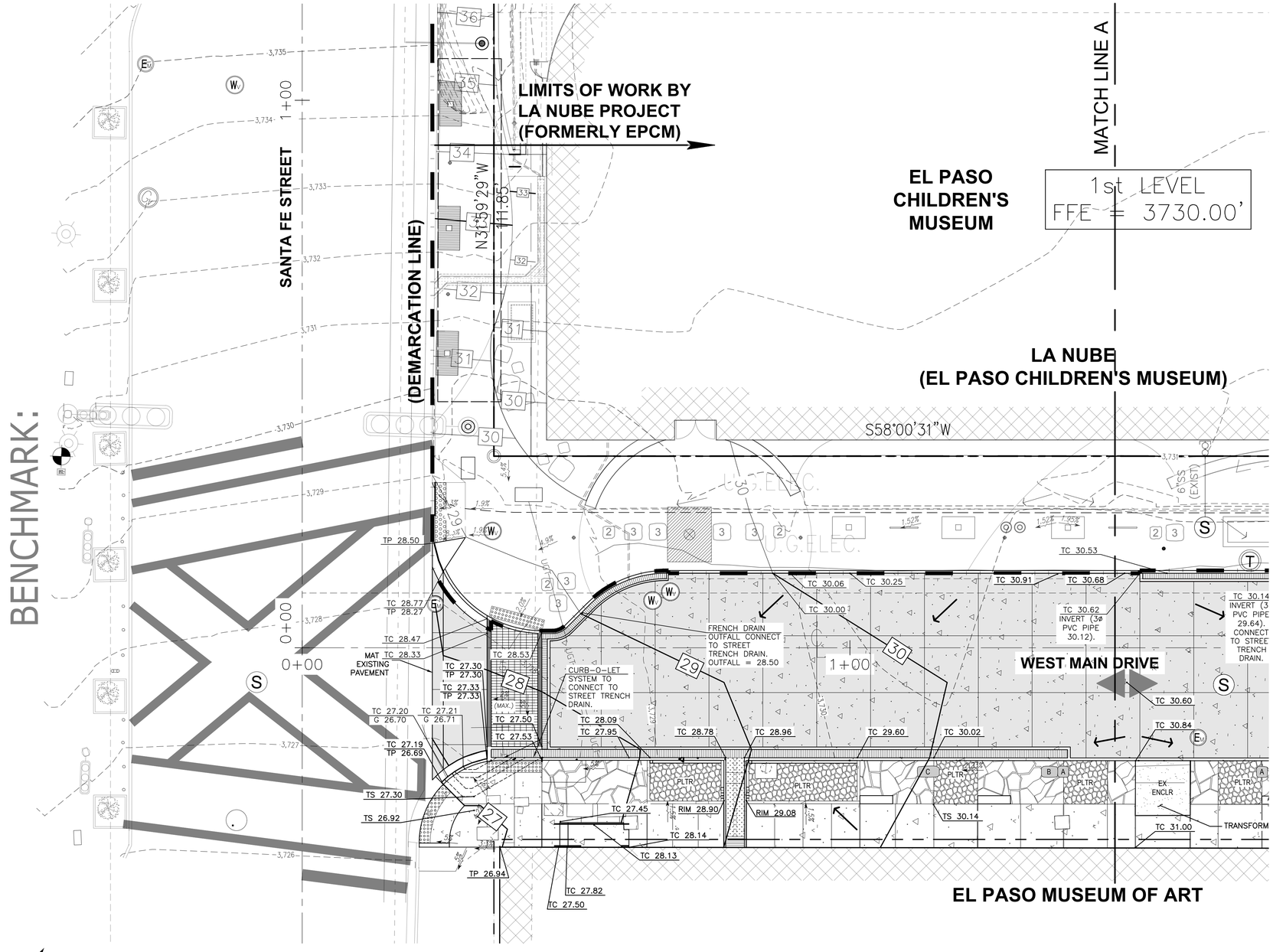

1 ENLARGED GRADING PLAN
SCALE: 1"=10'-0"

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STATE OF TEXAS
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01/18/2024

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

ENLARGED GRADING PLAN
C-201

EL PASO STREETCAR (EPSC) NOTES:

1. ANY WORK THAT IS WITHIN 10 FT OF STREETCAR INFRASTRUCTURE OR WITHIN THE ZONE OF INFLUENCE (25 FT FOR TRENCHING/EXCAVATIONS) WILL NEED TO COMPLY WITH SUN METRO'S TRACK ACCESS PROGRAM POLICY. THIS INCLUDES ALL TRENCHING/EXCAVATION STANDARDS AND REQUIREMENTS. GENERAL CONTRACTOR TO COORDINATE WITH SUN METRO.
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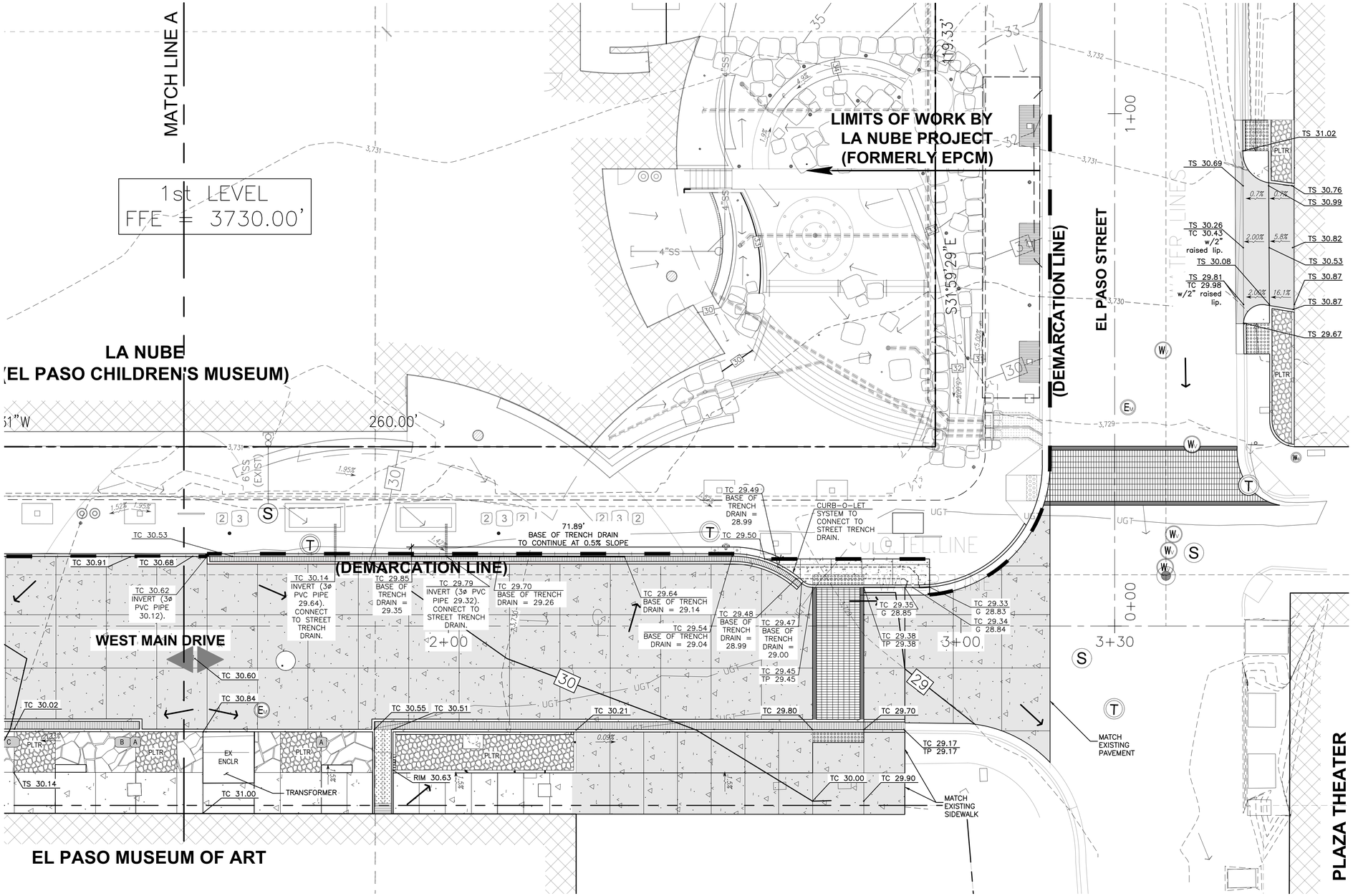

1 ENLARGED GRADING PLAN
SCALE: 1"=10'-0"

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STATE OF TEXAS
SERGIO CASTILLO
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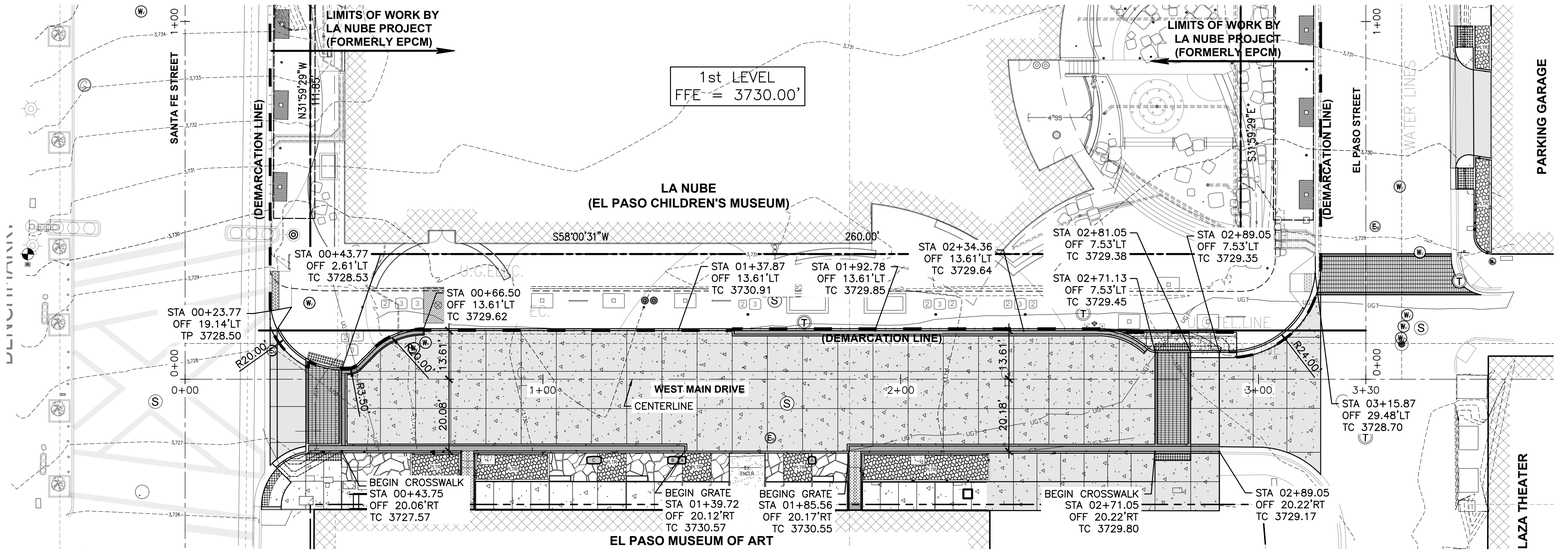
01/18/2024

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

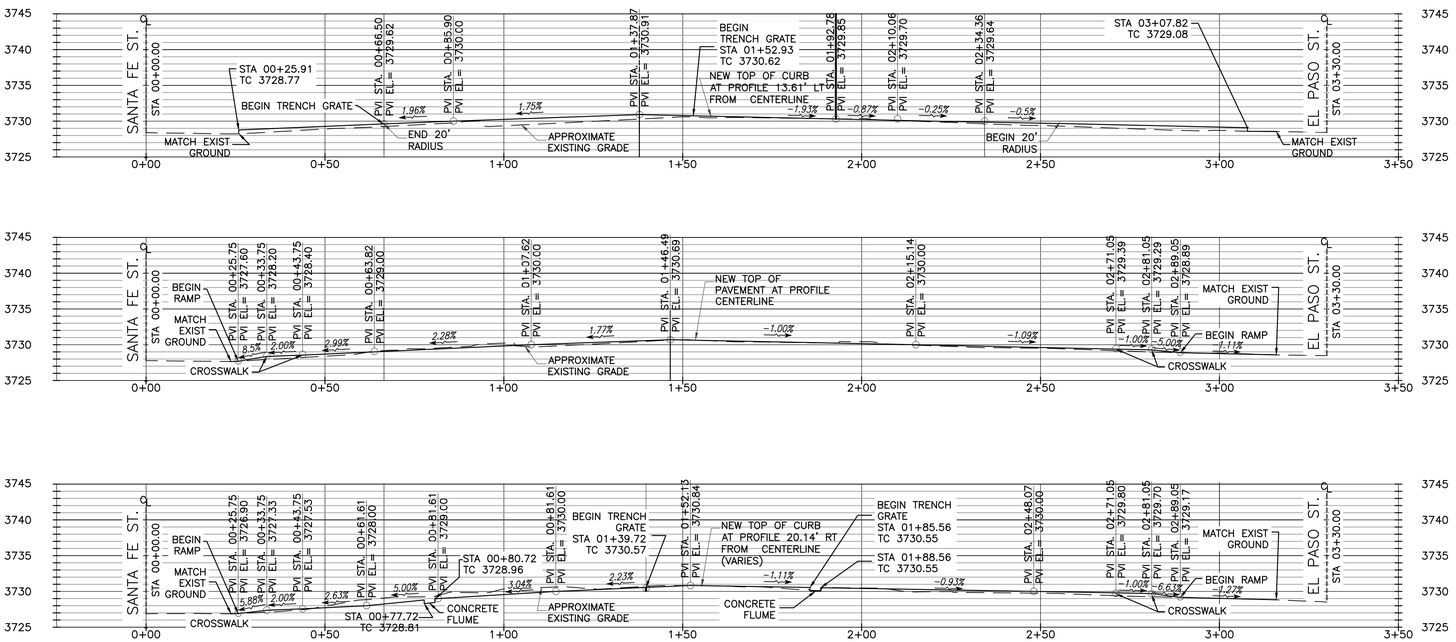
SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

ENLARGED GRADING PLAN
C-202



1 STREET PLAN VIEW

SCALE: 1"=20'-0"



2 STREET PROFILE - W. MAIN DR.

SCALE: HORIZONTAL 1"=20'-0"
VERTICAL 1"=10'-0"

PROPOSED CONDITIONS:

- 4000 PSI CONCRETE PAVEMENT (ROAD, BUS STOP, SIDEWALK & DRIVEWAY AT PARKING GARAGE)
- RECYCLED CONCRETE PAVERS (REFER TO DETAIL 1.5, SHT. L.403)
- 3000 PSI CONCRETE PAVEMENT (SIDEWALK)
- ADA DETECTABLE WARNING STRIP
- FLUME GRATE
- 74 PROP. CONTOURS IN FEET
- WATER RUNOFF FLOW ARROW
- HIGH POINT ELEVATION
- TRUE NORTH
- PAVERS OVER 4000 PSI CONCRETE PAVEMENT

EL PASO STREETCAR (EPSC) NOTES:

1. ANY WORK THAT IS WITHIN 10 FT OF STREETCAR INFRASTRUCTURE OR WITHIN THE ZONE OF INFLUENCE (25 FT FOR TRENCHING/EXCAVATIONS) WILL NEED TO COMPLY WITH SUN METROS TRACK ACCESS PROGRAM POLICY. THIS INCLUDES ALL TRENCHING/EXCAVATION STANDARDS AND REQUIREMENTS. GENERAL CONTRACTOR TO COORDINATE WITH SUN METRO.
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100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

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STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED
PROFESSIONAL ENGINEER
01/18/2024

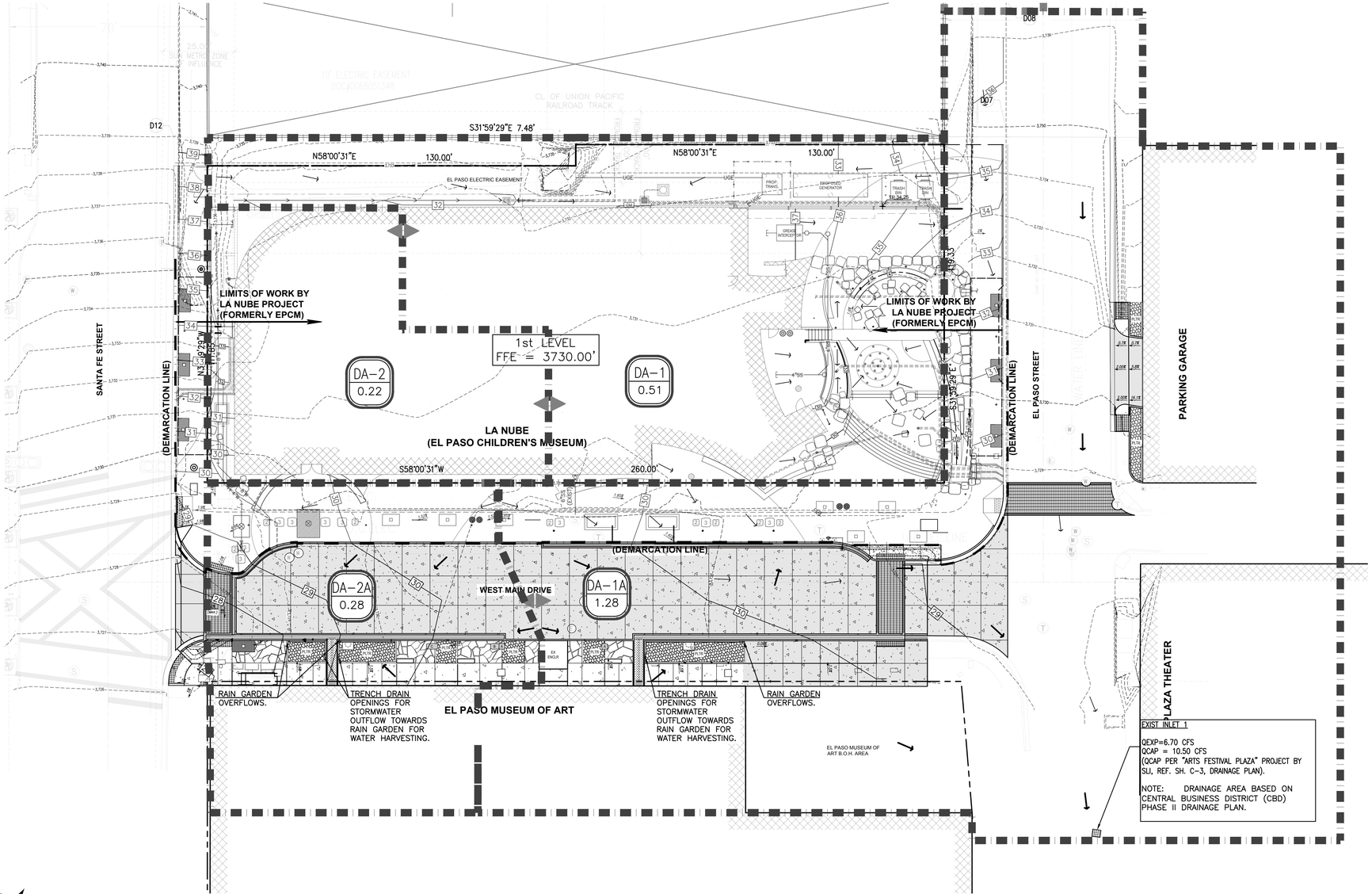
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

W. MAIN DR.
PLAN AND PROFILE

C-203



1 DRAINAGE PLAN
SCALE: 1"=20'-0"

PROPOSED CONDITIONS:

- WATER RUNOFF FLOW ARROW
- HIGH POINT ELEVATION
- LOW POINT ELEVATION
- WATERSHED PERIMETER LINE
- WATERSHED IDENTIFICATION (DA-1, 3.05) # AREA (AC.)
- TRUE NORTH

STORM WATER CALCULATIONS

SITE DESIGN STORM DRAINAGE CALCULATION
TABLE 100 YEAR DESIGN FREQUENCY

RATIONAL FORMULA (BASED ON CITY OF EL PASO DRAINAGE DESIGN MANUAL, JUNE 2008):

Q = CIA,
WHERE,
Q = DISCHARGE RATE (CFS)
C = 0.95 FOR COMMERCIAL
C = 0.40 FOR LANDSCAPED AREAS
*C = WEIGHTED COEFFICIENT
$I_{100} = 111.04/(T_C + 26.09)^{0.8177}$ (CENTRAL INTENSITY EQUATION) = 4.13
T_C = 10 MIN.

NOTE: REFERENCE "CENTRAL BUSINESS DISTRICT (CBD) PHASE II" DRAINAGE PLAN FOR WATERSHED AREAS AND THE "ARTS FESTIVAL PLAZA" PROJECT FOR EXIST INLET 1 CAPACITY.

EXIST CONDITIONS - 100 Year Design					
WATERSHED	Area (Ac)	*C	T (MIN.)	I	Discharge Rate (cfs)
DA-1A	1.28	0.95	10	4.13	5.01
DA2-2A	0.28	0.95	10	4.13	1.09
				TOTAL:	6.09

PROPOSED CONDITIONS - 100 Year Design					
WATERSHED	Area (Ac)	*C	T (MIN.)	I	Discharge Rate (cfs)
DA-1A	1.28	0.95	10	4.13	5.01
DA2-2A	0.28	0.95	10	4.13	1.09
				TOTAL:	6.09

PER LA NUBE (FORMERLY EL PASO CHILDREN'S MUSEUM) PROJECT, CALCULATIONS BELOW FOR STORM WATER DRAINAGE FOR DA-1 AND DA-2 ARE BASED ON THE CENTRAL BUSINESS DISTRICT (CBD) PHASE II DRAINAGE PLAN. PER SAID DRAINAGE PLAN, EXISTING DRAINAGE RUNOFF (C) = 0.85.

EXIST CONDITIONS - 100 Year Design					
WATERSHED	Area (Ac)	*C	T (MIN.)	I	Discharge Rate (cfs)
DA1+DA2	0.73	0.85	10	4.13	2.55
				TOTAL:	2.55

PROPOSED CONDITIONS - 100 Year Design					
WATERSHED	Area (Ac)	*C	T (MIN.)	I	Discharge Rate (cfs)
DA1	0.51	0.81	10	4.13	1.69
DA2	0.22	0.85	10	4.13	0.77
				TOTAL:	2.46

THEREFORE, THE EXPECTED DRAINAGE (QEXP) AT EXIST INLET 1 IS:

QEXP = (DA-1 + DA-1A) = (1.69 CFS + 5.01 CFS) = 6.70 CFS.
QEXP (6.70 CFS) < QCAP OF INLET (10.50 CFS).

FURTHERMORE, THE EXPECTED DRAINAGE (QEXP) TOWARDS SANTA FE IS EQUAL TO THE EXISTING DRAINAGE:

QEXP = DA-2 + DA-2A = 0.77 CFS +0.28 CFS = 1.05 CFS.

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100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE
1		
2		
3		
4		
5		
6		

STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED
PROFESSIONAL ENGINEER
01/18/2024

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

DRAINAGE PLAN
C-300

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE **CITY OF EL PASO** (COEP) STANDARDS. REFERENCE COEP ORDINANCE TITLE 18 (BUILDING AND CONSTRUCTION), TITLE 13 (STREETS, SIDEWALKS AND PUBLIC PLACES) AND DESIGN STANDARDS FOR CONSTRUCTION (DSC).
2. UTILITIES SHOWN ON THE PLANS WERE TAKEN FROM FIELD SURVEYS AND INFORMATION PROVIDED BY THE UTILITY COMPANIES. THE COMPLETENESS AND THE ACCURACY OF THIS DATA IS NOT GUARANTEED. CONTACT THE UTILITY COMPANIES BEFORE BEGINNING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES AND PROTECTING THEM FROM DAMAGE DURING CONSTRUCTION. CONTACT ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE FOUND.
3. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS (TCP) THAT COMPLY WITH REQUIREMENTS BY THE **CITY OF EL PASO**. CONTRACTOR SHALL SUBMIT A TCP FOR APPROVAL. COORDINATE WITH SAM–TRAFFIC ENGINEERING 2 WEEKS BEFORE COMMENCING ANY ACTIVITY.
4. WORK SHALL NOT BE BACKFILLED OR COVERED UNTIL IT HAS BEEN INSPECTED AND APPROVED BY A CITY INSPECTOR.
5. MATERIAL TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY APPROVED BY THE COEP AND PAID FOR BY THE OWNER.
6. FINISHED SLOPES OR PUBLIC RIGHT–OF–WAY AND EASEMENTS SHALL NOT BE STEEPER THAN 3:1. ALL SLOPES STEEPER THAN 6:1 SHALL BE HYDRO–MULCHED AND MAINTAINED BY THE CONTRACTOR UNTIL GRASS COVERS ALL PARTS OF THE SLOPE.
7. ALL TRENCH AND EXCAVATION SHALL BE IN ACCORDANCE WITH OSHA STANDARDS. ANY TRENCH AND EXCAVATION WITHIN 25 FEET OF STREETCAR TRACK CENTERLINE WILL NEED TO COMPLY WITH THE TRACK ACCESS PROGRAM POLICY STANDARDS FOR TRENCHING AND EXCAVATION.
8. CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL AND MAINTAIN SWPPP SYSTEM FOR DURATION OF PROJECT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION/SEDIMENT CONTROL. THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER IF THERE ARE ANY SIGNS THAT SEDIMENT HAS LEFT THE PROPOSED WORK AREA.
10. THE CONTRACTOR SHALL FURNISH TO THE **CITY OF EL PASO** PROOF OF SATISFACTORY COVERAGE OF INSURANCE IN ACCORDANCE WITH STANDARD REQUIREMENTS PRIOR TO BEGINNING OF CONSTRUCTION.
11. TOPOGRAPHICAL INFORMATION BASED ON SURVEY BY **SLI ENGINEERING INC**. TOPO IS INCOMPLETE. EXISTING CONDITIONS NOT SHOWN ON PLANS. EXISTING CONDITION SURVEY INFORMATION IS PART OF CONTRACT DOCUMENT.
12. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH GAS, OIL, PROPANE, ELECTRIC, TELEPHONE, FIBER OPTIC, CABLE TV OWNERS ETC. FOR ANY RELOCATION AND/OR PROTECTION OF EXISTING LINES, POLES OR CABLES AS REQUIRED, DUE TO CONSTRUCT ION ACTIVITIES. CONTRACTOR TO MAINTAIN A MINIMUM COVER OF TWO (2') FEET UNDER TELEPHONE/CABLE/FIBER OPTIC AND GAS LINES. CONTRACTOR TO EXERCISE CAUTION WHEN PERFORMING WORK IN VICINITY OF OVERHEAD POWER LINES THROUGHOUT THE DURATION OF THE PROJECT. CITY OF EL PASO IS NOT PART OF THE "ONE CALL", COORDINATE AT LINESPOTS@CITYOFELPASO.GOV.
13. CONTRACTOR TO COMPACT SOIL NOT LESS THAN 95% OF MAXIMUM DENSITY, IN ACCORDANCE WITH ASTM D1557.
14. THE CONTRACTOR SHALL FIELD VERIFY ELEVATIONS, MEASUREMENTS, EXISTING CONDITIONS AND STAKE THE RIGHT–OF–WAY TO ENSURE PROPER OFFSET TO NEW IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. NOTIFY THE ENGINEER AT LEAST 14 DAYS PRIOR TO CONSTRUCTION OF ANY OMISSIONS, ERRORS, OR DISCREPANCIES FOUND SO THAT NECESSARY CORRECTIONS AND INTERPRETATIONS BE MADE PRIOR TO CONSTRUCTION.
15. THE CONTRACTOR SHALL NOTIFY THE CITY OF EL PASO IN WRITING, OF ANY PROPOSED DUMP SITE(S) FOR OVERBURDEN AND ANY CONSTRUCTION DEBRIS FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL OBTAIN APPROVAL OF ITS HAUL ROUTE TO THE DUMP SITE, AS WELL AS FOR THE MATERIALS IT SHALL BE HAULING BEFORE REMOVAL OF OVERBURDEN FROM PROJECT SITE.
16. THE CONTRACTOR SHALL NOTIFY ALL RESIDENTS AND BUSINESS OWNERS THAT MAY BE AFFECTED BY THE CONSTRUCTION FOURTEEN (14) DAYS PRIOR TO CONSTRUCTION.
17. PEDESTRIAN AND VEHICULAR ACCESS TO ALL RESIDENTS AND COMMERCIAL SITES SHALL BE PROVIDED AT ALL TIMES. COORDINATION FOR THIS ACTIVITY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. INSTALLATION OF THE STORMWATER & SANITARY SEWER LINES SHALL BE COORDINATED WITH, AND ALL RESTORATION INSPECTIONS WILL BE BY THE CITY OF EL PASO AND/OR EL PASO WATER DURING CONSTRUCTION.
19. THE PROPERTY OWNERS, EP WATER, AND THE CITY OF EL PASO MUST BE NOTIFIED 48 HOURS PRIOR TO COMMENCING ANY WORK IN AREAS WITHIN THEIR JURISDICTION.
20. ALL EXISTING ROADWAYS, CURB & GUTTER, SIDEWALKS, SIGNS, LANDSCAPING, DRAINAGE AND IRRIGATION STRUCTURES AND DRIVEWAYS AFFECTED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER BY CONTRACTOR AT NO COST TO THE OWNER. ALL BUSINESSES, RESIDENCES, SCHOOLS, ETC. SHALL BE PROVIDED WITH FULL ACCESS AT ALL TIMES, INCLUDING ALL DRIVEWAYS.
21. CONTRACTOR SHALL KEEP ALL DEBRIS AND SPOIL OUT OF DRAINS, CULVERTS, AND DROP INLETS AND ENSURE THAT THEY DO NOT BECOME CLOGGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
22. THE CONTRACTOR SHALL PRESERVE, DURING CONSTRUCTION, ALL STOP SIGNS, SPEED LIMIT SIGNS, UNDERGROUND SIGN AL CONDUITS AND ALL OTHER TRAFFIC REGULATORY SIGNS, COORDINATION SHALL BE WITH THE CITY OF EL PASO. CONTRACTOR SHALL COORDINATE WITH STREET & MAINTENANCE DEPARTMENT THE ABOVE ENTITY FOR THE LOCATION AND SPOTTING OF TRAFFIC SIGNAL CONDUITS.
23. CONTRACTOR IS REPONSIBLE FOR INSTALLING AND MAINTAINING THE TRAFFIC CONTROL DEVICES.
24. THE CONTRACTOR SHALL NOTIFY THE CITY'S ENGINEERING AND MUNICIPAL SERVICES (ENVIRONMENTAL DIVISION) DEPARTMENTS IMMEDIATELY, IF SUBSURFACE CONTAMINATION IS ENCOUNTERED OR SUSPECTED DURING POT HOLING, EXCAVATION OR BORING. ALL EXCAVATION AND CONSTRUCTION OPERATIONS SHALL BE CEASED UNTIL FURTHER NOTICE FROM THE MUNICIPAL SERVICES DEPARTMENT.
25. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING IMPROVEMENTS IN THE PROJECT AREA AND ITS VICINITY. ANY DAMAGES RESULTING FROM CONTRACTOR'S WORK, SHALL BE REPAIRED TO ITS ORIGINAL CONDITION BY CONTRACTOR AT NO COST TO THE OWNER.
26. CONTACT STREETS AND MAINTENANCE DEPARTMENT FOR THE TEMPORARY RELOCATION OF EXISTING SIGNS AND ANY STORAGE OF SIGNS. RE–INSTALL AND REMOVED SIGNS. ANY SIGNS DAMAGED OR FALLEN NEEDS TO BE REINSTALLED BY THE CONTRACTOR.
27. CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS DURING CONSTRUCTION ACTIVITY.
28. CID INSPECTIONS AND PLANNING AND INSPECTIONS DEPARTMENT INSPECTIONS FOR PERMITS ARE CONDUCTED SEPARATELY.

PERMIT CLOSEOUT:

18.44.220 – Permit closeout procedure.

After the permittee completes the grading under the permit, the permit shall be closed. As part of the closeout procedure, the applicant must submit the following to the city:

A. A statement from the engineer of record that states, "the grading operation has been substantially completed and generally conforms to the approved set of plans". The permittee shall call the permit official to establish the beginning of the warranty period and to notify the permit official that the GSP has been implemented.
B. A copy of the notice of termination filed with the state or dated construction site notice, if applicable, in accordance with Chapter 15.

The city will issue a letter stating general conformance to the permit has been met and that the warranty period requirements will continue to be in effect.

(Ord. No. 17516, § 1, 3–29–2011)

18.44.090 – Warranty.

Any person issued a permit shall agree warrant and maintain the area described in the permit for a period of two years after the permit is closed by the city pursuant to Section 18.44.220, or until a building permit is issued for the purpose of maintaining a stabilized site in accordance with the approved GSP, whichever first occurs (the "warranty" or "warranty period"). The city may conduct inspections of the permitted area throughout the warranty period and require maintenance and correction of the work by the permit holder. Failure of the permit holder to correct the work shall constitute a failure to comply with the provisions of this chapter.

NOTE:
ALL EXISTING AND PROPOSED SIDEWALKS, BARRIER FREE RAMPS, HANDICAP PARKING, DRIVEWAY CROSSWALKS, DRIVEWAYS AND ACCESSIBLE ROUTES SHALL COMPLY WITH A.D.A., T.A.S. AND **CITY OF EL PASO** REQUIREMENTS. EXISTING INFRASTRUCTURE NOT COMPLYING SHALL BE REMOVED AND REPLACED TO MEET STANDARDS.

LEGAL DESCRIPTION

W MAIN DR. ROW, STATION 0+19.37 TO 3+17.37, CITY OF EL PASO, EL PASO COUNTY, TEXAS

FLOOD ZONE DESIGNATION

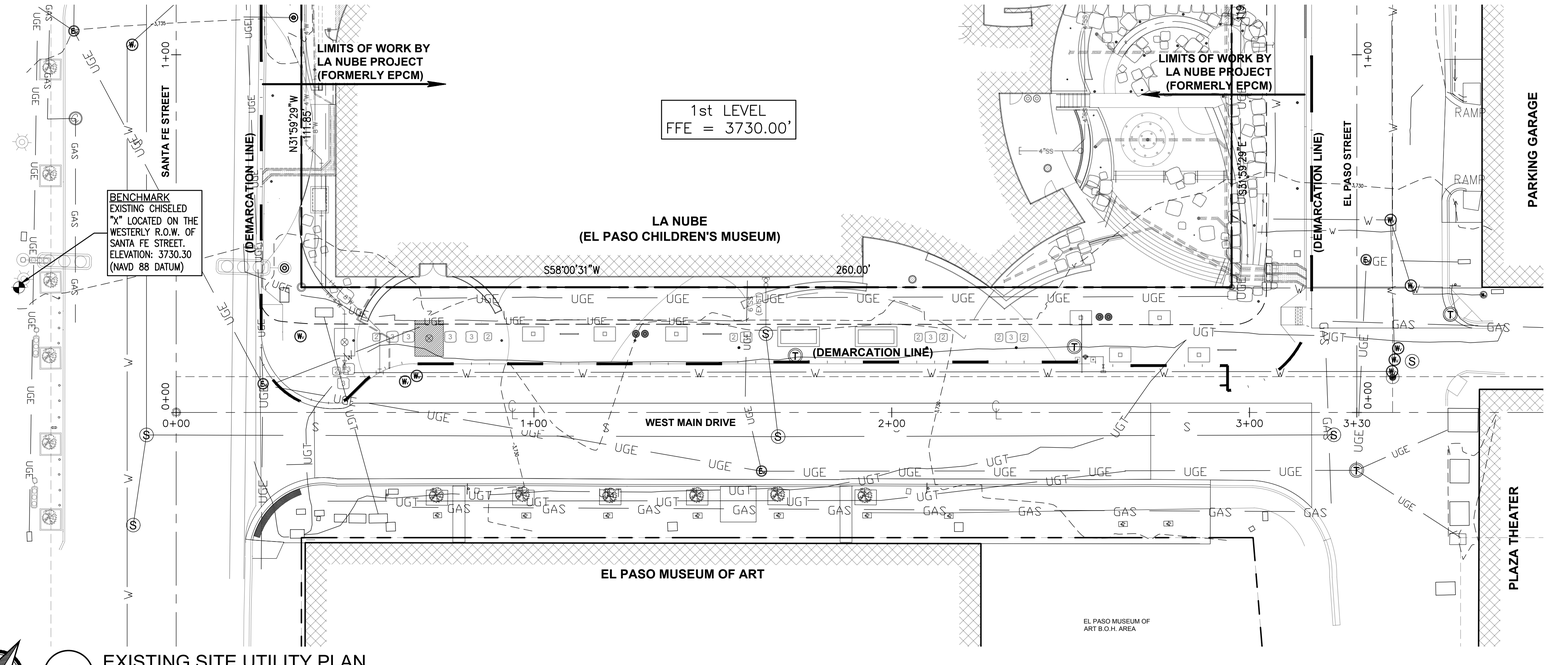
ZONE C, PANEL NUMBER 480214 0039 B, DATED OCTOBER 15, 1982.

VERTICAL DATUM

BENCHMARK: EXISTING CHISELED "X" LOCATED ON THE WESTERLY R.O.W. OF SANTA FE STREET.
ELEVATION: 3730.30' (NAD83 DATUM–CONUS)

EXISTING CONDITIONS:

EXISTING BUILDING	UTILITY UNDER GROUND TELEPHONE (PUBLIC) — UGT —
G GAS METER	POWER POLE
Ww WATER METER	ELECTRIC POLE W/TRANSFORMER
Ew ELECTRIC METER	POWER POLE W/ LIGHT
Wv WATER VALVE	CITY MONUMENT
Gv GAS VALVE	BENCHMARK
S SANITARY SEWER MANHOLE	CENTER LINE
D STORM SEWER MANHOLE	IRON PIN FOUND
E ELECTRIC MANHOLE	GUARD POST GP
T TELEPHONE MANHOLE	CAR STOPPER
TB TELEPHONE BOX	HOSE BIBB
Wmb WATER BOX (Hot Box)	BUILDING OVERHANG
EB ELECTRIC BOX	CANOPY
WB WATER BOX	CHAIN LINK FENCE
E ELECTRIC TRANSFORMER	IRON FENCE
ELECTRIC PIPE	HANDRAIL
WALL LIGHT	BENCH
SCO SEWER CLEAN OUT	TABLE
ICV IRRIGATION CONTROL VALVE	BUSH
ICV IRRIGATION CONTROL BOX	TREE
— W — UTILITY WATER LINE	PALM
— S — UTILITY SEWER LINE	LIGHT POST
— W — UTILITY WATER LINE (PUBLIC)	TREE TRUNK DIAMETER Ø
— S — UTILITY SEWER LINE (PUBLIC)	HANDICAP SYMBOL
FIRE HYDRANT	SIGN
GUY WIRE	FLAG POLE
3907 MINOR CONTOUR LINE	RAMP
3907 MAJOR CONTOUR LINE	FINISH FLOOR ELEV. FF=3907'
Fo FIBER OPTIC	BOUNDARY SYMBOL
SETBACK LINE	BOUNDARY LINE
EASEMENT LINE	EXISTING FENCE
— UGE — UTILITY UNDER GROUND ELECTRIC (PUBLIC)	STORM WATER LINE
— UGT — UTILITY UNDER GROUND TELEPHONE (PUBLIC)	WOOD POLE



1 EXISTING SITE UTILITY PLAN
SCALE: 1"=20'–0"

NOTES:

1. ALL EXISTING UTILITIES SHALL BE PROTECTED DURING CONSTRUCTION.
2. ALL EXISTING UTILITY ACCESS PANELS TO BE ADJUSTED AS REQUIRED TO BE FLUSH WITH NEW PAVEMENT AND SIDEWALK ELEVATION.
3. ALL WATER METERS SHOULD BE ORDERED FROM EL PASO WATER AS SOON AS CONSTRUCTION STARTS TO AVOID DELAYS.

Texas 811
Know what's below. Call before you dig.
TEXAS EXCAVATION SAFETY SERVICES CALL 811

EL PASO STREETCAR (EPSC) NOTES:

1. ANY WORK THAT IS WITHIN 10 FT OF STREETCAR INFRASTRUCTURE OR WITHIN THE ZONE OF INFLUENCE (25 FT FOR TRENCHING/EXCAVATIONS) WILL NEED TO COMPLY WITH SUN METRO'S TRACK ACCESS PROGRAM POLICY. THIS INCLUDES ALL TRENCHING/EXCAVATION STANDARDS AND REQUIREMENTS. GENERAL CONTRACTOR TO COORDINATE WITH SUN METRO.
2. EPSC DETAIL FOR CURB PLACEMENT ADJACENT TO TRACK SLAB ALONG SANTA FE ST. SHALL BE FOLLOWED.
3. COORDINATION WITH EPSC REQUIRED PRIOR TO PLACEMENT OF SIDEWALK. SIDEWALK SUBGRADE TO BE IN ACCORDANCE WITH EPSC DESIGN STANDARDS.

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100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE

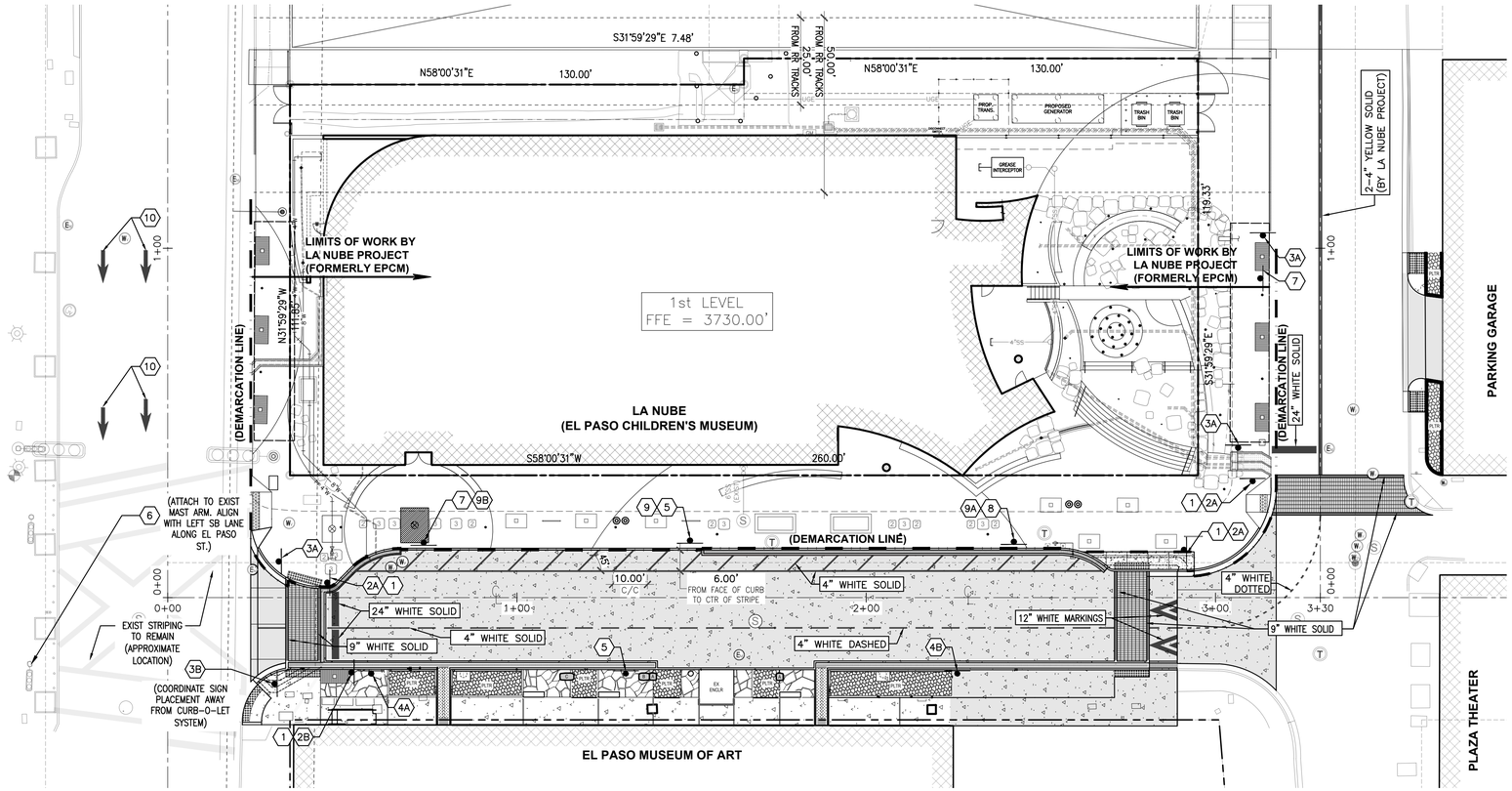
STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED PROFESSIONAL ENGINEER
01/18/2024

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE: AS NOTED
DATE: 18 JANUARY 2024
PROJECT: 1568
DRAWN BY: SC

EXISTING SITE UTILITY PLAN
C-400

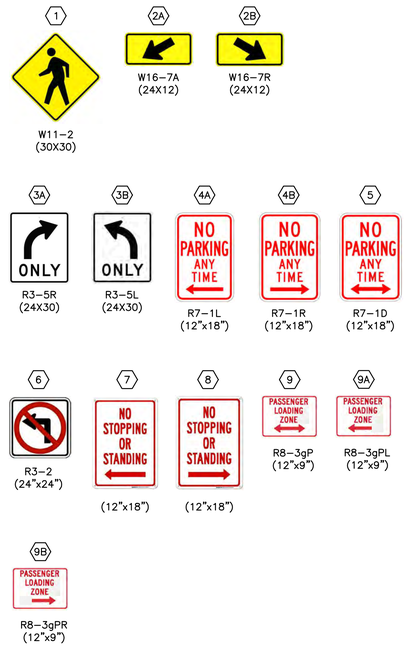


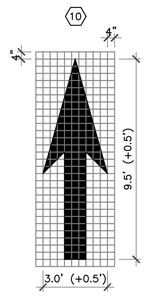
1 SIGNAGE AND STRIPING PLAN

SCALE: 1"=20'-0"

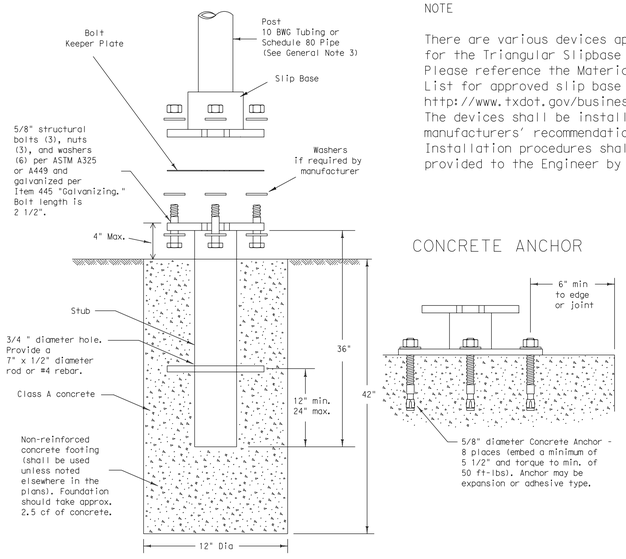
LEGEND

- PROPOSED SMALL SIGN (REF DET. 2, SH C-500 FOR SIGN MOUNTING DETAILS)
- (1) SMALL SIGN NUMBER





WHITE ARROW MARKING (THERMOPLASTIC)



NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

CONCRETE ANCHOR

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the followings
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   21% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is:
   http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the traveiway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the traveiway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

2 SIGN MOUNTING DETAILS (TXDOT)

SCALE: NTS

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100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE
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3		
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STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED
PROFESSIONAL ENGINEER
01/18/2024

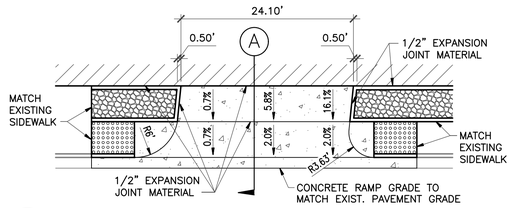
WEST MAIN DRIVE STREETSCAPE

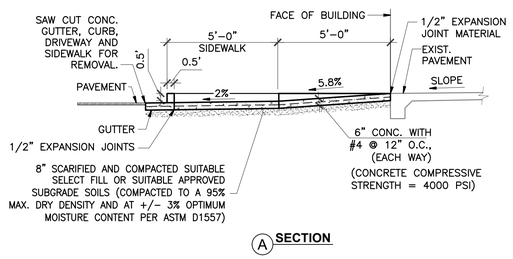
WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

SIGNAGE AND STRIPING

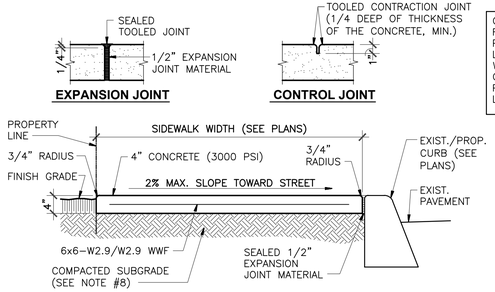
C-500





1 TYPICAL DRIVEWAY PLAN

SCALE: NTS



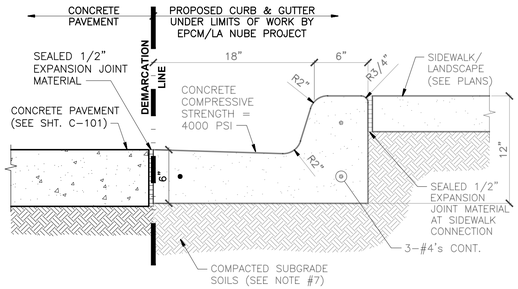
COORDINATE SIDEWALK FINISH, COLOR AND PATTERN WITH LANDSCAPE PLANS AS WELL AS REUSED CONCRETE FOR PROPOSED PLACEMENT LOCATIONS.

SIDEWALK NOTES:
1. REUSED CONCRETE FROM SIDEWALK AND PAVEMENT DEMOLITION SHALL BE REUSED IN SIDEWALK AREAS. COORDINATE WITH LANDSCAPE PLANS.
2. CONCRETE TO BE 3000 PSI MINIMUM.
3. DUMMY JOINT REQUIRED AT 10' O.C. FOR HEADERS AND 5' O.C. FOR SIDEWALKS.
4. EXPANSION MATERIAL REQUIRED AT CURB RETURNS AND AT 20' O.C. FOR SIDEWALKS WITH SEALED 1/2" PREMOLDED ASPHALT IMPREGNATED EXPANSION MATERIAL OR EQUAL.
5. EXPANSION JOINTS REQUIRED AT 50' O.C. WHEN FORMING FOR CURBS.
6. PROVIDE EXPANSION JOINT MATERIAL WHERE SIDEWALK MEETS CURB, AND AT ALL SIDES WHERE CONCRETE PARKWAY MEETS SIDEWALK AND CURB.
7. TOOLED CONTRACTION JOINTS AT 5' O.C., 1/2" PREMOLDED EXPANSION JOINTS AT 20' O.C. AND AT BUILDINGS, STEPS AND INTERSECTIONS.
8. SCARIFIED MOISTURE CONDITIONED AND COMPACTED NATIVE SUBGRADE SOILS (COMPACTED TO A MIN. 95% MAX. DRY DENSITY AND AT 3% OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D1557)

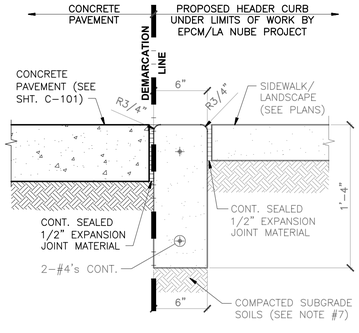
2 CONCRETE PUBLIC SIDEWALK DETAIL

SCALE: 3/4"=1'-0"

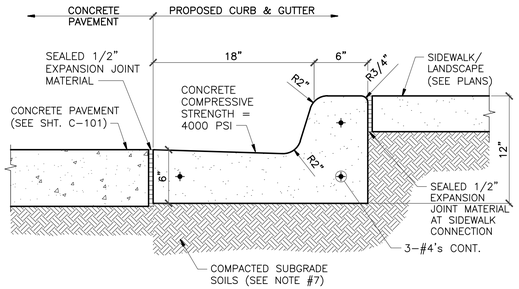
CURB NOTES:
1. CONCRETE SIDEWALK TO BE 3000 PSI MINIMUM.
2. CONCRETE CURB & GUTTER TO BE 4000 PSI MINIMUM.
3. DUMMY JOINT REQUIRED AT 10' O.C. FOR HEADERS AND 5' O.C. FOR SIDEWALKS.
4. SEALED EXPANSION JOINTS MATERIAL REQUIRED AT CURB RETURNS AND AT 20' O.C. FOR SIDEWALKS WITH 1/2" PRE-MOLDED ASPHALT IMPREGNATED EXPANSION MATERIAL.
5. SEALED EXPANSION JOINTS REQUIRED AT 50' O.C. WHEN FORMING FOR CURBS.
6. PROVIDE SEALED EXPANSION JOINT MATERIAL WHERE SIDEWALK MEETS CURB, AND AT ALL SIDES WHERE CONCRETE PARKWAY MEETS SIDEWALK AND CURB.
7. 12" COMPACTED SUBGRADE SOILS (COMPACTED TO A MIN. 95% MAX. DRY DENSITY AND AT +/- 3% OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D 1557).



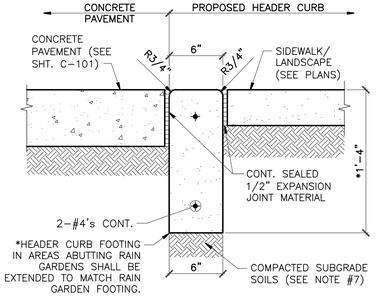
A 6" CURB & GUTTER ALONG NORTHSIDE



B 6" HEADER CURB ALONG NORTHSIDE



C 6" CURB & GUTTER ALONG SOUTHSIDE

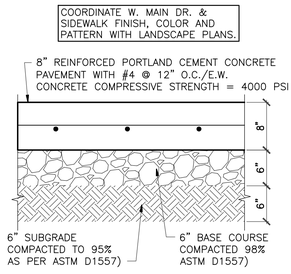


D 6" HEADER CURB ALONG SOUTHSIDE

3 CONCRETE CURB DETAILS

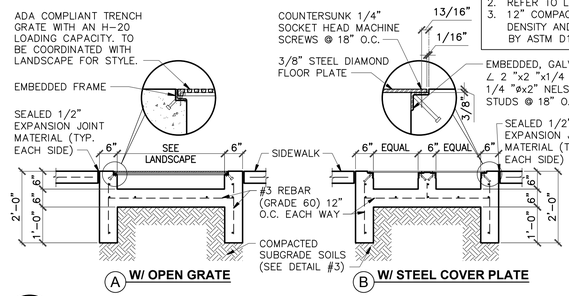
SCALE: 1 1/2"=1'-0"

COORDINATE W. MAIN DR. & SIDEWALK FINISH, COLOR AND PATTERN WITH LANDSCAPE PLANS.

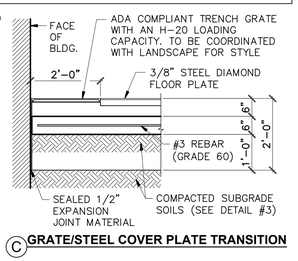


4 8" CONC. PAVEMENT DETAIL

SCALE: 1"=1'-0"



FLUME NOTES:
1. ALL CONCRETE SHALL BE 4000 PSI COMPRESSIVE STRENGTH @ 28 DAYS.
2. REFER TO LANDSCAPE FOR GRATE SPECIFICATIONS AND ANCHORING.
3. 12" COMPACTED SUBGRADE SOILS (COMPACTED TO A MIN. 95% MAX. DRY DENSITY AND AT +/- 3% OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D1556



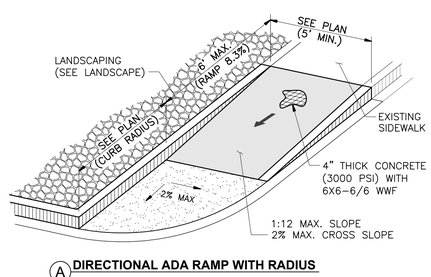
5 CONCRETE FLUME WITH OPEN GRATE AT SIDEWALK

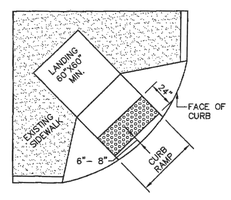
SCALE: N.T.S.

CURB RAMP ON ACCESSIBLE ROUTE

CURB RAMPS SHALL COMPLY WITH THE FOLLOWING:

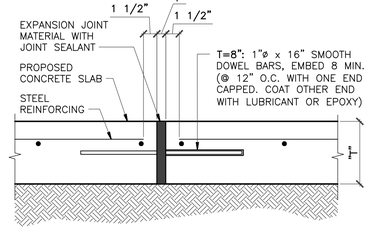
1. CURB RAMP SHALL HAVE A LEVEL LANDING WITH SLOPES NOT GREATER THAN 2% (1:48) IN ANY DIRECTION.
2. TAS SECTION 405 RAMPS. SUBSECTION 405.2 SLOPE, SUBSECTION 405.3 CROSS SLOPE, SUBSECTION 405.4 FLOOR OR GROUND SURFACES, SUBSECTION 405.5 CLEAR WIDTH AND SUBSECTION 405.10 WET CONDITIONS.
3. TAS SECTION 406 CURB RAMPS





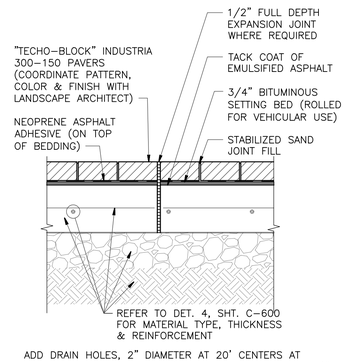
6 PUBLIC ADA RAMPS

SCALE: NTS



7 RIGID PAVEMENT EXPANSION JOINT AT RAISED PAVEMENT

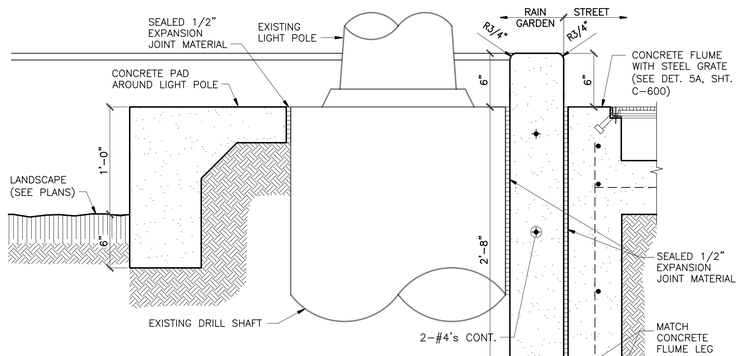
SCALE: 1 1/2"=1'-0"



ADD DRAIN HOLES, 2" DIAMETER AT 20' CENTERS AT LOWEST ELEVATION. FILL W/FREE DRAINING AGGREGATE ½".

8 PAVER DETAIL

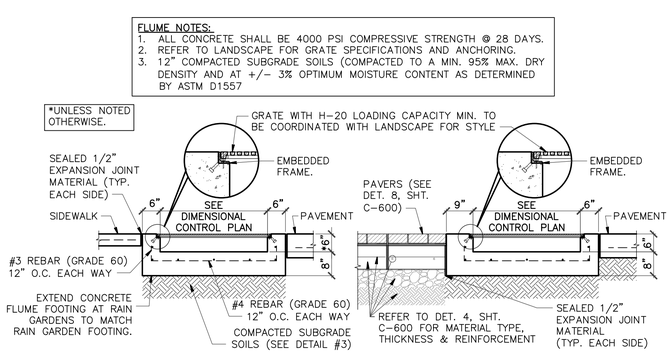
SCALE: 1"=1'-0"



9 CONCRETE PAD AROUND LAMP BASE

SCALE: 1 1/2"=1'-0"

FLUME NOTES:
1. ALL CONCRETE SHALL BE 4000 PSI COMPRESSIVE STRENGTH @ 28 DAYS.
2. REFER TO LANDSCAPE FOR GRATE SPECIFICATIONS AND ANCHORING.
3. 12" COMPACTED SUBGRADE SOILS (COMPACTED TO A MIN. 95% MAX. DRY DENSITY AND AT +/- 3% OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D1557



10 CONCRETE FLUME WITH OPEN GRATE DETAIL ALONG STREET

SCALE: 1/2"=1'-0"

surroundings
landscape architecture urbanism
1611 Paseo de Peralta
Santa Fe, NM 87501
t: 505 982 3454
www.surroundings.studio

SER Group, Llc
Sustainable Engineering Resource Group, LLC
221 N. Kansas St., Suite 700 | El Paso, TX 79901
T 915.875.1590 | F 915.603.4290
www.sergroupusa.com
ENGINEERING FIRM NO.: F-12625

100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

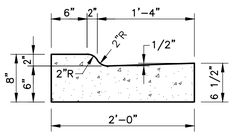
NO	DATE	NOTE
1		
2		
3		
4		
5		

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

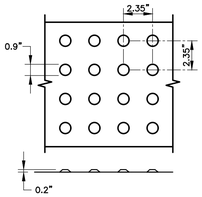
DETAILS
C-600



CAN BE USED ON DRIVEWAYS WITH APPROVAL BY THE CITY ENGINEER: EXCEPT WHERE ROLLOVER OR MOUNTABLE CURBING IS INSTALLED.

1 TYPE "H" DRIVEWAY CURB DETAIL

NTS

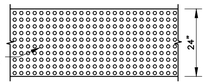


DOME SIZE AND SPACING. TRUNCATED DOMES SHALL HAVE A DIAMETER OF NOMINAL 0.9 INCHES (23 mm) AT THE BOTTOM, A DIAMETER OF 0.4 INCHES (10 mm) AT THE TOP, A HEIGHT OF NOMINAL 0.2 INCHES (5 mm), AND A CENTER–TO–CENTER SPACING OF NOMINAL 2.35 INCHES (60 mm) MEASURED ALONG ONE SIDE OF A SQUARE ARRANGEMENT.

DOME ALIGNMENT. DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES. DETECTABLE WARNING SURFACES SHALL EXTEND 24 INCHES (610 mm) MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION.

CONTRAST. THERE SHALL BE A MINIMUM OF 70 PERCENT CONTRAST IN LIGHT REFLECTANCE BETWEEN THE DETECTABLE WARNING AND AN ADJOINING SURFACE, OR THE DETECTABLE WARNING SHALL BE "RED BRICK" COLOR, UNLESS OTHERWISE DIRECTED BY THE OWNER. THE MATERIAL USED TO PROVIDE VISUAL CONTRAST SHALL BE AN INTEGRAL PART OF THE DETECTABLE WARNING SURFACE. CONTRAST SHALL BE PROVIDED BY PLACING AND MIXING TINT IN THE PLASTIC CONCRETE USED FOR THE DETECTABLE WARNING SURFACE. NO PAINTING OF SURFACE SHALL BE PERMITTED.

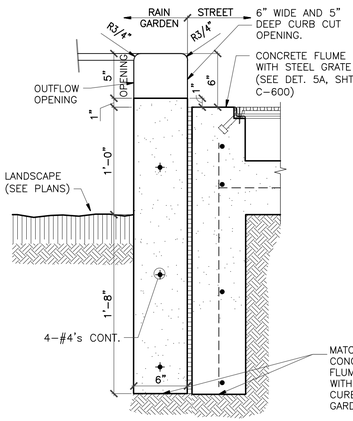
***THE DETECTABLE WARNING COLOR SHALL MATCH THE SAME COLOR AS THE DETECTABLE WARNING SURFACE USED IN LA NUBE PROJECT.**



TRUNCATED DOME TILES. ADA CERTIFIED "ARMOR–TILE" TACTILE SYSTEMS OR APPROVED EQUAL

2 TRUNCATED DOME SIZE AND SPACING

NTS



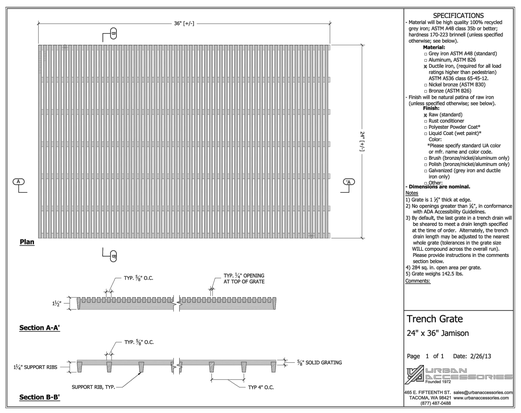
A **CURB OPENING OUTFLOW**

B **SECTION AT CONCRETE FLUME**

C **SECTION AT CONCRETE FLUME**

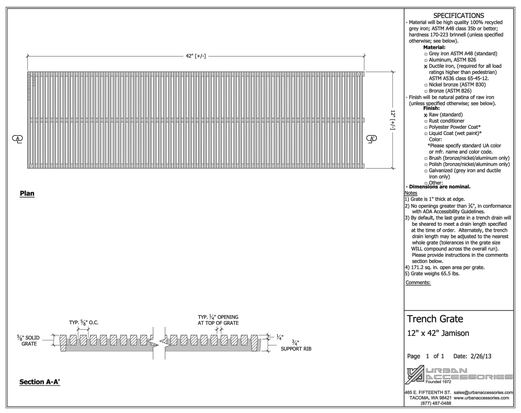
3 RAIN GARDEN DETAILS

SCALE: 1 1/2"=1'–0"



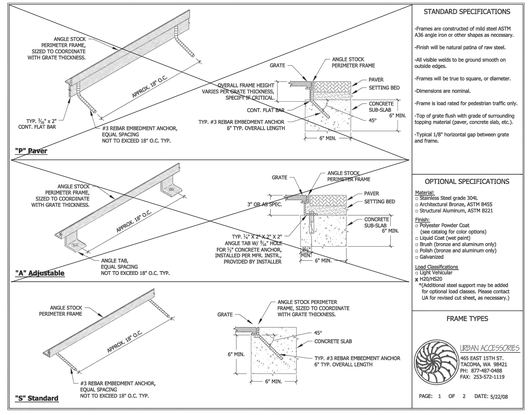
4 SIDEWALK TRENCH GRATE DETAIL

NTS



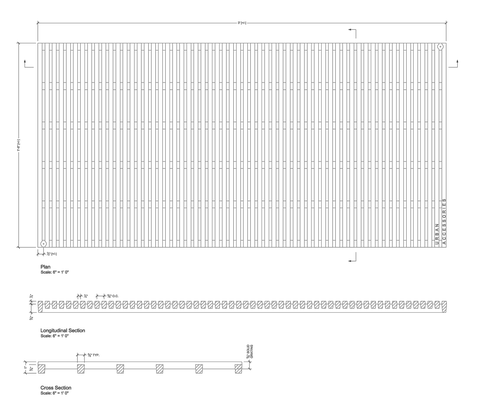
5 ROAD TRENCH GRATE DETAIL - (HS-20 TRAFFIC RATED)

NTS



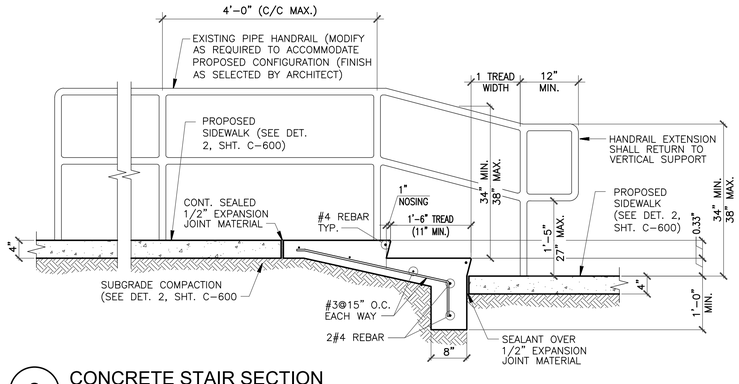
6 TRENCH GRATE FRAME DETAIL (HS-20 TRAFFIC RATED)

NTS



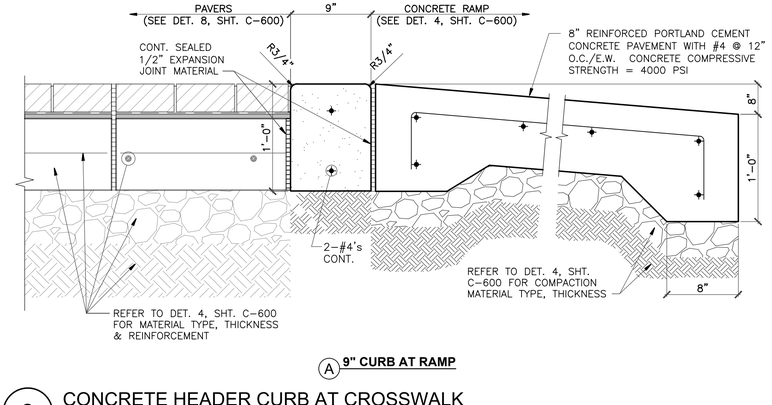
7 ROAD TRENCH GRATE DETAIL (HS-20 TRAFFIC RATED)

NTS



8 CONCRETE STAIR SECTION

SCALE: N.T.S.



A **9" CURB AT RAMP**

B **9" CURB AT PAVERS**

9 CONCRETE HEADER CURB AT CROSSWALK

SCALE: 1 1/2"=1'–0"

CURB NOTES:
1. CONCRETE SIDEWALK TO BE 3000 PSI MINIMUM.
2. CONCRETE CURB & GUTTER TO BE 4000 PSI MINIMUM.
3. DUMMY JOINT REQUIRED AT 10' O.C. FOR HEADERS AND 5' O.C. FOR SIDEWALKS.
4. SEALED EXPANSION JOINTS MATERIAL REQUIRED AT CURB RETURNS AND AT 20' O.C. FOR SIDEWALKS WITH 1/2" PRE–MOLDED ASPHALT IMPREGNATED EXPANSION MATERIAL.
5. SEALED EXPANSION JOINTS REQUIRED AT 50' O.C. WHEN FORMING FOR CURBS.
6. PROVIDE SEALED EXPANSION JOINT MATERIAL WHERE SIDEWALK MEETS CURB, AND AT ALL SIDES WHERE CONCRETE PARKWAY MEETS SIDEWALK AND CURB.
7. 12" COMPACTED SUBGRADE SOILS (COMPACTED TO A MIN. 95% MAX. DRY DENSITY AND AT +/– 3% OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D 1557).

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1611 Paseo de Peralta
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SER Group, Llc
Sustainable Engineering Resource Group, LLC
221 N. Kansas St., Suite 700 | El Paso, TX 79901
T 915.875.1990 | F 915.603.4290
www.sergroupusa.com
ENGINEERING FIRM NO.: F-12625

100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE
1		
2		
3		
4		
5		

STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED
PROFESSIONAL ENGINEER
01/18/2024

WEST MAIN DRIVE STREETSCAPE

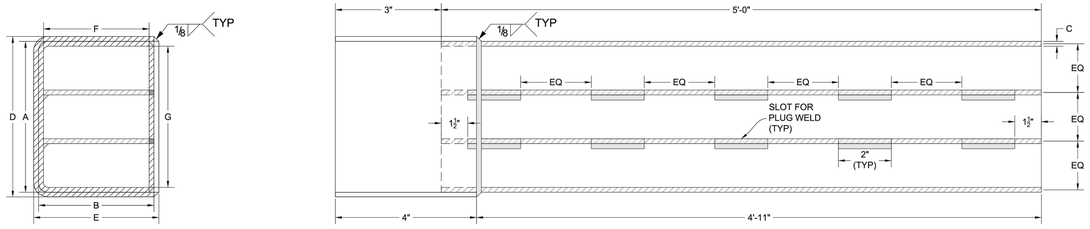
WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

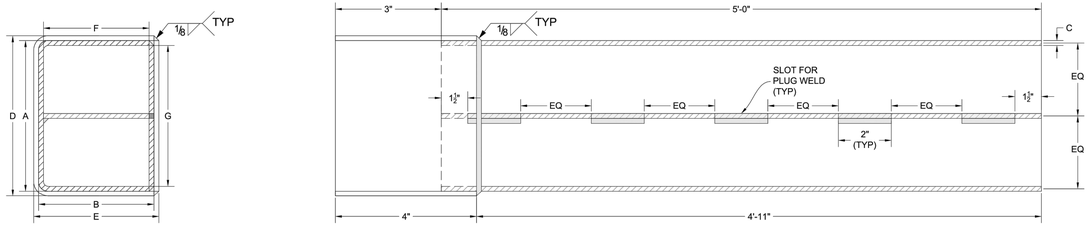
DETAILS
C-601

RECTANGULAR CHANNEL DETAIL

CP - SP327H



CP - SP317H / CP - SP422H



PRODUCT SPECIFICATION - HUB PIPE											
PRODUCT LIST				PRODUCT DIMENSIONS							
MODEL	DIMENSIONS	ROUND EQUIV.	ROUND TRANSVERSE AREA (SQ. IN.)	A	B	C	D	E	F	G	
CP-SP317H	3"x17"x5"	8"	50.014	17.269"	3.269"	10 GA.	17.50"	3.5"	3"	17"	
CP-SP327H	3"x27"x5"	10"	78.814	27.269"	3.269"	10 GA.	27.50"	3.5"	3"	27"	
CP-SP422H	4"x22"x5"	10"	78.814	22.269"	4.269"	10 GA.	22.50"	4.5"	4"	22"	

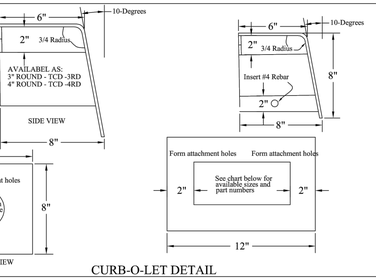
MATERIAL: 10 GUAGE GALVANIZED A653 G90 MEETS ASTM A-653. TENSILE STRENGTH 50,000.0 YEILD 36,000.
ALL WELDS TO BE SPRAYED, ROLLED OR BRUSHED WITH GALVANIZED #95 COATING.
RECTANGULAR CONNECTION: MASTIC, CAULKING, EPOXY BINDING OR OTHER APPROVED METHOD.
ROUND CONNECTION: CAST IRON/PLASTIC PIPE CONNECTION USE CAST IRON OR PLASTIC TO STEEL COUPLINGS.

NOTES	NOT TO SCALE
FINISH	GALVANIZED
DRAWN FOR:	CURB-O-LET

CERTIFIED INDUSTRIAL FABRICATORS, INC.
1532 S. Greenwood Ave.
Montebello, CA 90640
L.A. Cert #1636
www.CIFSTEEL.com
P: (323) 722-2090
F: (323) 722-3638

DESCRIPTION	RECTANGULAR CHANNEL DETAIL		
PROJECT NAME	CURB-O-LET		
DRAWN BY	FSV	JOB No.	DRG No. S-02
DATE DRAWN	12/11/2018		

1 HUB PIPE DETAIL
NTS



CURB-O-LET DETAIL

PRODUCT SPECIFICATION - CURB-O-LET					
PRODUCT LIST					
ROUND EQUIV.	SIZE	MODEL	(ROOF DRAIN) LABEL MODEL NUMBER	(OVERFLOW DRAIN) LABEL MODEL NUMBER	REMARKS
3"	3" ROUND	TCD-3RD	TCD-3RD-RFD	TCD-3RD-OFD	6"-8" CURB FACE
4"	4" ROUND	TCD-4RD	TCD-4RD-RFD	TCD-4RD-OFD	6"-8" CURB FACE
4"	3"x5"	TCD-35	TCD-35-RFD	TCD-35-OFD	6"-8" CURB FACE
5"	3"x8"	TCD-38	TCD-38-RFD	TCD-38-OFD	6"-8" CURB FACE
6"	3"x12"	TCD-312	TCD-312-RFD	TCD-312-OFD	6"-8" CURB FACE
8"	4"x14"	TCD-414	TCD-414-RFD	TCD-414-OFD	NOTE: 8" CURB FACE ONLY
8"	3"x17"	TCD-317	TCD-317-RFD	TCD-317-OFD	6"-8" CURB FACE
10"	3"x27"	TCD-327	TCD-327-RFD	TCD-327-OFD	6"-8" CURB FACE
10"	4"x22"	TCD-422	TCD-422-RFD	TCD-422-OFD	NOTE: 8" CURB FACE ONLY

ALL CURB-O-LET PRODUCTS ARE MANUFACTURED TO CLOSE TOLERANCES. VERY SLIGHT VARIATIONS IN SIZE ARE POSSIBLE. CURB-O-LET FITS STANDARD 6" AND 8" CURB FACE. EPOXY COATING FINISHES AVAILABLE ON REQUEST.

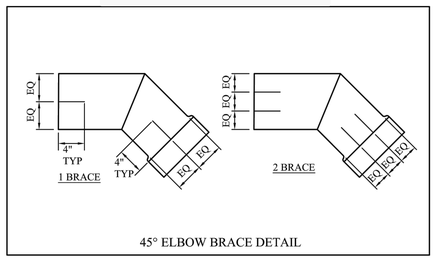
REV	ZONE	DATE	REVISION DESCRIPTION	BY	CK'D

Curb-O-Let™
Thru The Curb Drain
9421 Monterey Ave. Bellflower, CA. 90706 - Office (714)903-2468

SCALE: NONE	DRAWN BY JB	DATE 08/18/16	CHECKED BY JB	APPROVED BY JB

RECTANGULAR STEEL PIPE AND FITTINGS.
CURB-O-LET

4 RECTANGULAR STEEL PIPE AND FITTINGS
NTS



45° ELBOW BRACE DETAIL

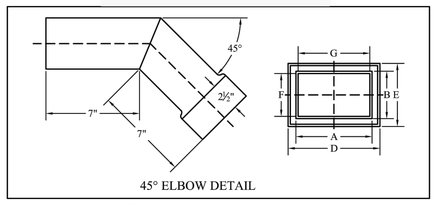
NOTE: BRACES HAVE 4-INCH LONG TACK WELD INSIDE RECTANGULAR END FOR ADDITIONAL STRENGTH

PRODUCT SPECIFICATION - 45° ELBOW												
PRODUCT LIST				PRODUCT DIMENSIONS								
ROUND EQUIV.	DIMENSIONS	MODEL	ROUND AREA (SQ. IN.)	A	B	C	D	E	F	G	NUMBER OF BRACES	
8"	3"x17"	CP-SP4517	50.027	17.269"	3.269"	10 GA.	17.50"	3.5"	3"	17"	1	
8"	4"x14"	CP-SP4514	50.027	14.269"	4.269"	10 GA.	14.50"	4.5"	4"	14"		
10"	3"x27"	CP-SP4527	78.854	27.269"	3.269"	10 GA.	27.50"	3.5"	3"	27"	2	
10"	4"x22"	CP-SP4522	78.854	22.269"	4.269"	10 GA.	22.50"	4.5"	4"	22"	1	
12"	4"x28"	CP-SP4528	111.931	28.269"	4.269"	10 GA.	28.50"	4.5"	4"	28"	2	

MATERIAL: 10 GAUGE GALVANIZED A653 G90, MEETS ASTM A-653. TENSILE STRENGTH 50,000. YIELD 36,000. ALL WELDS WILL BE SPRAYED, ROLLED OR BRUSHED WITH GALVANIZED #95 COATING. RECTANGULAR CONNECTION: MASTIC (MUST MEET OR EXCEED ASTM D-4586), CAULKING, EPOXY OR OTHER CITY OF LOS ANGELES APPROVED METHOD. ROUND CONNECTION: CAST IRON/ PLASTIC PIPE CONNECTION USE CAST IRON OR PLASTIC TO STEEL COUPLINGS. CONTACT BUREAU OF CONTRACT ADMINISTRATION MATERIAL CONTROL SECTION AT (213) 485-5080 FOR FABRICATION INSPECTION

Curb-O-Let™
Thru The Curb Drain
9421 Monterey Ave. Bellflower, CA. 90706 - Office (714)903-2468

5 45° ELBOW BRACE DETAIL
NTS



45° ELBOW DETAIL

NOTE: BRACES HAVE 4-INCH LONG TACK WELD INSIDE RECTANGULAR END FOR ADDITIONAL STRENGTH

PRODUCT SPECIFICATION - 45° ELBOW												
PRODUCT LIST				PRODUCT DIMENSIONS								
ROUND EQUIV.	DIMENSIONS	MODEL	ROUND AREA (SQ. IN.)	A	B	C	D	E	F	G	NUMBER OF BRACES	
4"	3"x5"	CP-SP455	12.730	5.269"	3.269"	10 GA.	5.5"	3.5"	3"	5"		
5"	3"x8"	CP-SP458	20.005	8.269"	3.269"	10 GA.	8.5"	3.5"	3"	8"		
6"	3"x12"	CP-SP4512	28.890	12.269"	3.269"	10 GA.	12.5"	3.5"	3"	12"		
8"	3"x17"	CP-SP4517	50.027	17.269"	3.269"	10 GA.	17.50"	3.5"	3"	17"	1	
8"	4"x14"	CP-SP4514	50.027	14.269"	4.269"	10 GA.	14.50"	4.5"	4"	14"		
10"	3"x27"	CP-SP4527	78.854	27.269"	3.269"	10 GA.	27.50"	3.5"	3"	27"	2	
10"	4"x22"	CP-SP4522	78.854	22.269"	4.269"	10 GA.	22.50"	4.5"	4"	22"	1	
12"	4"x28"	CP-SP4528	111.931	28.269"	4.269"	10 GA.	28.50"	4.5"	4"	28"	2	

MATERIAL: 10 GAUGE GALVANIZED A653 G90, MEETS ASTM A-653. TENSILE STRENGTH 50,000. YIELD 36,000. ALL WELDS WILL BE SPRAYED, ROLLED OR BRUSHED WITH GALVANIZED #95 COATING. RECTANGULAR CONNECTION: MASTIC (MUST MEET OR EXCEED ASTM D-4586), CAULKING, EPOXY OR OTHER CITY OF LOS ANGELES APPROVED METHOD. ROUND CONNECTION: CAST IRON/ PLASTIC PIPE CONNECTION USE CAST IRON OR PLASTIC TO STEEL COUPLINGS. CONTACT BUREAU OF CONTRACT ADMINISTRATION MATERIAL CONTROL SECTION AT (213) 485-5080 FOR FABRICATION INSPECTION

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Thru The Curb Drain
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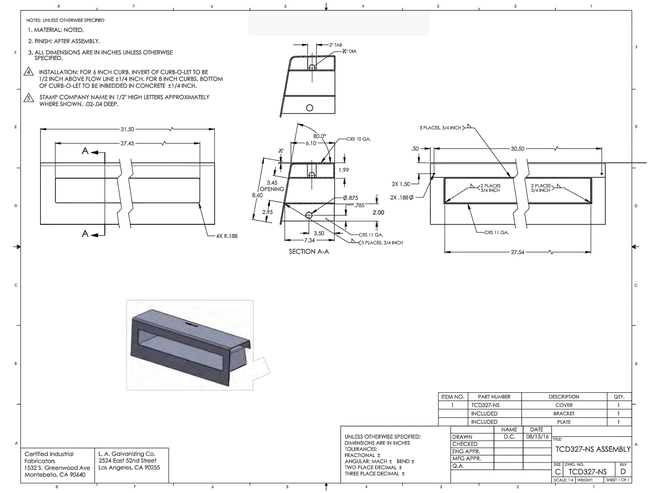
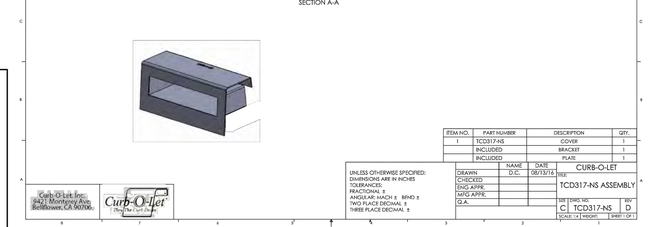
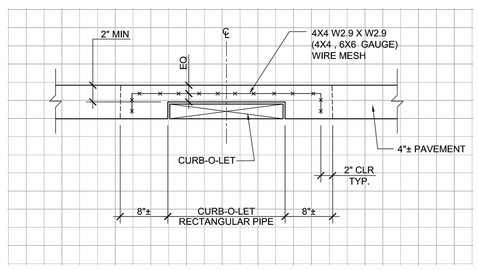
6 45° ELBOW BRACE DETAIL
NTS



2 3"x27" CURB ASSEMBLY
NTS



3 3"x17" CURB ASSEMBLY
NTS



7 TYPICAL SECTION OF RECTANGULAR PIPE INSTALLATION
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100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE

STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED
PROFESSIONAL ENGINEER
01/18/2024

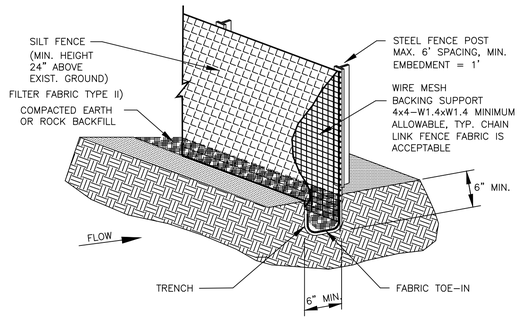
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

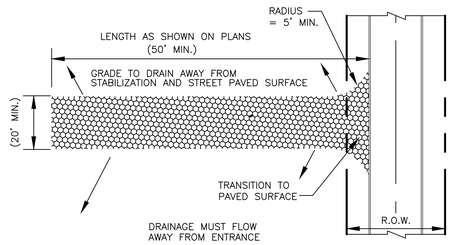
SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

CURB-O-LET DETAILS

C-602



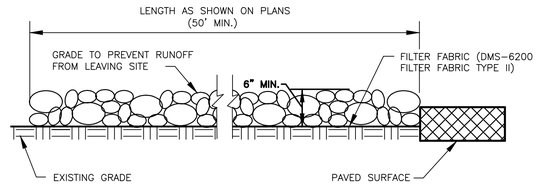
3 ISOMETRIC PLAN VIEW
SCALE: NTS



4 PLAN VIEW
SCALE: NTS

LEGEND:

F.F.E.	FINISHED FLOOR ELEVATION.
— — 40.00 — — —	EXISTING CONTOURS IN FEET.
——·——·——	PROPERTY LINE
54	NEW CONTOURS IN FEET.
—SF—SF—	SILT FENCE
	CONTRACTOR'S PROPOSED STAGING AREA
	PRELIMINARY PORTABLE TOILET LOCATION
	STABILIZED CONSTRUCTION ACCESS



2 PROFILE VIEW
SCALE: NTS

NOTES:

1. INSTALL SILT FENCE AROUND DOWNHILL SIDE OF SOIL STOCKPILES AND DISTURBED AREAS.
2. CONTRACTOR SHALL IMMEDIATELY REMOVE SEDIMENT OR MUD FROM STREETS AND DRAINAGE STRUCTURES, AND SHALL KEEP PUBLIC ROADWAYS MUD FREE AT ALL TIMES.
3. PERMANENT SITE RESTORATION: ALL DISTURBED AREAS SHALL BE COVERED WITH SOD AS SPECIFIED IN STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION. SOD MATERIAL PER ITEM 2.15, INSTALLED PER ITEM 3.9 SHALL BE USED.
4. PERMANENT SITE RESTORATION: ALL DISTURBED AREAS SHALL BE HYDROMULCHED AS SPECIFIED IN STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION. HYDRO MULCH MATERIAL PER ITEM 2.15.3, INSTALLED PER ITEM 3.10 SHALL BE USED.

SILT FENCE GENERAL NOTES:

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
5. INSPECTION SHALL BE MADE EVERY TWO WEEKS AND AFTER EACH 1/2" RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

BEST MANAGEMENT PRACTICES CONTROLS

1. STRUCTURAL MEASURES SHALL BE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT IN EFFECTIVE OPERATING CONDITION.

2. DOCUMENTATION OF MAINTENANCE ACTIVITIES INCLUDING FREQUENCY, LOT DESIGNATION, INSPECTIN OF STRUCTURAL CONTROLS, MATERIAL STORAGE AREAS VEHICLE ENTRANCE AND EXITS: ACTIONS TAKEN AND INSPECTORS NAME.

3. CONSTRUCTION SITE NOTICE WILL BE MAINTAINED ON SITE.

4. COPY OF SWPPP SHALL BE KEPT ON SITE.

5. PERIMETER MUST RETAIN THE SWPS NOI AND INSPECTION LOG FOR A MINIMUM OF 3 YEARS FROM THE TERMINATION AND FINAL STABILIZATION OF PROJECT.

I WASTE MATERIAL:

ALL WASTE MATERIALS, INCLUDING CONSTRUCTION DEBRIS, SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. NO CONSTRUCTION WASTE MATERIAL SHALL BE BURIED ON SITE. THE TRANSIT DUMPSTER SHALL COMPLY WITH ORDINANCE 18.52.010 (ENCLOSURE AND REMOVAL OF WASTE MATERIALS DURING CONSTRUCTION). THE DUMPSTER SHALL BE EMPTIED AS NECESSARY OR AS REQUIRED BY ORDINANCE 9.04 (SOLID WASTE MANAGEMENT) AND THE TRASH SHALL BE HAULED TO A LICENSED LANDFILL.

II HAZARDOUS WASTE:

AT A MINIMUM ANY PRODUCTS IN THE FOLLOWING CATEGORIES SHALL BE CONSIDERED HAZARDOUS: PAINT, ACIDS FOR CLEANING MASONRY SURFACES, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SPILL STABILIZATION, CURING COMPOUNDS AND ADDITIVES. IN THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS, THE CONTRACTOR SHALL TAKE IMMEDIATE ACTION AND CONTACT THE FIRE DEPARTMENT AND TNRCC.

III SANITARY WASTE:

THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURES OF MATERIALS TO STORM WATER RUNOFF.

IV SPILL PREVENTION:

ALL SANITARY WASTE SHALL BE COLLECTED FROM THE CONSTRUCTION PORTABLE UNITS AS NECESSARY OR AS REQUIRED, CHAPTER 18.08 (BUILDING CODE) BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR. ALL WASTE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

V GOOD HOUSEKEEPING:

A. STORE ONLY ENOUGH PRODUCTS REQUIRED TO DO THE JOB
B. NEATLY STORE MATERIALS ON–SITE IN AN ORDERLY MANNER.
C. KEEP PRODUCTS IN THEIR ORIGINAL CONTAINER
D. DO NOT MIX SUBSTANCES WITH ONE ANOTHER. UNLESS OTHERWISE RECOMMENDED BY THE MANUFACTURER.
E. USE ENTIRE CONTENTS OF A PRODUCT BEFORE DISPOSING THE CONTAINER.
F. FOLLOW MANUFACTURE'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL.

VI HAZARDOUS PRODUCTS:

PRACTICES TO REDUCE RISKS:

A. KEEP PRODUCTS IN THEIR ORIGINAL CONTAINER IF AT ALL POSSIBLE
B. RETAIN ORIGINAL LABELS, PRODUCT INFORMATION AND MATERIAL SAFETY DATA SHEETS (MSDS)
C. DISPOSE SURPLUS PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S OR LOCAL AND STATE RECOMMENDED METHODS.

VII PETROLEUM PRODUCTS:

ALL ON–SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANGE OF LEAKAGE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ON–SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.

VIII SPILL CONTROL PRACTICES:

A. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES.
B. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON–SITE.
C. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
D. SPILL AREA SHALL BE WELL VENTILATED AND APPROPRIATE CLOTHING WILL BE WORN.
E. ANY SPILL SHALL BE REPORTED TO THE APPROPRIATE GOVERNMENTAL AGENCY.
F. MEASURES SHALL BE TAKEN TO PREVENT SPILL FROM REOCCURRING.

IX MAINTENANCE AND INSPECTION PROCEDURES:

ALL POLLUTION PREVENTION MEASURES SHALL BE INSPECTED AT LEAST ONCE A MONTH OR WITHIN 24–HOURS PRIOR TO ANTICIPATED STORM EVENT AND FOLLOWING A STORM EVENT OF 0.50 INCHES OR MORE. INSPECTION IN FINAL STABILIZED AREAS OR DURING ARID PERIODS WILL BE CONDUCTED MONTHLY. BEST MANAGEMENT PRACTICES AND POLLUTION CONTROL PROCEDURES SHALL BE INSPECTED FOR ADEQUACY. A REPORT SUMMARIZING THE SCOPE OF INSPECTION SHALL BE DONE AND RETAINED ALONG WITH THE SDPCP.

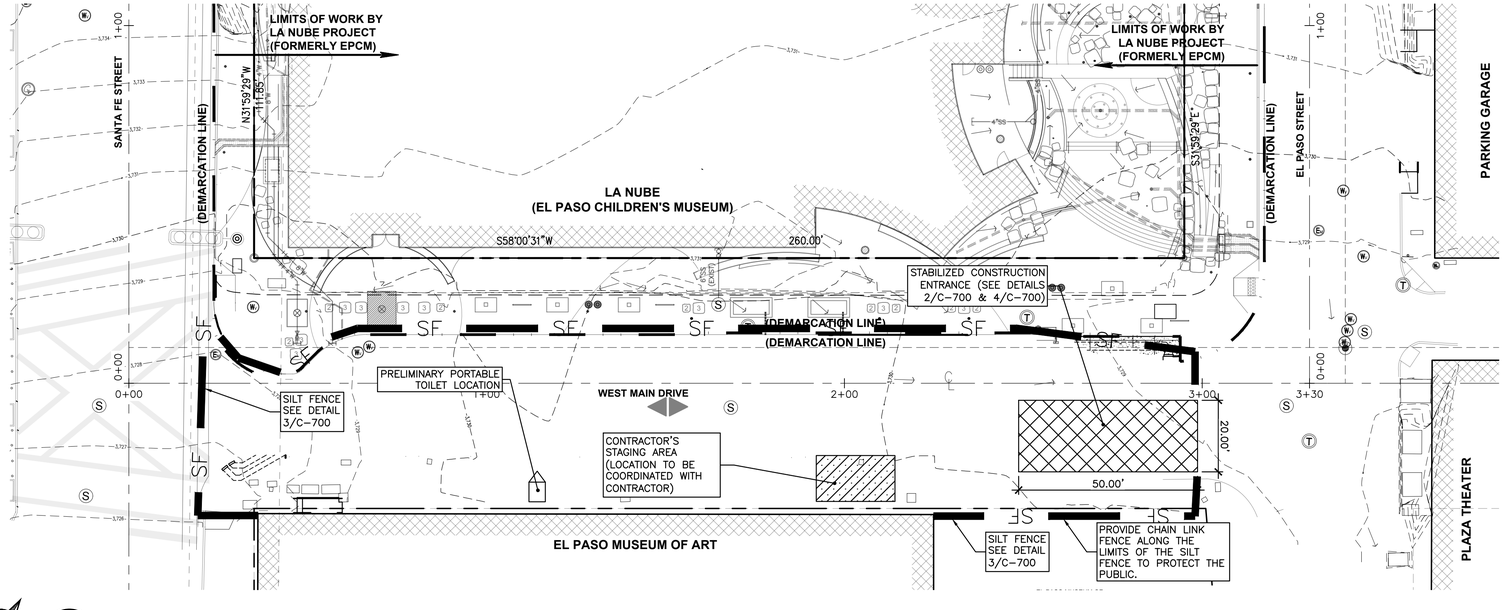
X REMARKS:

DISPOSAL AREAS, STOCKPILES, AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT THAT MAY ENTER RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, WATERBODY OR STREAM BED. CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS. ALL WATERWAYS SHALL BE CLEANED AS SOON AS PRACTICABLE OF TEMPORARY EMBANKMENT, TEMPORARY BRIDGES, MATTING, FALSE WORK, PILING DEBRIS OR OTHER OBSTRUCTIONS PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT A PART OF THE FINISHED WORK.

XI OFFSITE VEHICLE TRACKING:

IN ADDITION TO THE STABILIZED CONSTRUCTION ENTRANCES, THE FOLLOWING MEASURES SHALL BE OBSERVED DURING CONSTRUCTION.

_X_ HAUL ROADS SHALL BE DAMPENED FOR DUST CONTROL
_X_ LOADED HAUL TRUCKS SHALL BE COVERED WITH TARPAULIN
_X_ EXCESS DIRT ON ROADS SHALL BE REMOVED IMMEDIATELY
_X_ STABILIZED CONSTRUCTION ENTRANCE
___ OTHER _____



1 EROSION CONTROL PLAN
SCALE: 1"=20'–0"

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100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE
1		
2		
3		
4		
5		
6		

STATE OF TEXAS
SERGIO CASTILLO
95621
LICENSED
PROFESSIONAL ENGINEER
01/18/2024

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	SC

EROSION CONTROL PLAN
C-700

GENERAL CONDITIONS NOTES

1. SOURCE OF BASE SHEETS IS SER GROUP AND IS ASSUMED TO BE CORRECT. REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT IMMEDIATELY.
2. IF ANY PART OF THIS PLAN CANNOT BE FOLLOWED DUE TO EXISTING SITE CONDITIONS, CONTACT THE LANDSCAPE ARCHITECT FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.
3. CONTACT LOCAL UNDERGROUND UTILITY SERVICES FOR UTILITY LOCATION AND IDENTIFICATION 48 HOURS PRIOR TO ANY EXCAVATION.
4. PERFORM EXCAVATION IN THE VICINITY OF UNDERGROUND UTILITIES WITH CARE AND BY HAND, IF NECESSARY. THE CONTRACTOR BEARS FULL RESPONSIBILITY FOR THIS WORK AND DISRUPTION OR DAMAGE TO UTILITIES SHALL BE REPAIRED IMMEDIATELY AND AT NO EXPENSE TO THE OWNER.
5. THE LOCATION OF EXISTING UTILITIES AS SHOWN ON THE PLANS MAY VARY IN RELATION TO ACTUAL EXISTING CONDITIONS; ADDITIONAL UTILITIES NOT SHOWN ON THE DRAWINGS MAY EXIST. VERIFY IN THE FIELD THE DATA SHOWN, AND CALL ANY DISCREPANCIES TO THE ATTENTION OF THE SITE REPRESENTATIVE BEFORE STARTING WORK.
6. REQUEST INSPECTION AS REQUIRED IN THE SPECIFICATIONS 48 HOURS IN ADVANCE OF PERFORMING ANY WORK UNLESS OTHERWISE NOTED ON THIS SHEET.

DEMOLITION - SALVAGE - PRESERVATION NOTES

1. SEE GENERAL CONDITIONS NOTES ON THIS SHEET.
2. SITE FURNISHINGS AND SITE STRUCTURES SHALL REMAIN IN PLACE UNLESS DESIGNATED FOR REMOVAL OR SALVAGE.
3. ON TREES DESIGNATED FOR REMOVAL, REMOVE STUMP AND ROOTS TO FIVE FOOT DIAMETER AREA.
4. VERIFY THE LOCATION OF ITEMS TO BE REMOVED PRIOR TO COMMENCEMENT OF THE WORK.
5. ITEMS ENCOUNTERED BELOW GRADE AND NOT SHOWN ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
6. EXISTING TREES TO BE REMOVED OR PRESERVED IN PLACE MUST BE VERIFIED IN FIELD BY THE LANDSCAPE ARCHITECT PRIOR TO COMMENCING WORK.
7. REMOVE DEMOLISHED MATERIALS FROM THE SITE. DISPOSE OF MATERIALS TO LEGAL, REGIONAL SOLID WASTE FACILITY. DISPOSAL BY BURNING AND OR BURYING IS PROHIBITED.
8. STOCKPILE ANY SOIL FROM REMOVED TREES FOR LATER RE-USE IN PROJECT.
9. DEMOLISH EXISTING PEDESTRIAN CONCRETE SIDEWALK INTO 18" MIN AND 36" MAXIMUM SIZED PIECES. ANY PIECES THAT CONTAIN CHIPS, STAINS, FACE DAMAGE, OR CRACKS, MUST BE DISGARDED. REMAINING PIECES TO BE STOCKPILED FOR REUSE.
10. DESIGNATE A MINIMUM 60'-0" X 15'-0" OF EXISTING CONCRETE AREA FOR THE SAWCUTTING/REMOVAL OF PIECES FOR THE RECYCLED CONCRETE CURB.

LAYOUT NOTES

1. SEE GENERAL CONDITIONS NOTES ON THIS SHEET.
2. LAYOUT AND VERIFY DIMENSIONS PRIOR TO CONSTRUCTION. ALL LAYOUT TO BE CONFIRMED BY LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION. BRING DISCREPANCIES TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALE. DO NOT SCALE DRAWINGS.
4. WHERE DIMENSIONS ARE CALLED AS "EQUAL," SPACE REFERENCED ITEMS EQUALLY, MEASURED TO THEIR CENTER LINES.
5. MEASUREMENTS ARE TO FACE OF BUILDING, WALL OR THE FIXED SITE IMPROVEMENT. DIMENSIONS TO CENTER LINES IS INDICATED.
6. INSTALL INTERSECTING ELEMENTS AT 90 DEGREE ANGLES TO EACH OTHER UNLESS OTHERWISE NOTED.

PLANTING NOTES

1. SEE GENERAL CONDITIONS NOTES ON THIS SHEET.
2. LANDSCAPE ARCHITECT TO REVIEW PLANT MATERIALS AT SOURCE OR BY PHOTOGRAPHS PRIOR TO DIGGING OR SHIPPING OF PLANT MATERIALS.
3. PROVIDE MATCHING FORMS AND SIZES FOR PLANT MATERIALS WITHIN EACH SPECIES AND SIZE DESIGNATED ON THE DRAWINGS.
4. LANDSCAPE CONTRACTOR TO PLACE PLANT BUCKETS IN-FIELD ACCORDING TO PLANTING PLAN FOR LANDSCAPE ARCHITECT FOR FINAL ADJUSTMENT AND APPROVAL PRIOR TO INSTALLATION.
5. TREES SHALL BEAR SAME RELATION TO FINISHED GRADE AS IT BORE TO EXISTING.
6. TREES TO BE PLANTED A MINIMUM OF 4 FEET FROM FACE OF BUILDING, OR PAVEMENT, EXCEPT AS APPROVED BY LANDSCAPE ARCHITECT.
7. PRUNE NEWLY PLANTED TREES ONLY IF DIRECTED BY LANDSCAPE ARCHITECT.
8. ALIGN AND EQUALLY SPACE IN ALL DIRECTIONS SHRUBS AS DESIGNATED PER NOTES AND DRAWINGS.
9. FINISH GRADES OF SHRUB AREAS AND LAWNS SHALL BE 1 1/2 INCHES BELOW ADJACENT PAVING OR HEADER. COORDINATE WITH MULCH DEPTH.
10. PROVIDE SPECIFIED EDGING AS DIVIDER BETWEEN PLANTING BEDS AND OTHER AREAS.
11. ANY SUBSTITUTIONS PROPOSED BY CONTRACTOR TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO ORDERING MATERIAL.

UTILITY LINE LEGEND:

- LA NUBE LIMIT OF WORK
- ADD ALTERNATE BOUNDARY
- MATCHLINE
- UGT UNDERGROUND TELEPHONE
- W WATER LINE
- UGE UNDERGROUND ELECTRIC
- SEWER LINE

MATERIALS LEGEND

- PEDESTRIAN CONCRETE / COLOR: STANDARD GREY FINISH: SAND FINISH REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 2
- VEHICULAR CONCRETE / COLOR: STANDARD GREY FINISH: CARPET DRAG TEXTURE REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 4
- VEHICULAR CONCRETE / COLOR: STANDARD GREY FINISH: SAND FINISH REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 4
- CONCRETE PAVERS / BLU 80 SMOOTH HD2 / COLOR: CHAMPLAIN GREY SOURCE: TECHO BLOC OR APPROVED EQUAL REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 8
- 3" TO 4" DEPTH GRAVEL BLEND: 40% 3/4" ANGULAR GRAVEL / COLOR: DESERT TAN 60% 2" TO 4" ANGULAR AGGREGATE / COLOR: DESERT TAN
- RECYCLED CONCRETE PAVERS: MATERIAL RE-USED FROM EXISTING SIDEWALKS NOTED FOR DEMOLITION.

LANDSCAPE BOULDERS

SYMBOL	QTY	TYPE - COLOR AND SIZE
A	2	SIZE: 2 FT X 2 FT X 1.5 FT H COLOR: DESERT TAN TO MATCH LA NUBE BOULDERS
B	1	SIZE: 3 FT X 2 FT X 1.5 FT H COLOR: DESERT TAN TO MATCH LA NUBE BOULDERS
C	1	SIZE: 4 FT X 2 FT X 1.5 FT H COLOR: DESERT TAN TO MATCH LA NUBE BOULDERS

PLANT PALETTE

TREES

SYMBOL	ID	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	CL	4	Chilopsis linearis 'Bubba'	Bubba Desert Willow Multi-Trunk	3" CAL
	QF	4	Quercus fusiformis	Texas Live Oak	3" CAL

SHRUBS

SYMBOL	ID	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	Vc	6	Vauquelinia californica	Arizona Rosewood	10 GAL
	Yp	6	Yucca pallida	Pale Leaf Yucca	5 GAL

PERENNIALS

SYMBOL	ID	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	bl	22	Berlandieria lyrata	Chocolate Daisy	1 GAL
	md	23	Muhlenbergia dubia	Pine Muhly	1 GAL
	mr	124	Muhlenbergia reverchonii	Seep Muhly	1 GAL

PLANTING DETAIL KEYNOTES

8.1	PLANTING NOTES	L.702
8.2	SHRUB PLANTING	L.702
8.3	GRAVEL MULCH	L.702
8.4	SOIL PROFILE AT BED	L.702
8.5	PERENNIAL PLANTING	L.702
8.6	PLANT SPACING (TRIANGULAR)	L.702

SITE DETAIL KEYNOTES

1.1	BOULDERS	L.403
1.2	RAIN GARDEN	L.403
1.3	CONCRETE BENCH	L.403
1.4 TYP	CONTROL AND EXPANSION JOINT	L.403
1.5	RECYCLED CONCRETE PAVERS	L.403
1.6	TREE GRATE	L.404

TABLE OF ABBREVIATION

APPROX	APPROXIMATE	MIN	MINIMUM
ARCH	ARCHITECT	MISC	MISCELLANEOUS
AVG	AVERAGE	MTD	MOUNTED
B&B	BALLED AND BURLAPPED	MTL	METAL
BC	BOTTOM OF CURB	N	NORTH
BF	BOTTOM OF FOOTING	NIC	NOT IN CONTRACT
BLDG	BUILDING	NO	NUMBER
BM	BENCHMARK	NOM	NOMINAL
BOC	BACK OF CURB	NTS	NOT TO SCALE
BR	BOTTOM OF RAMP	OAE	OR APPROVED EQUAL
BRG	BEARING	OC	ON CENTER
BS	BOTTOM OF STEP	OD	OUTSIDE DIAMETER
BW	BOTTOM OF WALL	OPP	OPPOSITE
CAL	CALIPER	PAR	PARALLEL
CAP	CAPACITY	PC	POINT OF CURVATURE
CF	CUBIC FEET	PE	POLYURETHANE
CHAM	CHAMFER	PERF	PERFORATED
CIP	CAST IN PLACE	PED	PEDESTRIAN
CJ	CONTROL JOINT	PI	POINT OF INTERSECTION
CL	CENTER LINE	PL	PROPERTY LINE
CLR	CLEARANCE	PLTR	PLANTER AREA
CM	CENTIMETER	PT	POINT, POINT OF TANGENCY
CO	CLEAN OUT	PVC	POLYVINYL CHLORIDE
COMP	COMPACTED	PVMT	PAVEMENT
CONC	CONCRETE	PVR	PAVER
CONST	CONSTRUCTION	QTY	QUANTITY
CONT	CONTINUOUS	R	RADIUS
CONTR	CONTRACTOR	RECEP	RECEPTACLE
CU	CUBIC	REF	REFERENCE
CY	CUBIC YARD	REINF	REINFORCE(D)
DBL	DOUBLE	REM	REMOVE
DF	DIRECTION OF FLOW	REQ'D	REQUIRED
DEG	DEGREE	REV	REVISION, REVISED
DEMO	DEMOLISH, DEMOLITION	ROW	RIGHT OF WAY
DIA	DIAMETER	RT	RIGHT
DIM	DIMENSION	S	SOUTH
DTL	DETAIL	SAN	SANITARY
DWG	DRAWING	SCH	SCHEDULE
E	EAST	SD	STORM DRAIN
EA	EACH	SEC	SECTION
EJ	EXPANSION JOINT	SF	SQUARE FOOT (FEET)
EL	ELEVATION	SHT	SHEET
ELEC	ELECTRICAL	SI	STORM INLET
ENG	ENGINEER	SIM	SIMILAR
EQ	EQUAL	SNT	SEALANT
EQUIP	EQUIPMENT	SPECS	SPECIFICATIONS
EST	ESTIMATE	SQ	SQUARE
E.W.	EACH WAY	ST	STORM SEWER
EX.	EXISTING	SY	SQUARE YARD
EXP	EXPANSION, EXPOSED	STA	STATION
FF	FINISHED FLOOR ELEVATION	STD	STANDARD
FG	FINISHED GRADE	STL	STEEL
FIN	FINISH	STRL	STRUCTURAL
FL	FLOW LINE	SYM	SYMMETRICAL
FOC	FACE OF CURB	T&B	TOP AND BOTTOM
FT	FOOT (FEET)	TBD	TOP OF BACK CURB
FTG	FOOTING	TBC	TO BE DETERMINED
GA	GAUGE	TC	TOP OF CURB
GAL	GALVANIZED	TF	TOP OF FOOTING
GC	GENERAL CONTRACT(OR)	THK	THICK
GEN	GENERAL	TOC	TOP OF CONCRETE
HORIZ	HORIZONTAL	TOPO	TOPOGRAPHY
HP	HIGH POINT	TSL	TOP OF SLAB
HT	HEIGHT	TRAS	TRANSFORMER
ID	INSIDE DIAMETER	TR	TOP OF RAMP
INV	INVERT ELEVATION	TS	TOP OF STEP
IN	INCH(ES)	TW	TOP OF WALL
INCL	INCLUDE(D)	TYP	TYPICAL
INL	INLET	VAR	VARIES
IRR	IRRIGATION	VERT	VERTICAL
JT	JOINT	VEH	VEHICLE
LIN	LINEAR	VOL	VOLUME
LF	LINEAR FEET	W/	WITH
LP	LOW POINT	W/O	WITHOUT
LT	LIGHT	WT	WEIGHT
MATL	MATERIAL	WL	WEIR LEVEL
MAX	MAXIMUM	WWF	WELDED WIRE FABRIC
MEMB	MEMBRANE	YD	YARD
MH	MANHOLE	@	AT

DETAILS LEGEND:

- SUBGRADE
- AMENDED TOPSOIL
- SAND / CRUSHED STONE PAVING
- MULCH
- AGGREGATE BASE COURSE
- COBBLE
- GRAVEL
- BRICK
- CONCRETE
- STEEL
- STONE
- MORTAR
- STUCCO/PLASTER
- CONCRETE BLOCK
- WOOD

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REVISIONS:

NO	DATE	NOTE

REGISTERED LANDSCAPE ARCHITECT
KENNETH E. FRANCIS
2771
STATE OF TEXAS

1.18.2023

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	JC

LANDSCAPE GENERAL NOTES

L.002

IRRIGATION NOTES

1. CONTRACTOR SHALL FIELD VERIFY PRESSURE PRIOR TO INITIATION OF CONSTRUCTION BY INSTALLING A FLOW METER AND A PRESSURE GAUGE ON THE DOWNSTREAM SIDE OF EACH WATER METER. THIS INFORMATION SHALL BE PROVIDED TO THE CITY'S REPRESENTATIVE, IRRIGATION DESIGNER AND CITY ARBORIST IN WRITING FOR APPROVAL, PRIOR TO PROCEEDING.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL SITE ELEMENTS & AREAS TO REMAIN. CONTRACTOR SHALL REPLACE IN KIND, ALL ITEMS DAMAGED DURING THE COURSE OF WORK, AS DETERMINED BY THE LANDSCAPE ARCHITECT/CITY ARBORIST CUT AND CAP ALL LINES WHERE EXISTING IRRIGATION WILL REMAIN AND LINES WILL BE RE-ROUTED. IF EXISTING IRRIGATION LINES WILL NOT BE USED (i.e. PLANTS ARE NO LONGER PRESENT OR WILL BE REMOVED), CUT AND CAP AT A LOGICAL LOCATION. IN ALL CASES VERIFY THAT EXISTING IRRIGATION IS FUNCTIONING WITH NO LEAKS AT CUT LOCATION OR AS IT DID PRE-CONSTRUCTION.

3. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES, STRUCTURES AND SERVICES BEFORE COMMENCING WORK. THE LOCATIONS OF UTILITIES, STRUCTURES AND SERVICES SHOWN IN THESE PLANS ARE APPROXIMATE ONLY. ANY DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED IN WRITING TO THE LANDSCAPE ARCHITECT.

4. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS REQUIRED TO PERFORM THE WORK INDICATED HEREIN BEFORE BEGINNING WORK.

5. THIS DRAWING IS FOR DESIGN CLARITY ONLY, DESIGN (LINES & COMPONENTS) ARE DIAGRAMMATIC. ALL IRRIGATION COMPONENTS AND ALL EQUIPMENT SHOWN IN PAVED AREAS SHALL BE INSTALLED IN LANDSCAPE AREAS IN AS MUCH AS POSSIBLE. CONSTRUCTED ELEMENTS AND OBSTRUCTIONS WHETHER NOTED ON THE PLANS OR NOT SHALL BE AVOIDED TO MINIMIZE SLEEVING. ACTUAL ALIGNMENTS TO BE LOCATED AS PER NOTES OR AS APPROVED IN FIELD BY LANDSCAPE ARCHITECT AND/OR CITY ARBORIST. EXISTING PLANT ROOTS LARGER THAN 1 INCH IN DIAMETER SHALL NOT BE CUT. THEY SHALL BE BORED OR WASHED UNDER TO RUN IRRIGATION LINES AND WIRE.

6. PIPE SOLVENT WELDING PROCEDURES ON ALL JOINTS SHALL BE SPECIFIED AS FOLLOWS: FIRST USE IPS WELD-ON CLEANER, NEXT USE IPS WELD-ON PURPLE PRIMER P68 OR P70, THEN USE IPS WELD-ON GRAY GLUE #711 HEAVY DUTY. LASTLY, WIPE OFF ALL EXCESS CEMENT AND LET SET AS PER MANUFACTURER'S RECOMMENDATIONS. ONCE WELD IS SET, PIPE SHALL NOT BE MOVED FOR ANY REASON UNTIL SET TIMES HAVE BEEN ACHIEVED, WATER SHALL NOT BE TURNED ON UNTIL ALL CURE TIMES HAVE BEEN ACHIEVED.

7. SLEEVES SHALL BE EXTENDED 24" BEYOND EDGE OF HARD SURFACES, WRAP ENDS WITH FOUR MIL PLASTIC AND TAPE WITH GOOD QUALITY PLASTIC TAPE, GRAY DUCT TAPE IS NOT ACCEPTABLE.

8. VALVE AND COMMUNICATION WIRING SHALL BE IN A SEPARATE BORING & EXPANSION LOOPS SHALL BE PROVIDED EVERY 200 FEET, WIRE SHALL NOT BE STRETCHED TIGHT. VALVE WIRE SHALL BE STANDARD COLORS RED (HOT) AND WHITE (COMMON) & LABELED AT CONTROLLER AND IN VALVE BOX. CONNECTIONS AT VALVES MUST BE MADE WITH DRI-SPLICE CONNECTORS. CONNECTORS MUST BE READY FILLED FROM FACTORY WITH SILICONE.

9. CONTRACTOR SHALL REFER TO CITY OF EL PASO STREETS & TRAFFIC STANDARD SPECIFICATIONS FOR IRRIGATION CONSTRUCTION. IN THE EVENT OF A CONFLICT BETWEEN SPECIFICATIONS AND IRRIGATION DESIGN, CONTRACTOR SHALL NOTIFY THE LICENSED IRRIGATION DESIGNER IN WRITING. THE CONTRACTOR SHALL NOT PROCEED WITH INSTALLATION OF CONFLICTING IRRIGATION COMPONENTS UNTIL HE RECEIVES CLARIFICATION IN WRITING FROM THE CONSULTANT.

10. ALL PIPE CUTS SHALL BE MITERED TO 90 DEGREES & ALL BURRS SHALL BE REMOVED PRIOR TO GLUING. PIPE THREE INCHES OR LARGER MUST HAVE FILED BEVELED EDGE A MINIMUM OF ONE FOURTH (1/4) THE WIDTH OF PIPE WALL TO ASSURE A PROPER SOLVENT WELD.

11. ALL METERS SHALL BE YARD METERS. COORDINATION WITH EL PASO WATER AND ALL COSTS ASSOCIATED WITH INSTALLATION AND USE DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ENTIRE IRRIGATION SYSTEM IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL FINAL ACCEPTANCE.

12. UPON COMPLETION OF IRRIGATION INSTALLATION, A BACKFLOW TEST BY A CERTIFIED BACKFLOW INSPECTOR IS THE RESPONSIBILITY OF THE CONTRACTOR AND WRITTEN RESULTS SHALL BE SUBMITTED TO THE CITY OF EL PASO ENGINEERING DEPARTMENT PROJECT MANAGER TO DISTRIBUTE TO THE EL PASO WATER UTILITIES, CITY ARBORIST AND STREET AND MAINTENANCE DEPARTMENT REPRESENTATIVE TO HAVE THE WATER SERVICE TAKEN OVER BY THE CITY OF EL PASO.

13. ENTIRE IRRIGATION SYSTEM SHALL BE GUARANTEED FOR THE PERIOD OF ONE YEAR, BEGINNING ON THE DATE OF FINAL CONTRACT ACCEPTANCE.

14. IRRIGATION AND ELECTRICAL LINES SHALL BE BORED. IF CONTRACTOR FINDS THAT AFTER NUMEROUS ATTEMPTS, BORING A LINE IS NOT FEASIBLE, CONTRACTOR CAN SUBMIT WRITTEN REQUEST TO CITY'S REPRESENTATIVE TO CUT AND PATCH ASPHALT TO INSERT LINES AND CONDUIT. CONTRACTOR SHALL NOT BEGIN CUTTING AND PATCHING UNTIL A WRITTEN RESPONSE IS RECEIVED.

15. UPON PROJECT'S FINAL ACCEPTANCE BY THE CITY OF EL PASO, CONTRACTOR SHALL PROVIDE CITY OF EL PASO PROJECT MANAGER THE PERTINENT INFORMATION, SUCH AS THE METER NO., ACCOUNT NO., LOCATION, ETC; AND A LETTER OF ACCEPTANCE FOR THE PROJECT BY CITY OF EL PASO DEPARTMENT OF TRANSPORTATION TO TRANSFER THE RESPONSIBILITY OF THE WATER TO THE CITY OF EL PASO.

16. AFTER SUBSTANTIAL COMPLETION AND PRIOR TO PUNCH LIST INSPECTION, CONTRACTOR SHALL PROVIDE TO CITY OF EL PASO REPRESENTATIVE THE BACKFLOW TEST RESULT(S), AS-BUILT MARKUPS, CONTROLLER TRANSMITTER AND IRRIGATION SYSTEM OPERATION MANUAL, MAINTENANCE AGREEMENT AND EQUIPMENT WARRANTY INFORMATION.

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL IRRIGATION SYSTEM AND LANDSCAPED/UN-LANDSCAPED PARKWAY MAINTENANCE WITHIN PROJECT LIMITS. ANY WORK IN LANDSCAPED SIDEWALKS REQUIRES COORDINATION WITH CID AND STREETS AND MAINTENANCE DEPARTMENT - OPERATIONS. THIS AREA(S) WILL BE REMOVED FROM CITY'S MAINTENANCE SCHEDULE STARTING AT THE TIME OF NTP ISSUANCE TO THE TIME OF FINAL ACCEPATNCE OF THE PROJECT SITE.

18. INSTALL VALVE BOXES AT EACH END OF SLEEVE AND AT EVERY DIRECTION FOR FUTURE LOCATING AND MAINTENANCE.

19. IRRIGATION IN TEXAS IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) (MC-178), PO BOX 13087 AUSTIN, TEXAS 78711-3087. TCEQ's WEB SITE IS: www.tceq.state.tx.us.

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REVISIONS:

NO	DATE	NOTE
1		
2		
3		
4		
5		
6		

STATE OF TEXAS
VALERIA LOPEZ
23966
LICENSED IRRIGATOR

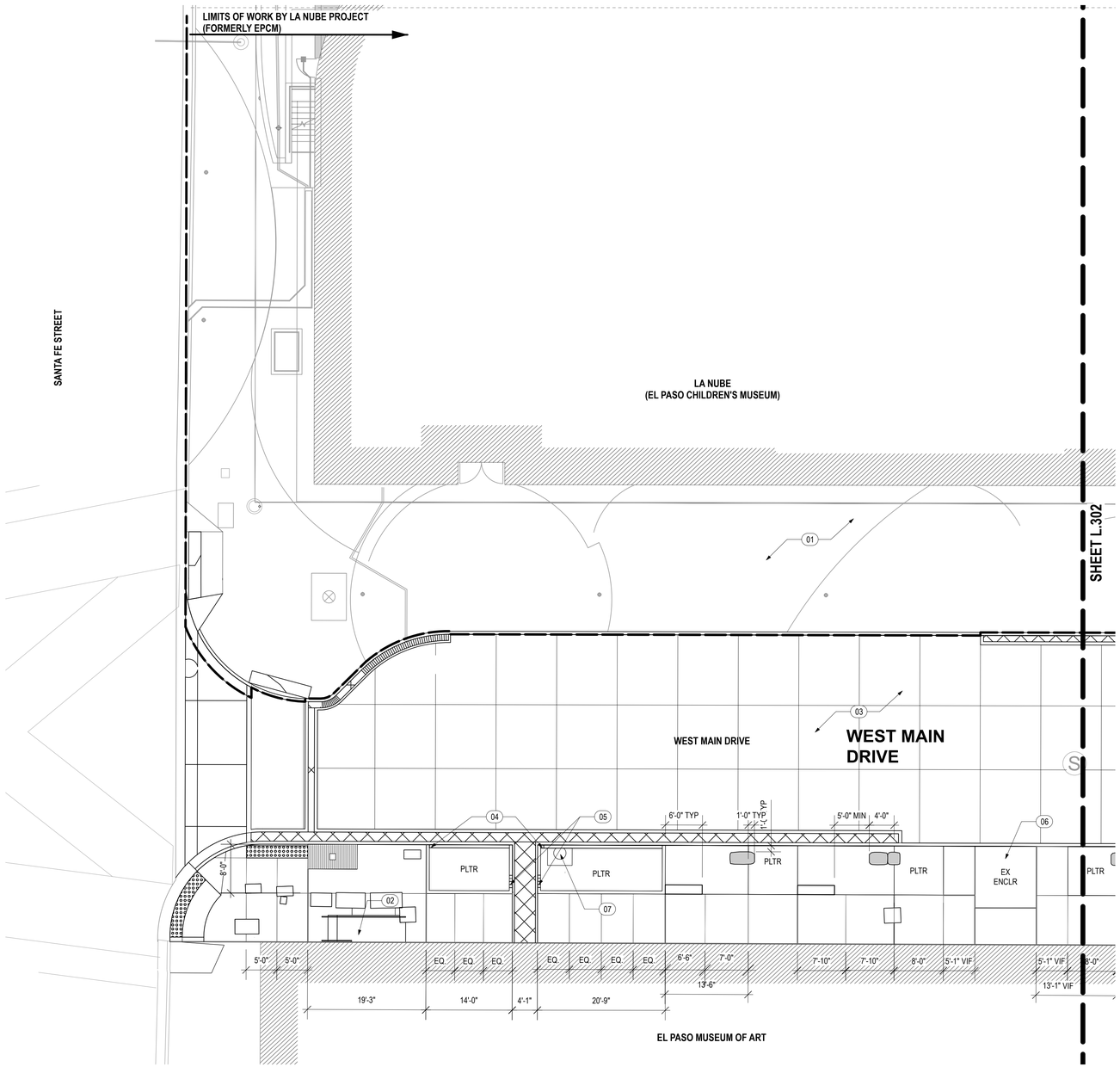
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	VL

IRRIGATION GENERAL NOTES

L.003



NORTH

0 5 10 20

SCALE: 1"=10'

LAYOUT NOTES

01 REFER TO GREENWAY STUDIO'S PLANS FOR LAYOUT OF SITE FURNISHINGS, TREE GRATES, BOULDERS, LIGHTS, AND CONTROL JOINTS ON THE NORTH SIDE OF W MAIN DRIVE.

02 REFER TO CIVIL ENGINEER'S SHEET C-101 FOR LAYOUT OF STEPS AND LANDING

03 REFER TO CIVIL ENGINEER'S SHEET C-101 FOR LAYOUT OF ROAD, CURB/GUTTER, DRAINAGE GRATES, AND CROSSINGS.

04 RAIN GARDEN OUTFLOW; REFER TO CIVIL ENGINEER'S SHEET C-601 / DETAIL 3

05 RAIN GARDEN INFLOW; REFER TO CIVIL ENGINEER'S SHEET C-601 / DETAIL 3

06 EXISTING TRANSFORMER WAS NOT INCLUDED IN SURVEY. LOCATION IS BASED ON FIELD MEASUREMENTS. CONTRACTOR TO CONFIRM EXACT LOCATION PRIOR TO CONSTRUCTION.

07 EXISTING LAMP POSTS WERE NOT SHOWN ACCURATELY IN SURVEY. CONTRACTOR TO CONFIRM EXACT LOCATION PRIOR TO CONSTRUCTION.

08 CONTRACTOR TO CONSTRUCT A CONCRETE PEDESTAL AROUND EXISTING LIGHT POST BASE TO MAINTAIN EXISTING ELEVATION WHILE THE SURROUNDING GRADE IS LOWERED FOR THE RAIN GARDEN. REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 9 FOR DETAIL

LINE LEGEND:

- LA NUBE LIMIT OF WORK
- ADD ALTERNATE BOUNDARY
- MATCHLINE
- CONTROL JOINT
- EXPANSION JOINT

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REVISIONS:

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REGISTERED LANDSCAPE ARCHITECT
KENNETH E. FRANCIS
2771
STATE OF TEXAS

1.18.2023

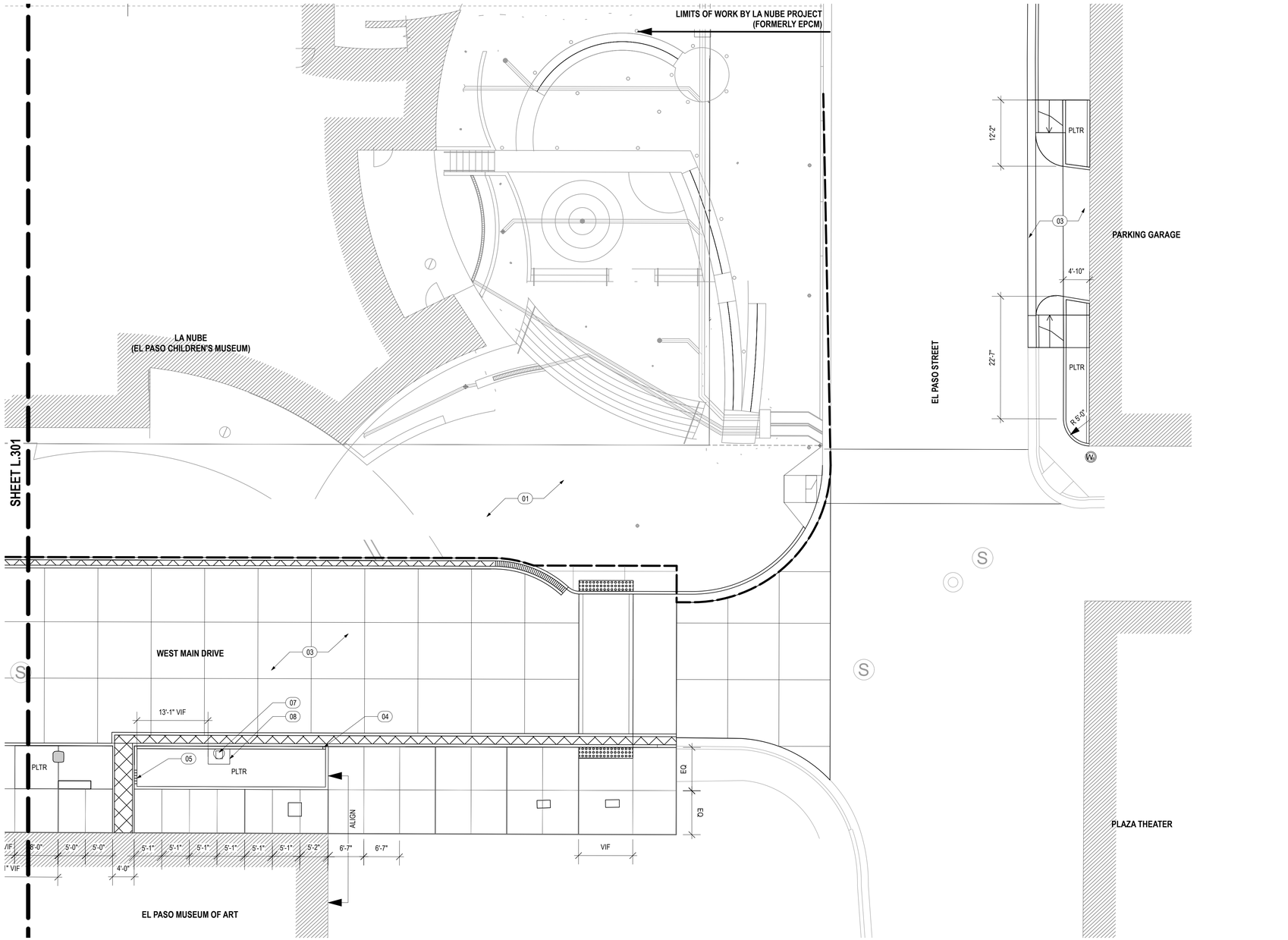
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	JC

LAYOUT PLAN

L.301



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LINE LEGEND:

- LA NUBE LIMIT OF WORK
- ADD ALTERNATE BOUNDARY
- MATCHLINE
- CONTROL JOINT
- EXPANSION JOINT

NORTH

0 5 10 20

SCALE: 1"=10'

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WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
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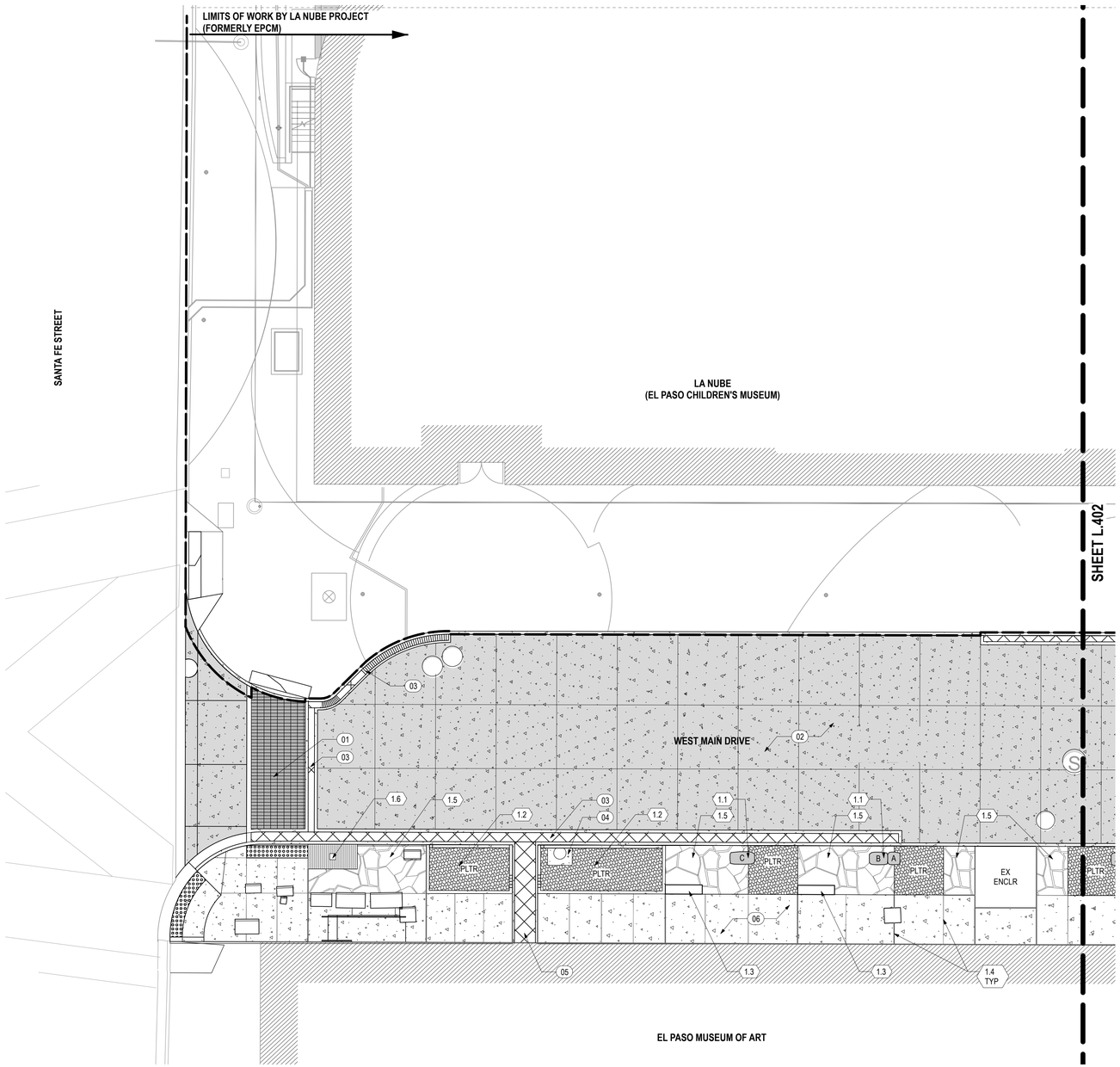
PROJECT:	1568
DRAWN BY:	JC

LAYOUT PLAN

L.302



NORTH

0 5 10 20

SCALE: 1"=10'

MATERIALS NOTES

01 REFER TO CIVIL ENGINEER'S SHEETS C-600 / DETAIL 8 FOR CONCRETE PAVERS DETAIL

02 REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 4 FOR VEHICULAR CONCRETE DETAIL

03 REFER TO CIVIL ENGINEER'S SHEETS C-600 / DETAIL 10 AND C-601 / DETAIL 5 FOR TRENCH GRATE ALONG ROAD

04 REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 9 FOR LAMP BASE DETAIL

05 REFER TO CIVIL ENGINEER'S SHEETS C-600 / DETAIL 5 AND C-601 / DETAIL 4 FOR TRENCH GRATE FROM BUILDING ROOF DRAIN DETAIL

06 REFER TO CIVIL ENGINEER'S SHEETS C-600 / DETAIL 2 FOR PEDESTRIAN CONCRETE DETAIL

LINE LEGEND:

- LA NUBE LIMIT OF WORK
- ADD ALTERNATE BOUNDARY
- MATCHLINE
- CONTROL JOINT
- EXPANSION JOINT

SITE DETAIL KEYNOTES

1.1	BOULDERS	L.403
1.2	RAIN GARDEN	L.403
1.3	CONCRETE BENCH	L.403
1.4 TYP	CONTROL AND EXPANSION JOINT	L.403
1.5	RECYCLED CONCRETE PAVERS	L.403
1.6	TREE GRATE	L.404

MATERIALS LEGEND

PEDESTRIAN CONCRETE / COLOR: STANDARD GREY
FINISH: SAND FINISH
REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 2

VEHICULAR CONCRETE / COLOR: STANDARD GREY
FINISH: CARPET DRAG TEXTURE
REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 4

VEHICULAR CONCRETE / COLOR: STANDARD GREY
FINISH: SAND FINISH
REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 4

CONCRETE PAVERS / BLU 80 SMOOTH HD2 / COLOR: CHAMPLAIN GREY
SOURCE: TECHO BLOC OR APPROVED EQUAL
REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 8

3" TO 4" DEPTH GRAVEL BLEND:
40% 3/4" ANGULAR GRAVEL / COLOR: DESERT TAN
60% 2" TO 4" ANGULAR AGGREGATE / COLOR: DESERT TAN

RECYCLED CONCRETE PAVERS: MATERIAL RE-USED FROM EXISTING SIDEWALKS NOTED FOR DEMOLITION.

SITE FURNITURE

SYMBOL	QTY	TYPE	MANUFACTURER - MODEL - COLOR
	1	TREE GRATE - 4' x 8'	URBAN ACCESSORIES / CUSTOM JAMISON 2000 / FINISH: RAW

LANDSCAPE BOULDERS

SYMBOL	QTY	TYPE - COLOR AND SIZE
A	2	SIZE: 2 FT X 2 FT X 1.5 FT H COLOR: DESERT TAN TO MATCH LA NUBE BOULDERS
B	1	SIZE: 3 FT X 2 FT X 1.5 FT H COLOR: DESERT TAN TO MATCH LA NUBE BOULDERS
C	1	SIZE: 4 FT X 2 FT X 1.5 FT H COLOR: DESERT TAN TO MATCH LA NUBE BOULDERS

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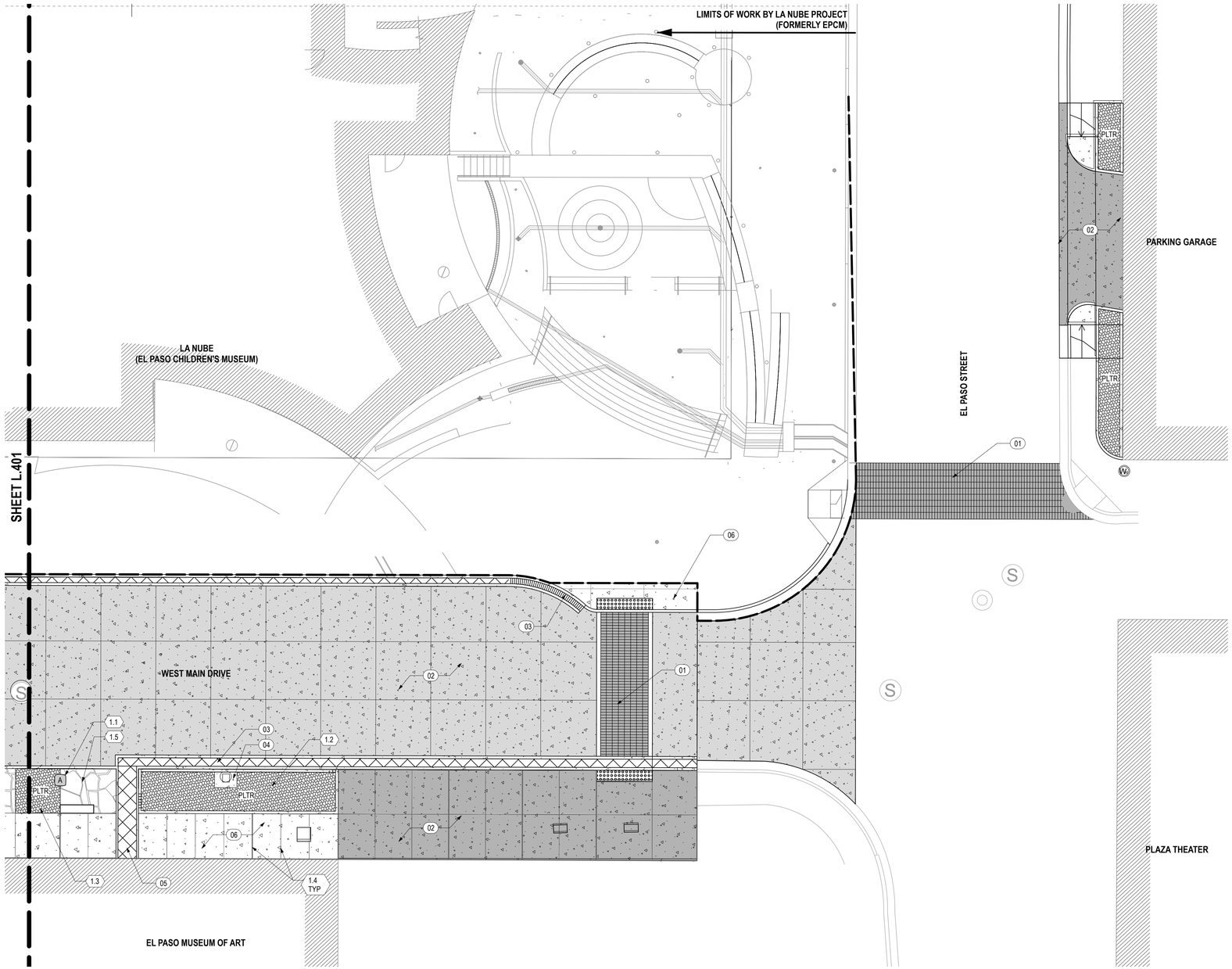
MATERIALS PLAN

L.401



MATERIALS NOTES

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SITE DETAIL KEYNOTES

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1.5	RECYCLED CONCRETE PAVERS	L.403
1.6	TREE GRATE	L.404

MATERIALS LEGEND

PEDESTRIAN CONCRETE / COLOR: STANDARD GREY
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REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 2

VEHICULAR CONCRETE / COLOR: STANDARD GREY
FINISH: CARPET DRAG TEXTURE
REFER TO CIVIL ENGINEER'S SHEET C-600 / DETAIL 4

VEHICULAR CONCRETE / COLOR: STANDARD GREY
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SOURCE: TECHO BLOC OR APPROVED EQUAL
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LANDSCAPE BOULDERS

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STATE OF TEXAS

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WEST MAIN DRIVE STREETSCAPE

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EL PASO, TX 79901

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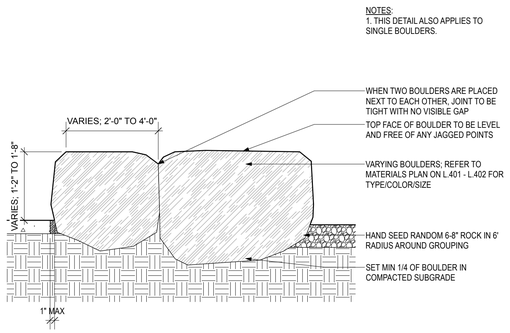
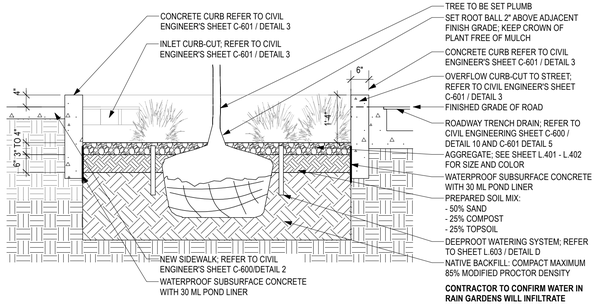
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	JC

MATERIALS PLAN

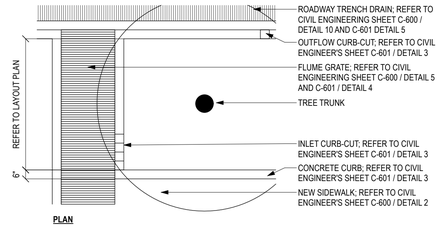
L.402



1.1 BOULDERS
NTS



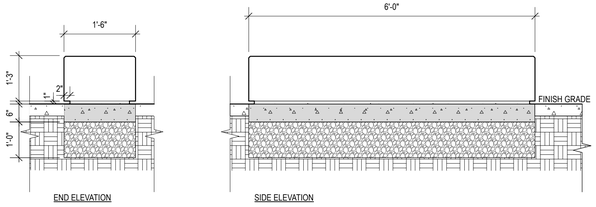
SECTION



PLAN

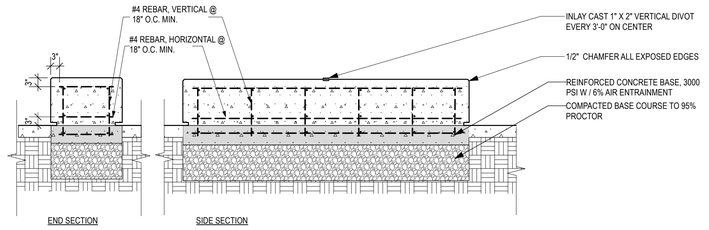
1.2 RAIN GARDEN
NTS

CAST-IN-PLACE CONCRETE BENCH
4000 PSI INTEGRAL COLORED CONCRETE
COLOR: DAVIS SIERRA
FINISH: SMOOTH FINISH
SEALER: WS BLOK GUARD ANTI-GRAFFITI SEALER

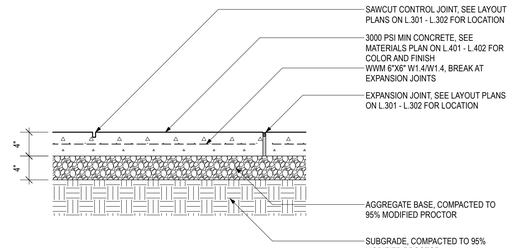


BENCH FORM

ALL EXPOSED SIDES:
FORM TO BE FACED WITH MASONITE (OR APPROVED EQUAL) BOARDS TO CREATE A SEAMLESS AND SMOOTH FINISH. FORM TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO CASTING.

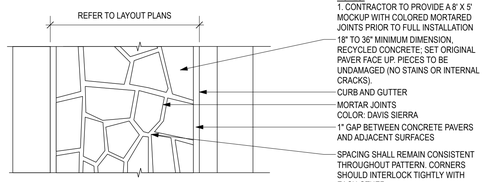


1.3 CONCRETE BENCH
NTS

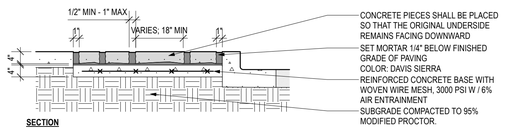


1.4 CONTROL AND EXPANSION JOINT
NTS

NOTES:
1. CONTRACTOR TO PROVIDE A 8' X 5' MOCKUP WITH COLORED MORTARED JOINTS PRIOR TO FULL INSTALLATION



PLAN



SECTION

1.5 RECYCLED CONCRETE PAVERS
NTS

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REVISIONS:

NO	DATE	NOTE

REGISTERED LANDSCAPE ARCHITECT
KENNETH E. FRANCIS
2771
STATE OF TEXAS

1.18.2023

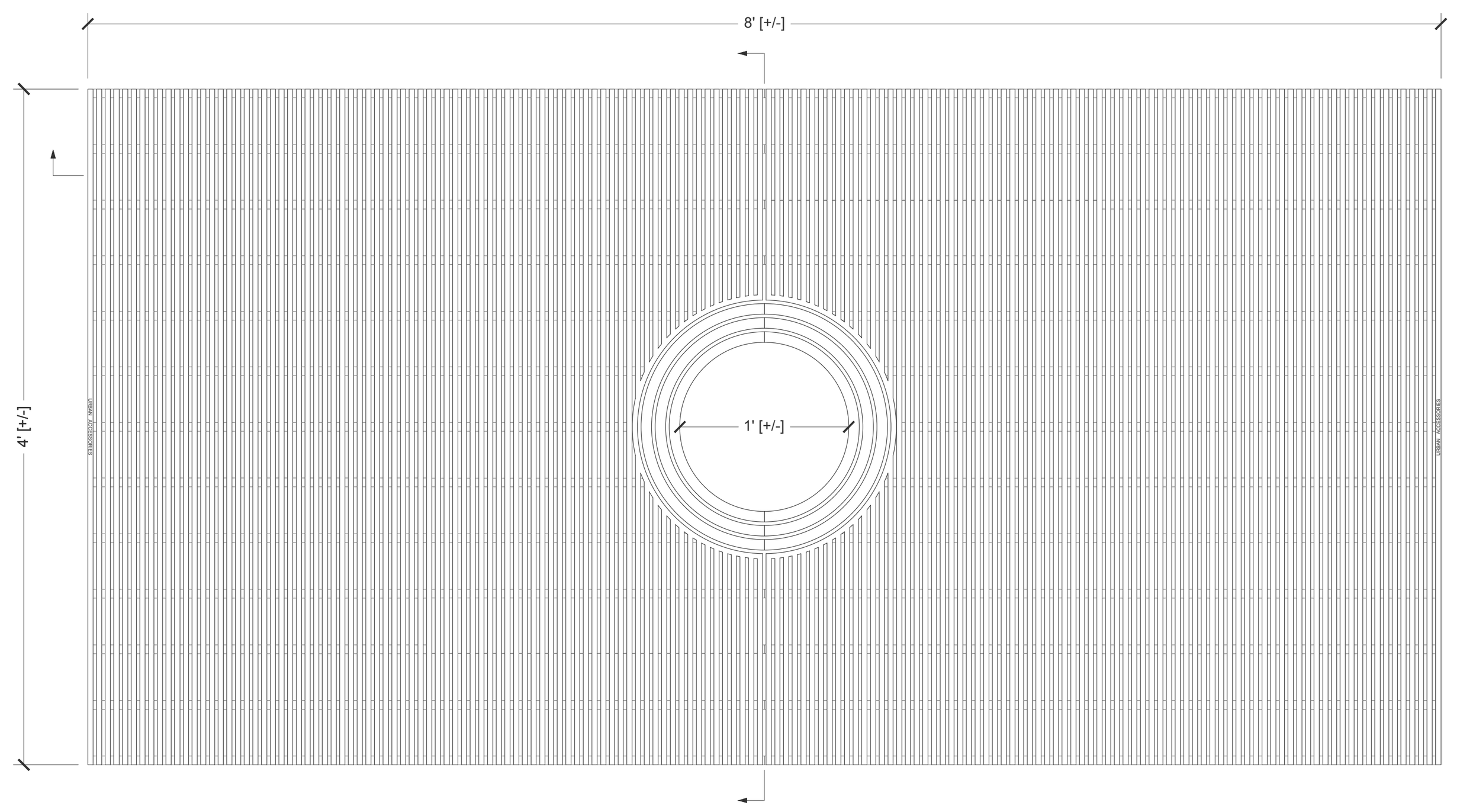
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

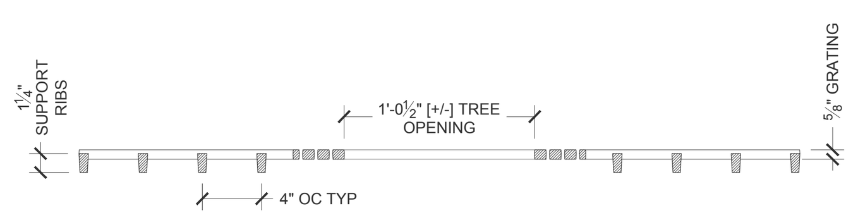
SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	JC

LANDSCAPE SITE DETAILS

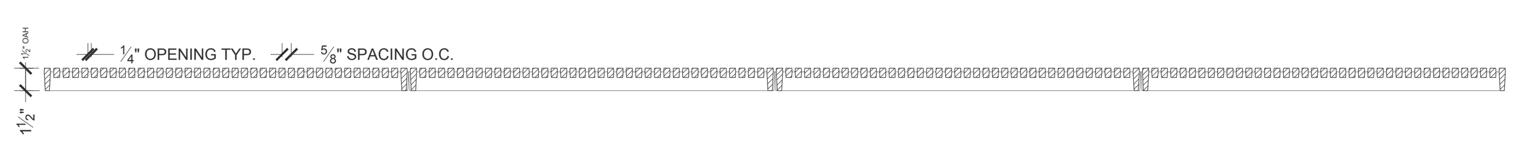
L.403



Plan
Scale: 1 1/2" = 1' 0"



Longitudinal Section
Scale: 1 1/2" = 1' 0"



Cross Section
Scale: 1 1/2" = 1' 0"

urban accessories

465 E 15th Street, Tacoma, WA 98421
1.877.487.0488 | 1.253.572.1112

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Specified By	XX
Sales Contact	XX
Project Location	XX
Page #	1 of 1

additional notes

JAMISON 2000 TREE GRATE

4' x 8'

STANDARD SPECIFICATIONS

- Material will be high quality 100% gray iron, ASTM A48 class 35b or better, hardness 170-223 brinell (unless specified otherwise; see below).

- Finish will be natural patina of raw material (unless specified otherwise; see below).

- Frame is load rated for pedestrian traffic only (unless specified otherwise; see below).

- **Dimensions are nominal.**

OPTIONS

Materials:
☐ Gray Iron, ASTM A48
☐ Ductile iron, (All load ratings higher than pedestrian) ASTM A536 class 65-45-12
☐ Aluminium, ASTM B26
☐ Nickel Bronze, ASTM B584
☐ Bronze, ASTM B584

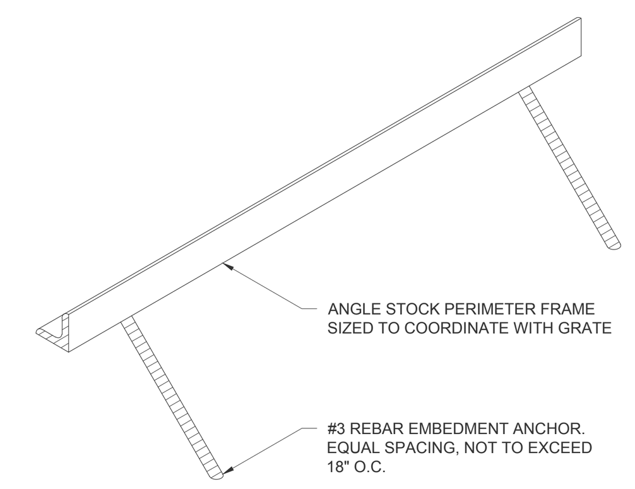
Finishes:
☐ Raw (standard)
☐ Rust Conditioner
☐ Polyester powdercoat (Specify color)
☐ Liquid coat (Specify color)
☐ Brush
☐ Polish
☐ Galvanized
☐ Other: ________ (With approval from UA)

ADDITIONAL NOTES

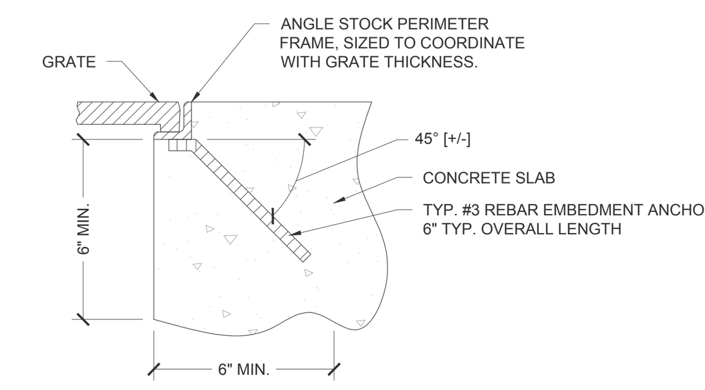
-Cast in two pieces
-Grate is 1 ½" thick at edge.
-Center opening expansions at 1" increments.
-No opening greater than ¼", in conformance with ADA Accessibility Guidelines.
-Grate weighs 340lbs in gray iron.

DRAWING INFO

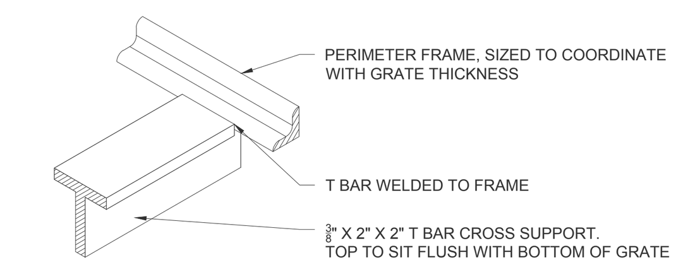
Drawn By	NR
Date Drawn	3.19.2020



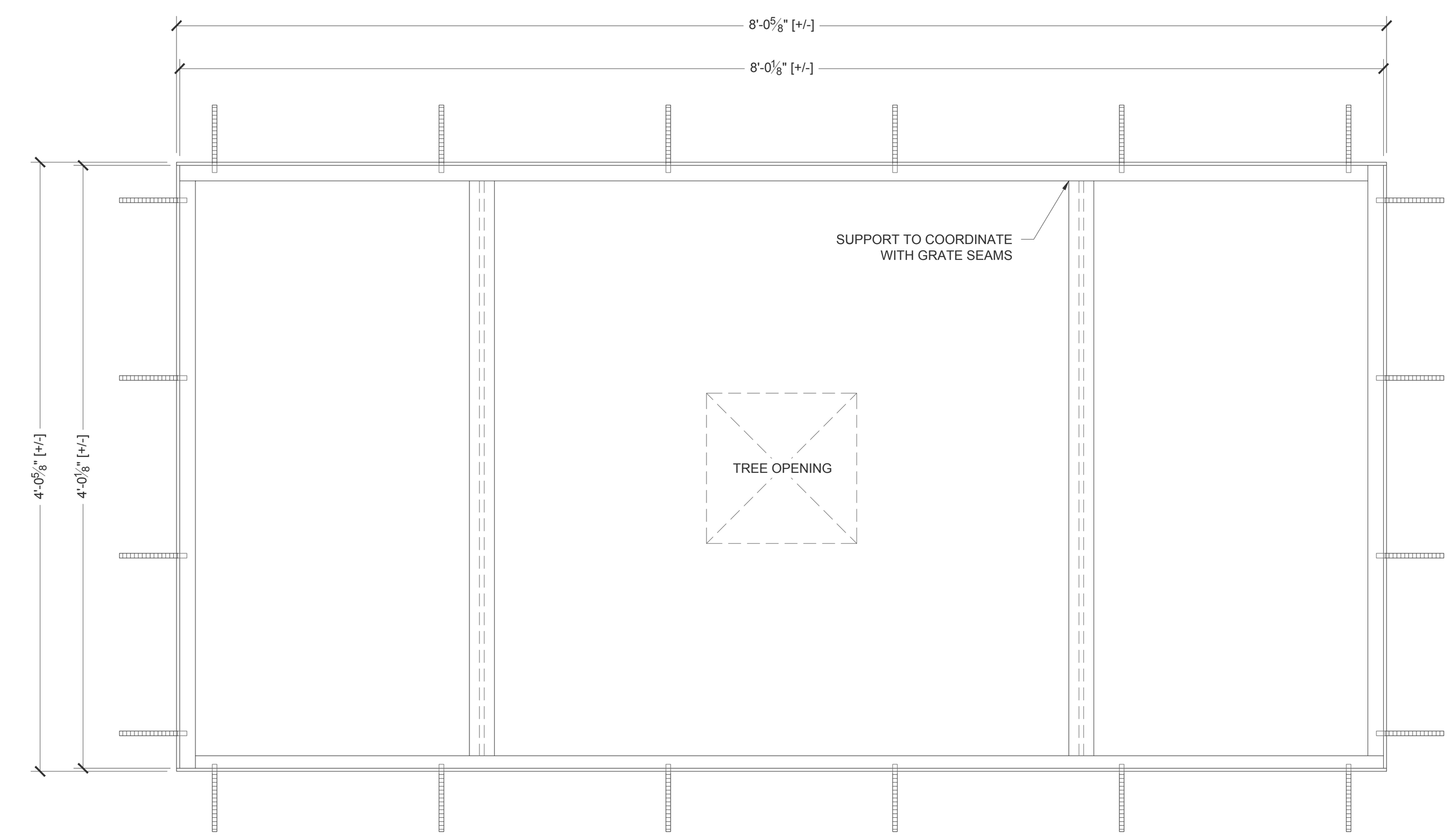
Anchor Detail Isometric
Scale: 3" = 1' 0"



Typical Frame Edge Section
Scale: 3" = 1' 0"



Grate Support Detail
Scale: 3" = 1' 0"



Plan
Scale: 1 1/2" = 1' 0"

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Project Name	Blank
Specified By	Blank
Sales Contact	sales@urbanaccessories.com
Project Location	Tacoma, WA
Page #	1 of 1

Additional Notes

TYPE S FRAME

4' x 8' - Tree Grate

STANDARD SPECIFICATIONS

- Frame material will be high quality mild carbon steel, ASTM A36 (unless specified otherwise; see below).

- Finish will be natural patina of raw steel (unless specified otherwise; see below).

- Typical ⅛" horizontal gap between grate and frame. All visible edges to be ground smooth on outside edges. Frames will be true to square or diameter. Top of grate flush with grade of surrounding topping material (paver, concrete slab, etc.).

- For cases of "or equal" consideration, our finished, full size product should be compared to the alternative product for general quality, surface finish, precise pattern or fabrication work, metal characteristics, and overall design aesthetics.

- **Dimensions are nominal.**

OPTIONS

Material:
☐ Mild Steel, ASTM A36 (standard)
☐ Stainless Steel, 304L
☐ Architectural Bronze
☐ Structural Aluminum, 6061 T6

Finish:
☐ Raw (standard)
☐ Polyester powder coat (Specify color)
☐ Liquid coat (Specify color)
☐ Brush
☐ Polish
☐ Galvanized
☐ Other: ___________

Load Classification:
■ Pedestrian (standard)
☐ Light Vehicular (Medium Duty)
☐ H20/HS20 (Heavy Duty)

ADDITIONAL NOTES

DRAWING INFO

Drawn By	RI
Date Drawn	11.23.2020

1.6 TREE GRATE
NTS

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urbanism

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REVISIONS:

NO	DATE	NOTE
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1.18.2023

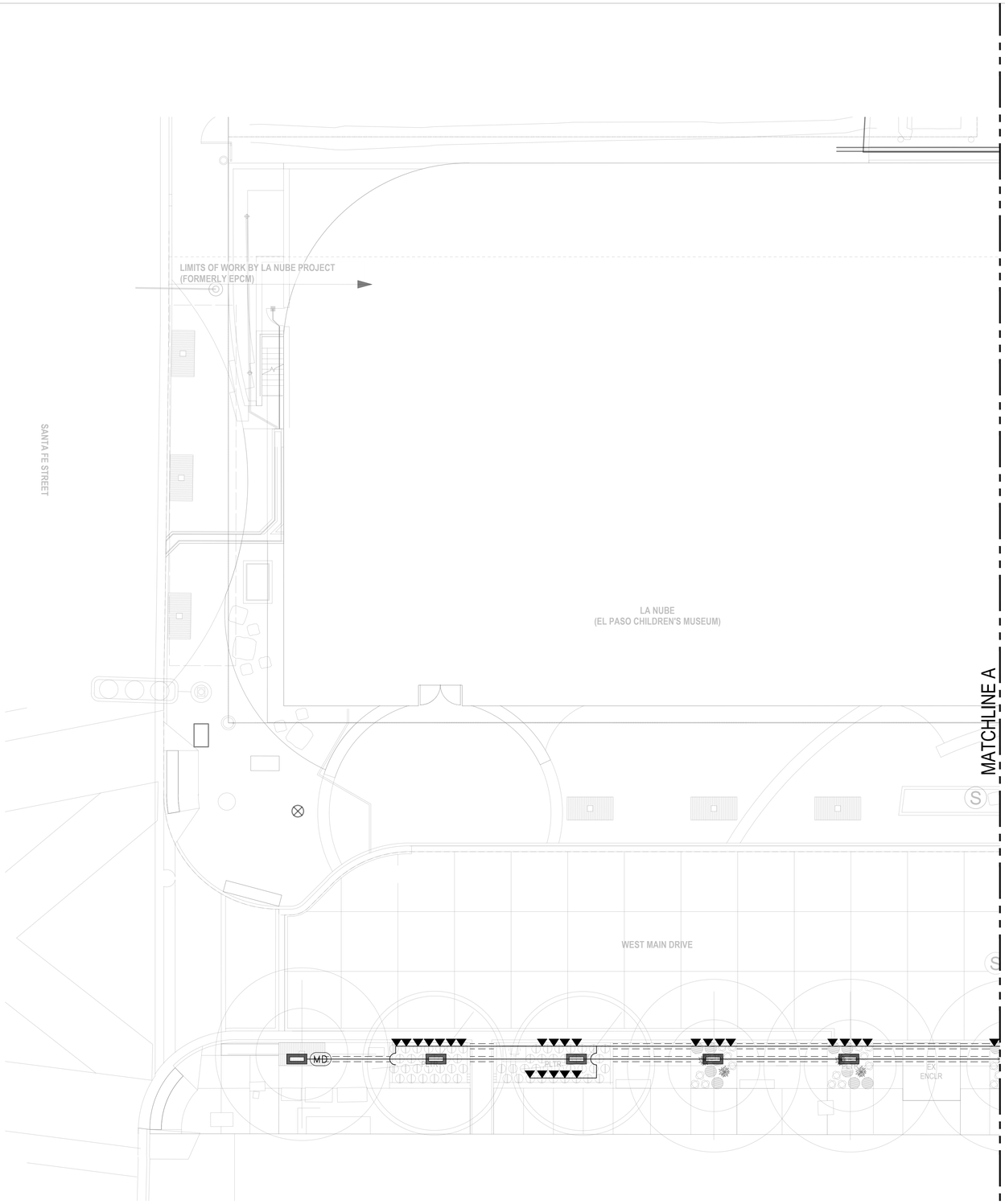
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	JC

LANDSCAPE SITE DETAILS

L.404



NORTH

0 5 10 20

SCALE: 1"=10'

ALL COMPONENTS SHALL BE AS SPECIFIED OR APPROVED EQUAL BY LANDSCAPE ARCHITECT OR LICENSED IRRIGATOR

IRRIGATION LEGEND	
P.O.C. #	APPROXIMATE POINT OF CONNECTION PROVIDED BY EPWU. FIELD VERIFY METER & SERVICE LINE SIZE/LOCATION PRIOR CONSTRUCTION
M	NEW 1" METER , CONTRACTOR SHALL FIELD LOCATE AND COORDINATE INSTALLATION WITH EPWU AND VERIFY GPM AND STATIC PRESSURE ON DOWNSTREAM SIDE OF METER AND INFORM IRRIGATION DESIGNER TO VERIFY SYSTEM HYDRAULICS AFTER INSTALLATION OF METERS
C	TBOS II BATTERY OPERATED CONTROLLER 3 STATION WITH TBOS FIELD TRANSMITTER AND RSD SERIES RAIN SHUT OFF PEDESTAL MOUNTED SEE DETAIL G/L.604. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO PROVIDE BATTERIES FOR CONTROLLER. USE MIN 14 AWG FOR ALL WIRING. CONTROLLER SHALL BE CONNECTED TO MASTER VALVE AT EACH METER. SEE DETAIL E/L.603 AND H/L.604
BF	1" REDUCED PRESSURE PRINCIPLE ASSEMBLY IN HEAVY DUTY METAL ENCLOSURE BOX, PROVIDE INSULATION BLANKET. INSTALL MUST COMPLY WITH ASSE 1060 CLASS I. SEE DETAIL C/L.603
MV	MASTER VALVE WITH LATCHING SOLENOID. SIZE TO MATCH MAINLINE A/L.603
PR	1" MAINLINE 70 SERIES PRESSURE REDUCING VALVE. SIZE TO MAINLINE AND SET TO 60 PSI. SEE DETAIL B/L.604
	HEAVY DUTY BRASS BALL VALVE SIZE TO MAINLINE. SEE DETAIL A/L.604
	1" REMOTE CONTROL VALVE KIT WITH FACTORY GLUED PRESSURE REGULATOR AND BASKET FILTER IN JUMBO SIZE BOX WITH LOCKING COVER. COLOR TO MATCH FINISHED GRADE. PROVIDE LATCHING SOLENOID. SEE DETAIL B/L.603
	MAINLINE 1" PVC SCHEDULE 40 PIPE. SEE DETAIL F/L.603
	LATERAL IRRIGATION 1" PVC SCHEDULE 40 PIPE. SEE DETAIL F/L.603
	PIPE SLEEVING. CONTRACTOR SHALL BORE, ALL SLEEVES SCHEDULE 40 PVC. CONTRACTOR SHALL BORE UNDER EXISTING SIDEWALKS AND CURBS AS NEEDED OR AS SHOWN ON PLANS. SLEEVING SHALL BE 2 SIZES LARGER THAN THE TOTAL DIAMETER OF THE PIPE HOUSED WITHIN. A SEPARATE SLEEVE SHALL BE PROVIDED FOR WIRE AS NEEDED. SEE DETAIL F/L.604
	DEEP ROOT WATERING SYSTEM FOR TREES. 2 GPH EMITTER OUTLETS. PROVIDE 8 GPH PER TREE. SEE DETAIL D/L.603
	INDUSTRIAL GRADE 8 MULTI-OUTLET EMITTER DEVICE, WITH 8 (EIGHT) 2 GPH OUTLETS. PROVIDE 2 (TWO) OUTLETS PER SHRUB. PROVIDE VALVE BOX WITH LOCKING COVER. COLOR TO MATCH ROCK MULCH. SEE DETAIL C/L.604
A	PROVIDE AND INSTALL AIR RELEASE VALVE ASSEMBLY SIZE TO MAINLINE OR LATERAL LINE. INSTALL ONE PER HIGH POINT OF EACH VALVE ZONE AND AT HIGH POINT OF MAINLINE. CONTRACTOR MUST FIELD LOCATE HIGH POINTS AT THE TIME OF CONSTRUCTION PRIOR INSTALLATION. SEE DETAIL D/L.604
MD	PROVIDE AND INSTALL ONE MANUAL DRAIN PER VALVE ZONE AT LOW POINT OF LINE. CONTRACTOR MUST FIELD LOCATE LOW POINTS AT THE TIME OF CONSTRUCTION PRIOR INSTALLATION. SEE DETAIL E/L.604
R	RAIN SHUT OFF. RSD CEx PEDESTAL MOUNTED. SEE DETAIL G/L.604.

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY POINTS OF CONNECTION WITH EPWU AND STATIC PRESSURE PRIOR TO THE START OF WORK TO MAKE SURE ALL COMPONENTS WILL WORK PROPERLY. IN THE EVENT ACTUAL SITE CONDITIONS DIFFER FROM THE PLAN DRAWINGS, THE CONTRACTOR SHALL MAKE ADJUSTMENTS TO THE IRRIGATION SYSTEM DESIGN TO ALLOW FOR PROPER SYSTEM OPERATION BASED ON VERIFIED WATER SERVICE AND PRESSURE INFORMATION.
2. CONTRACTOR SHALL INSTALL ALL IRRIGATION PARTS AS PER THE MANUFACTURER'S RECOMMENDATIONS AND EPWU STANDARDS.
3. EMITTER OUTLETS FOR SHRUBS AND PERENNIALS SHALL BE LOCATED OVER THE ROOTBALL.
4. THE IRRIGATION DESIGN LINES & COMPONENTS ARE DIAGRAMMATIC. ALL EQUIPMENT SHOWN IN PAVED AREA OR OVER TREE TRUNKS IS FOR DESIGN CLARITY ONLY AND CONSTRUCTED ELEMENTS AND OBSTRUCTIONS WETHER NOTED ON THE PLANS OR NOT, SHALL BE AVOIDED TO MINIMIZE SLEEVING.
5. CONTRACTOR SHALL VERIFY LOCATIONS OF CONTROLLER, BACKFLOW, ALL VALVES AND RAIN SENSOR IN FIELD PRIOR CONSTRUCTION.

IRRIGATION PIPE SIZING CHART

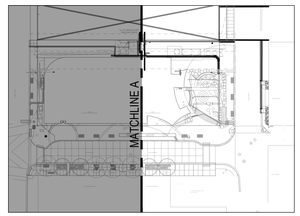
LATERAL PIPES SHALL BE PVC CLASS 40, SIZE AS INDICATED ON PLAN OR AS LISTED BELOW:

MAXIMUM DEMAND	PIPE SIZE	MAXIMUM DEMAND	PIPE SIZE
UP TO 10 GPM	3/4"	36 TO 55 GPM	2"
11 TO 16 GPM	1"	56 TO 80 GPM	2 1/2"
17 TO 26 GPM	1 1/4"	81 TO 120 GPM	3"
27 TO 35 GPM	1 1/2"	121 TO 200 GPM	4"

VALVE SCHEDULE				
METER 1				
VALVE #	SIZE	GPM	TYPE	RUN TIME
V-1	0'-1"	2	TREES	60 MIN
V-2	0'-1"	12.2	SHRUBS	60 MIN

METER 2				
VALVE #	SIZE	GPM	TYPE	RUN TIME
V-1	0'-1"	1.3	SHRUBS	60 MIN

KEY MAP



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STATE OF TEXAS
VALERIA LOPEZ
23966
LICENSED IRRIGATOR

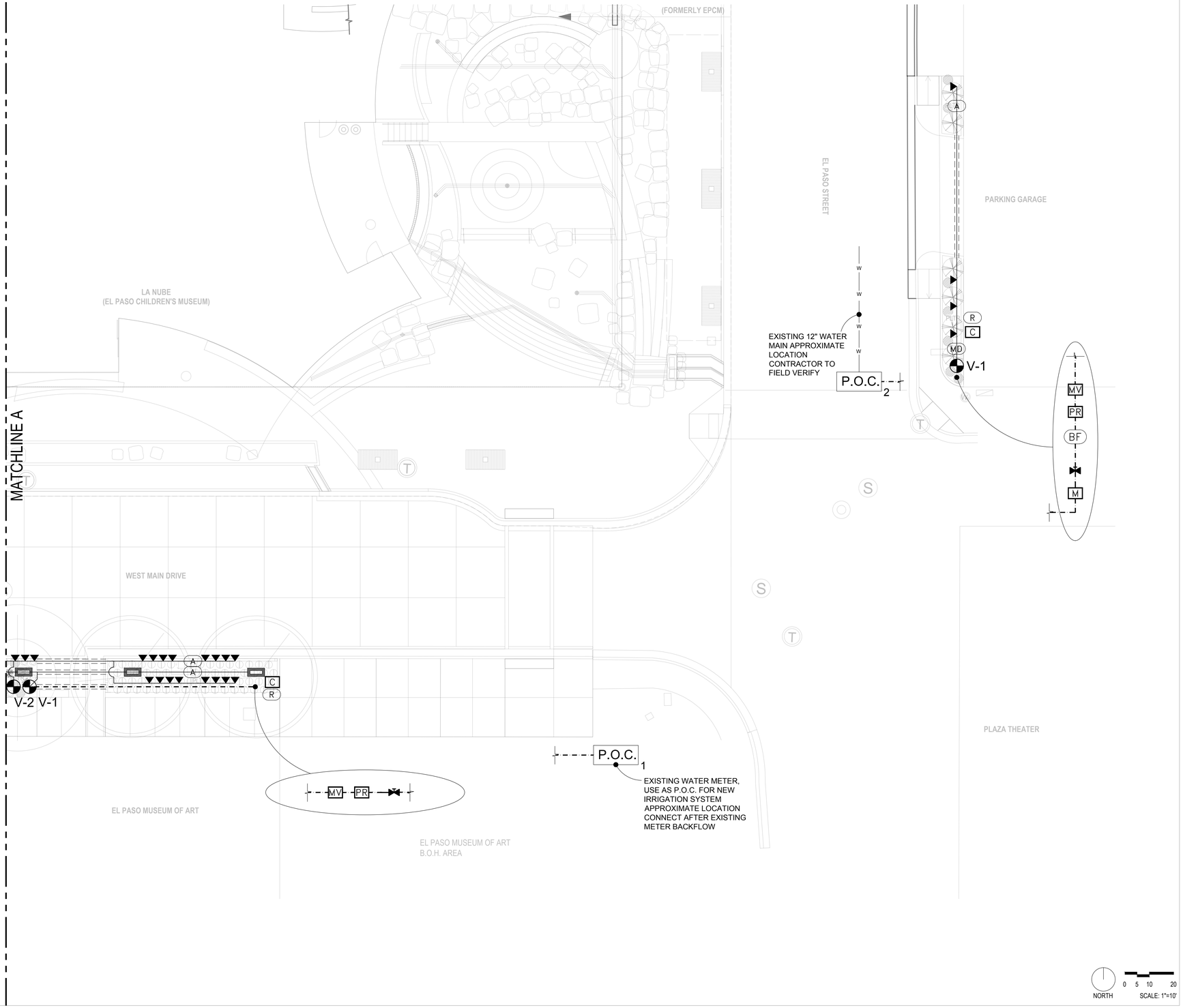
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	VL

IRRIGATION PLAN

L.601



ALL COMPONENTS SHALL BE AS SPECIFIED OR APPROVED EQUAL BY LANDSCAPE ARCHITECT OR LICENSED IRRIGATOR

IRRIGATION LEGEND	
P.O.C. #	APPROXIMATE POINT OF CONNECTION PROVIDED BY EPWU. FIELD VERIFY METER & SERVICE LINE SIZE/LOCATION PRIOR CONSTRUCTION
M	NEW 1" METER , CONTRACTOR SHALL FIELD LOCATE AND COORDINATE INSTALLATION WITH EPWU AND VERIFY GPM AND STATIC PRESSURE ON DOWNSTREAM SIDE OF METER AND INFORM IRRIGATION DESIGNER TO VERIFY SYSTEM HYDRAULICS AFTER INSTALLATION OF METERS
C	TBOS II BATTERY OPERATED CONTROLLER 3 STATION WITH TBOS FIELD TRANSMITTER AND RSD SERIES RAIN SHUT OFF PEDESTAL MOUNTED SEE DETAIL G/L.604. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO PROVIDE BATTERIES FOR CONTROLLER. USE MIN 14 AWG FOR ALL WIRING. CONTROLLER SHALL BE CONNECTED TO MASTER VALVE AT EACH METER. SEE DETAIL E/L.603 AND H/L.604
BF	1" REDUCED PRESSURE PRINCIPLE ASSEMBLY IN HEAVY DUTY METAL ENCLOSURE BOX, PROVIDE INSULATION BLANKET. INSTALL MUST COMPLY WITH ASSE 1060 CLASS I. SEE DETAIL C/L.603
MV	MASTER VALVE WITH LATCHING SOLENOID. SIZE TO MATCH MAINLINE A/L.603
PR	1" MAINLINE 70 SERIES PRESSURE REDUCING VALVE. SIZE TO MAINLINE AND SET TO 60 PSI. SEE DETAIL B/L.604
	HEAVY DUTY BRASS BALL VALVE SIZE TO MAINLINE. SEE DETAIL A/L.604
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	MAINLINE 1" PVC SCHEDULE 40 PIPE. SEE DETAIL F/L.603
	LATERAL IRRIGATION 1" PVC SCHEDULE 40 PIPE. SEE DETAIL F/L.603
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	DEEP ROOT WATERING SYSTEM FOR TREES. 2 GPH EMITTER OUTLETS. PROVIDE 8 GPH PER TREE. SEE DETAIL D/L.603
	INDUSTRIAL GRADE 8 MULTI-OUTLET EMITTER DEVICE, WITH 8 (EIGHT) 2 GPH OUTLETS. PROVIDE 2 (TWO) OUTLETS PER SHRUB. PROVIDE VALVE BOX WITH LOCKING COVER, COLOR TO MATCH ROCK MULCH. SEE DETAIL C/L.604
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MD	PROVIDE AND INSTALL ONE MANUAL DRAIN PER VALVE ZONE AT LOW POINT OF LINE. CONTRACTOR MUST FIELD LOCATE LOW POINTS AT THE TIME OF CONSTRUCTION PRIOR INSTALLATION. SEE DETAIL E/L.604
R	RAIN SHUT OFF. RSD CEx PEDESTAL MOUNTED. SEE DETAIL G/L.604.

NOTES:

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2. CONTRACTOR SHALL INSTALL ALL IRRIGATION PARTS AS PER THE MANUFACTURER'S RECOMMENDATIONS AND EPWU STANDARDS.
3. EMITTER OUTLETS FOR SHRUBS AND PERENNIALS SHALL BE LOCATED OVER THE ROOTBALL.
4. THE IRRIGATION DESIGN LINES & COMPONENTS ARE DIAGRAMMATIC. ALL EQUIPMENT SHOWN IN PAVED AREA OR OVER TREE TRUNKS IS FOR DESIGN CLARITY ONLY AND CONSTRUCTED ELEMENTS AND OBSTRUCTIONS WETHER NOTED ON THE PLANS OR NOT, SHALL BE AVOIDED TO MINIMIZE SLEEVING.
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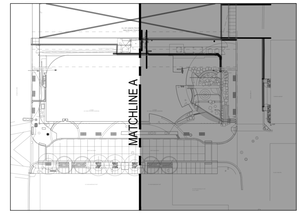
11 TO 16 GPM	1"	56 TO 80 GPM	2 1/2"
17 TO 26 GPM	1 1/4"	81 TO 120 GPM	3"
27 TO 35 GPM	1 1/2"	121 TO 200 GPM	4"

VALVE SCHEDULE				
METER 1				
VALVE #	SIZE	GPM	TYPE	RUN TIME
V-1	0'-1"	.2	TREES	60 MIN
V-2	0'-1"	12.2	SHRUBS	60 MIN
METER 2				
VALVE #	SIZE	GPM	TYPE	RUN TIME
V-1	0'-1"	1.3	SHRUBS	60 MIN

KEY MAP



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STATE OF TEXAS
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23966
LICENSED IRRIGATOR

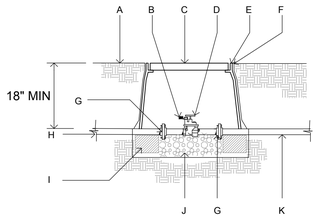
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	VL

IRRIGATION PLAN

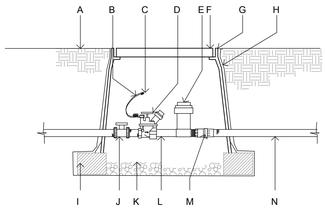
L.602



A. FINISH GRADE.
B. WIRE EXPANSION COIL. EXTEND WIRE 12" ABOVE VALVE BOX FOR SERVICE.
C. CARSON (OR APPROVED EQUAL) BOLT DOWN (ABS) COVER BOX, COLOR TO MATCH FINISH MATERIAL.
D. ELECTRIC MASTER VALVE (SEE IRRIGATION LEGEND).
E. CARSON PRODUCTS INC (OR APPROVED EQUAL), 1419-18 (ABS) VALVE BOX WITH 8" EXTENSIONS AS NECESSARY. COLOR TO MATCH FINISH MATERIAL.
F. DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX INSTALLATION. TAPE W/6 MM BLACK POLYETHYLENE TO ALL INLET AND OUTLET PIPE.
G. UNION.
H. SERVICE LINE.
I. 8" X 8" X 16" SOLID CMU BLOCK.
J. 8" DEPTH, 3/8" DIAMETER PEA GRAVEL.
K. PVC MAINLINE-SEE IRRIGATION LIST.
L. SCHEDULE 80 PVC NIPPLE.

A IRRIGATION MASTER VALVE

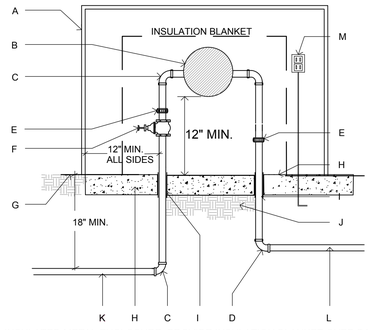
NOT TO SCALE



A. FINISH GRADE.
B. 24" WIRE LOOP.
C. DRY SPLICE CONNECTOR OR EQUAL.
D. AUTOMATIC VALVE INCLUDED IN CONTROL ZONE KIT. PROVIDE LATCHING SOLENOID. SEE IRRIGATION LEGEND.
E. BASKET FILTER STRAINER INCLUDED IN CONTROL ZONE KIT SHALL BE INSTALLED TO PROVIDE ACCESS FOR MAINTENANCE AND REPLACEMENT. SEE IRRIGATION LEGEND.
F. LOCKING VALVE BOX COVER, COLOR TO MATCH MULCH.
G. CARSON PRODUCTS INC (OR APPROVED EQUAL) (JUMBO) 1220 (ABS) VALVE BOX WITH EXTENSIONS AS NECESSARY. COLOR TO MATCH COVER.
H. PROVIDE DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX, TAPE TO ALL INLET & OUTLET PIPE.
I. 8" X 8" X 16" CMU SOLID CONCRETE BLOCK.
J. BALL VALVE, INCLUDED IN CONTROL ZONE KIT, SEE IRRIGATION LEGEND.
K. 4" LAYER OF 3/8" PEA GRAVEL.
L. SCH 80 NIPPLE
M. INLINE PRESSURE REGULATOR INCLUDED IN CONTROL ZONE KIT, SEE IRRIGATION LEGEND.
N. LATERAL LINE.

B DRIP VALVE/BASKET FILTER KIT

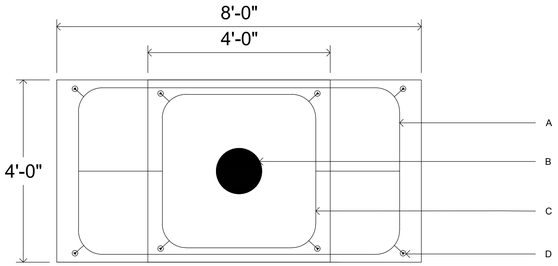
NOT TO SCALE



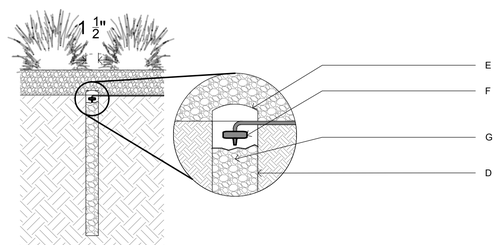
A. INSULATED METAL ENCLOSURE. PROVIDE INSULATION BLANKET OVER BACKFLOW PREVENTER. INSULATE (R-25 MIN.) FROM FREEZING MUST COMPLY WITH ASSE 1060. CLASS 1
B. REDUCED PRESSURE ASSEMBLY BACKFLOW PREVENTER.
C. TYPE K HARD DRAWN COPPER FITTINGS.
D. PVC SCH 80 FITTING.
E. UNION, MIN. 4" ABOVE GRADE.
F. BRASS BALL VALVE.
G. FINISH GRADE.
H. 4000 PSI CONCRETE PAD, 4" DEPTH, SLOPED 1% TO DRAIN.
I. PIPE SHALL BE SLEEVED THROUGH CONCRETE PAD WITH SCH 40 PVC.
J. UNDISTURBED SOIL.
K. TYPE K COPPER PIPE.
L. PVC SCH 40 IRRIGATION MAIN LINE.
M. INSTALL 120V 15 AMP GFCI OUTLET WITH WEATHERPROOF COVER FOR HEATER CONNECTION.

C REDUCED PRESSURE BACKFLOW PREVENTER

NOT TO SCALE



DIAGRAMMATIC PLAN



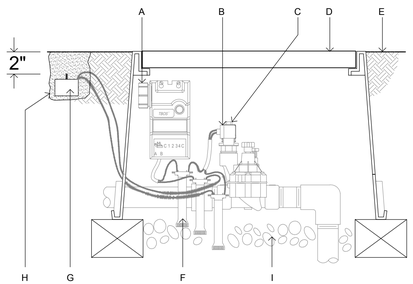
SECTION ENLARGEMENT

A. PHASE 1 RING TO ENSURE ROOTBALLS HAVE IMMEDIATE ACCESS TO WATER
B. TREE TRUNK
C. PHASE 2 RING TO PROMOTE OUTWARD GROWTH
D. 1.5" DIAMETER PERFORATED PVC PIPE BACKFILLED WITH ANGULAR GRAVEL
E. PVC PIPE TO HAVE REMOVABLE CAP. IRRIGATION TUBING MUST BE COVERED BY A MIN 1" OF GRAVEL
F. DRIP EMITTER
G. 3/8" MIN. GRAVEL BACKFILL

GENERAL NOTES:
1. IRRIGATION RING SHOULD BE EXPANDED TO PHASE 2 AFTER 2 YEARS. ONCE COMPLETE, THE EMITTERS ON THE PHASE 1 RING SHOULD BE CAPPED AND DISCONTINUED.
2. ALL NEWLY PLANTED AND RETROFITTED TREES MUST USE A DRIP IRRIGATION SYSTEM.

D DEEP ROOT WATERING SYSTEM FOR TREES

NOT TO SCALE

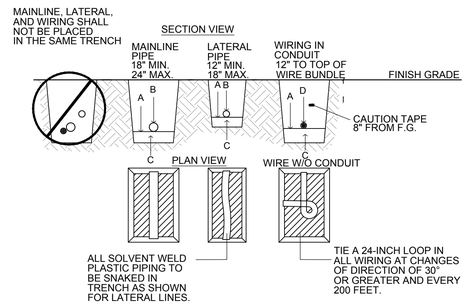


A. CONTROL MODULE
B. SOLENOID
C. REMOTE CONTROL VALVE
D. LOCKING VALVE BOX WITH COVER, COVER & BOX COLOR TO MATCH FINISH MATERIAL
E. FINISH GRADE
F. WATERPROOF CONNECTION: "QUICK CONNECT" DBY (1 OF 3)
G. RAIN SHUT-OFF DEVICE
H. UNIFORM GRADED MEDIUM SAND, 35 TO 60 MESH SIZE
I. 3/8" PEA GRAVEL

GENERAL NOTES:
1. INSTALL AN 8"X8"X16" SOLID CMU BLOCK AT EACH END OF THE VALVE BOX.
2. WASH ROCK SHALL BE INSTALLED FLUSH WITH BOTTOM OF PIPE AND VALVE.

E BATTERY OPERATED CONTROLLER

NOT TO SCALE



NOTES:
1. BOTTOM OF EXCAVATED TRENCH WHERE NO ROCKY SOILS ARE ENCOUNTERED.
2. IRRIGATION SYSTEM PIPING.
3. MINIMUM 4" DEEP BEDDING SANDY SOILS MATERIAL WHERE ROCKY SOILS ARE EXPOSED.
4. IRRIGATION SYSTEM VALVE WIRING.
5. BACKFILL SOILS MATERIAL MAY BE NATIVE SOILS IF IT IS FREE OF CALICHE OR STONES LARGER THANK 1" IN SIZE AND ORGANIC MATTER OR WASTE DEBRIS. SOILS COMPACTION IN PLANTED AREAS TO BE 80% TO 85% DENSITY BY ASTM D-1557 STANDARD AND AT 95% DENSITY UNDER PAVED OR HARDSCAPE SURFACES.

F PIPE & WIRE DEPTH OF BURY

NOT TO SCALE

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REVISIONS:

NO	DATE	NOTE
1		
2		
3		
4		
5		
6		

STATE OF TEXAS
VALERIA LOPEZ
23966
LICENSED IRRIGATOR

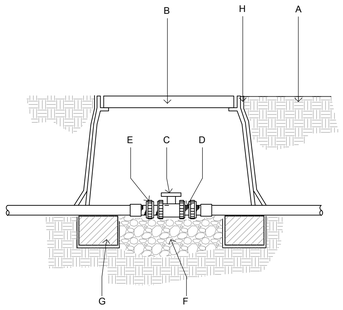
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	VL

IRRIGATION DETAILS

L.603

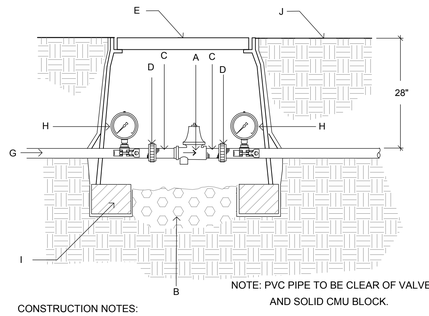


A. FINISH GRADE.
B. CARSONS PRODUCTS INC (OR APPROVED EQUAL), 1419 PB-18 BODY (ABS) VALVE BOX WITH 1419 BOLT DOWN COVER (ABS) AND TWO 8" EXTENSIONS. COLOR TO MATCH FINISH MATERIAL.
C. HEAVY DUTY BRASS BALL VALVE - SEE IRRIGATION PARTS LIST.
D. SCHEDULE 80 PVC CLOSE NIPPLE.
E. SPEARS SCH 80 PVC UNION.
F. 1 CUBIC FOOT 1" DIAMETER WASHED ROCK.
G. 8" X 8" X 16" SOLID CMU BLOCK.
H. DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX USE 6 mm BLACK POLYETHYLENE. TAPE TO ALL INLET AND OUTLET LINES.

GENERAL NOTES:
1. INSTALL AN 8"X8"X16" SOLID CMU BLOCK AT EACH END OF THE VALVE BOX.
2. WASH ROCK SHALL BE INSTALLED FLUSH WITH BOTTOM OF PIPE AND VALVE.

A BALL VALVE

NOT TO SCALE

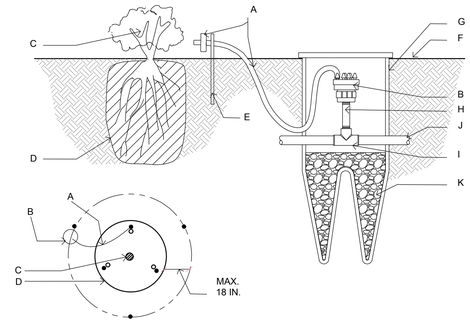


NOTE: PVC PIPE TO BE CLEAR OF VALVE BOX AND SOLID CMU BLOCK.

CONSTRUCTION NOTES:
A. PRESSURE REGULATOR, SEE IRRIGATION LEGEND
B. 2 CU. FT. 3/8" DIAMETER WASHED PEA GRAVEL.
C. SCH. 80 PVC NIPPLE
D. FLANGE (3" AND ABOVE) AND UNION (BELOW 3" PIPE SIZE)
E. CARSON PRODUCTS INC. 1419 OR 1730 PB-18 (ABS) VALVE BOX WITH 1419 OR 1730 BOLT DOWN COVER (ABS) AND (1) 8 INCH EXTENSION.
F. DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX INSTALLATION. TAPE TO ALL INLET AND OUTLET PIPE AND VALVE BOX WITH HEAVY DUTY PLASTIC 3M TAPE.
G. MAINLINE
H. HORIZONTAL HYGIENIC PRESSURE GAUGE
NOTE: PROVIDE 1 PRESSURE GAUGE ON MAIN LINE UPSTREAM AND DOWNSTREAM OF PRESSURE REDUCING VALVE. SET HORIZONTALLY SO THEY ARE MORE READABLE FROM ABOVE.
I. 8"X8"X16" SOLID CMU BLOCK @ EACH CORNER.
J. TOP OF FINISH MATERIAL.

B MAINLINE PRESSURE REDUCING VALVE

Not to scale

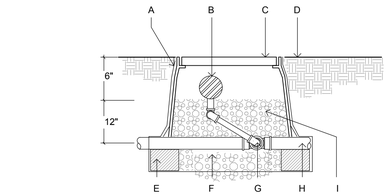


INSTALL 2 EMITTERS (2 GALLON) PER SHRUB SPACE EVENLY AROUND ROOTBALL, IN OFFSET TRIANGULAR PATTERN.

A. PRESSURE COMPENSATING EMITTER, BUG CAP AND TUBING
B. EMITTER MANIFOLD WITH 6 FREE-FLOW OUTLETS. OUTLETS NOT USED ARE TO REMAIN FACTORY CAPPED.
C. PLANT BASE
D. ROOTBALL
E. TUBING STAKE WITH LOCKING CAP
F. FINISH GRADE.
G. 9" ROUND HEAVY DUTY EMITTER BOX. BOX AND COVER COLOR TO MATCH MULCH. INSTALL OUTSIDE OF ROOTBALL
H. PVC SCH. 80 THREADED RISER
I. PVC SCH 80 TEE/ELL
J. PVC LATERAL PIPE
K. 3/8" DIA. WASHED PEA GRAVEL, INSTALL TO JUST BELOW LATERAL LINE, DO NOT COVER LATERAL LINE.

C THREADED MULTI OUTLET EMITTER

NOT TO SCALE

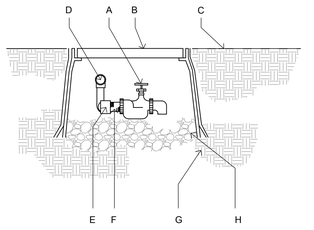


A. PROVIDE DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX INSTALLATION. TAPE TO ALL INLET AND OUTLET PIPE.
B. AIR RELEASE VALVE- SEE IRRIGATION LEGEND.
C. CARSON PRODUCTS, INC. (OR APPROVED EQUAL) 1419-18(ABS) VALVE BOX WITH BOLT DOWN COVER, COLOR TO MATCH MULCH . ADD EXTENSIONS AS NECESSARY.
D. FINISH GRADE.
E. 8" X 8" X 16" SOLID CMU BLOCK.
F. 1 CUBIC FOOT 3/8" PEA GRAVEL.
G. LASCO-PREASSEMBLED SWING JOINT.
H. IRRIGATION MAINLINE/LATERAL.
I. 6" DEPTH OF 3/8" PEA GRAVEL.

INSTALL AN 8" X 8" X 16" SOLID CMU BLOCK AT EACH CORNER OF THE VALVE BOX.
3/8" PEA GRAVEL SHALL BE INSTALLED FLUSH WITH BOTTOM OF PIPE AND VALVE.
AIR RELEASE VALVES SHALL BE INSTALLED AT ALL HIGH POINTS IN THE MAINLINE AND DRIP LINE. CONTRACTOR TO FIELD LOCATE HIGH POINTS.

D AIR RELEASE VALVE

NOT TO SCALE

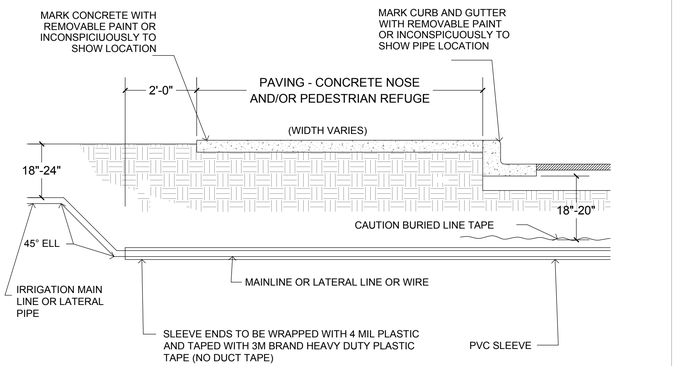


A. MANUAL DRAIN
B. CARSON PRODUCTS INC. (OR APPROVED EQUAL), 1419-18 VALVE BOX WITH BOLT DOWN COVER, COLOR TO MATCH MULCH WITH ONE 8" EXTENSION.
C. FINISH GRADE.
D. MAINLINE OR LATERAL MAIN.
E. THREADED PVC ELL.
F. PVC NIPPLE.
G. COMPACTED SUBGRADE.
H. 3/8" PEA GRAVEL SUMP.

NOTE:
CONTRACTOR SHALL PROVIDE AND INSTALL ONE MANUAL DRAIN PER VALVE ZONE AT LOW POINT OF LINE. CONTRACTOR TO FIELD LOCATE PIPE LOW POINTS.

E MANUAL DRAIN

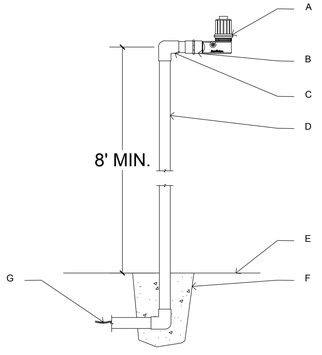
NOT TO SCALE



NOTE:
1. SLEEVE TO BE KEPT CLEAN AND FREE OF SOIL AND DEBRIS.
2. BURIED LINE TAPE TO BE INSTALLED ONLY WHEN SLEEVES ARE INSTALLED IN OPEN TRENCHES

F PAVEMENT CROSSING SLEEVE DETAIL

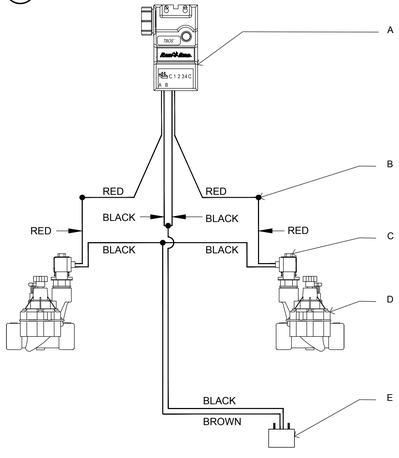
Not to scale



A. RAIN SENSOR: RAIN BIRD RSD-CEx
B. FEMALE ADAPTER (SLIP X FIPT)
C. GALVANIZED 90° EL (1 OF 2)
D. 3/4-INCH GALVAVIZED PIPE
E. FINISHED GRADE
F. CONCRETE BASE
G. WIRE TO IRRIGATION CONTROLLER

G RAIN SENSOR POLE MOUNT

NOT TO SCALE



A. RAIN BIRD TBOS CONTROL MODULE
B. WATERPROOF CONNECTION (TYPICAL)
C. RAIN BIRD TBOS SOLENOID (TYPICAL)
D. REMOTE CONTROL VALVE (TYPICAL)
E. RAIN BIRD TBOS RAIN SHUT-OFF DEVICE

H CONTROLLER WIRING LAYOUT

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NO	DATE	NOTE
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STATE OF TEXAS
VALERIA LOPEZ
23966
LICENSED IRRIGATOR

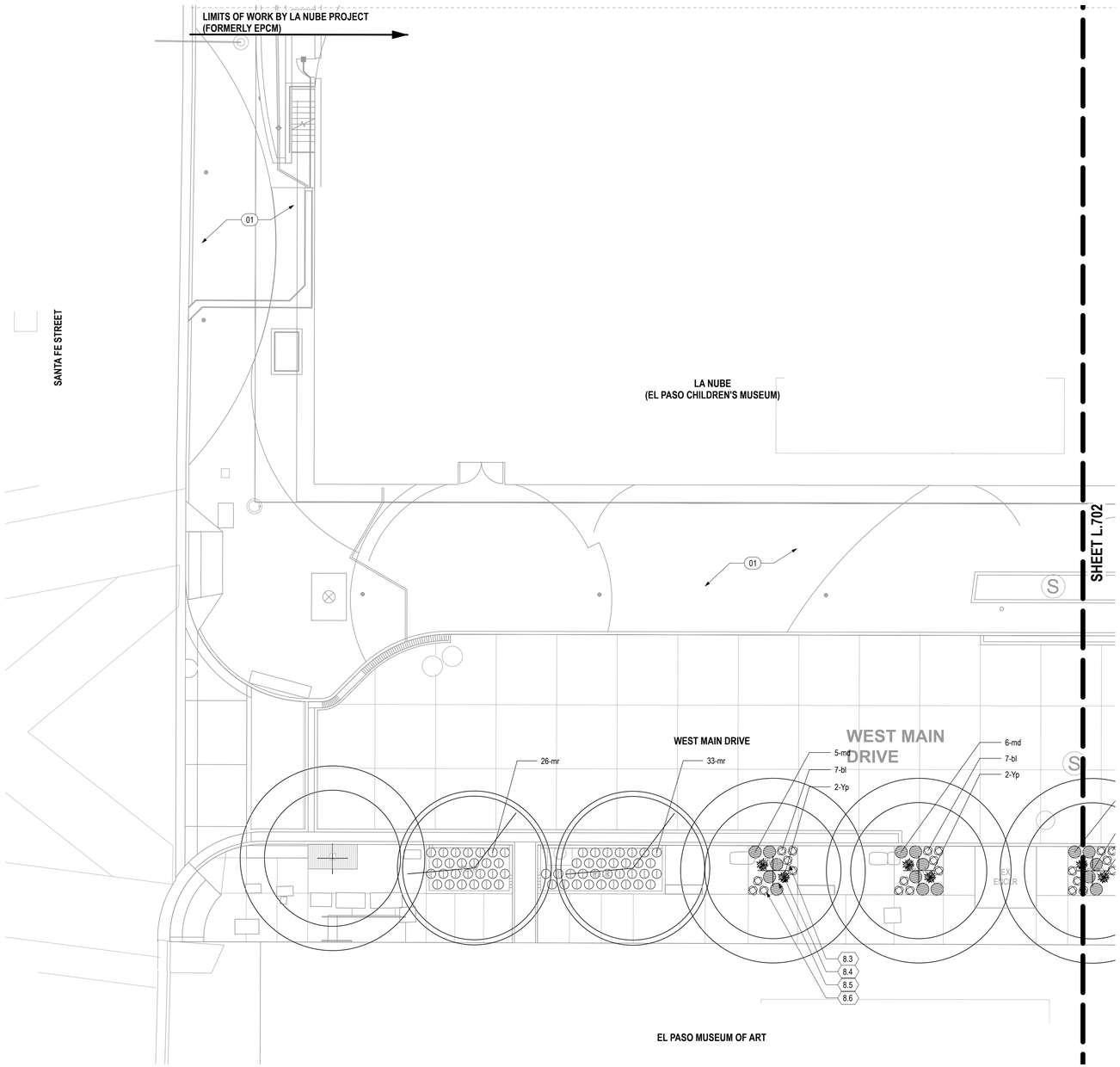
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	VL

IRRIGATION DETAILS

L.604



NORTH

0 5 10 20

SCALE: 1"=10'

GENERAL PLANTING NOTES

1. SEE GENERAL PLANTING NOTES ON SHEET L.002
2. LANDSCAPE CONTRACTOR TO PLACE PLANT BUCKETS IN-FIELD ACCORDING TO PLANTING PLAN FOR LANDSCAPE ARCHITECT FOR FINAL ADJUSTMENT AND APPROVAL PRIOR TO INSTALLATION.

PLANTING NOTES

(01) REFER TO LA NUBE DRAWINGS FOR TREES ON NORTH SIDE OF W MAIN DRIVE

PLANTING DETAIL KEYNOTES

(8.1)	PLANTING NOTES	L.702
(8.2)	SHRUB PLANTING	L.702
(8.3)	GRAVEL MULCH	L.702
(8.4)	SOIL PROFILE AT BED	L.702
(8.5)	PERENNIAL PLANTING	L.702
(8.6)	PLANT SPACING (TRIANGULAR)	L.702

PLANT PALETTE

TREES

SYMBOL	ID	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	CL	4	Chilopsis linearis 'Bubba'	Bubba Desert Willow Multi-Trunk	3" CAL
	QF	4	Quercus fusiformis	Texas Live Oak	3" CAL

SHRUBS

SYMBOL	ID	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	Vc	6	Vauquelinia californica	Arizona Rosewood	10 GAL
	Yp	6	Yucca pallida	Pale Leaf Yucca	5 GAL

PERENNIALS

SYMBOL	ID	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	bl	22	Berlandieria lyrata	Chocolate Daisy	1 GAL
	md	23	Muhlenbergia dubia	Pine Muhly	1 GAL
	mr	124	Muhlenbergia reverchonii	Seep Muhly	1 GAL

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NO	DATE	NOTE

REGISTERED LANDSCAPE ARCHITECT
KENNETH E. FRANCIS
2771
STATE OF TEXAS

1.18.2023

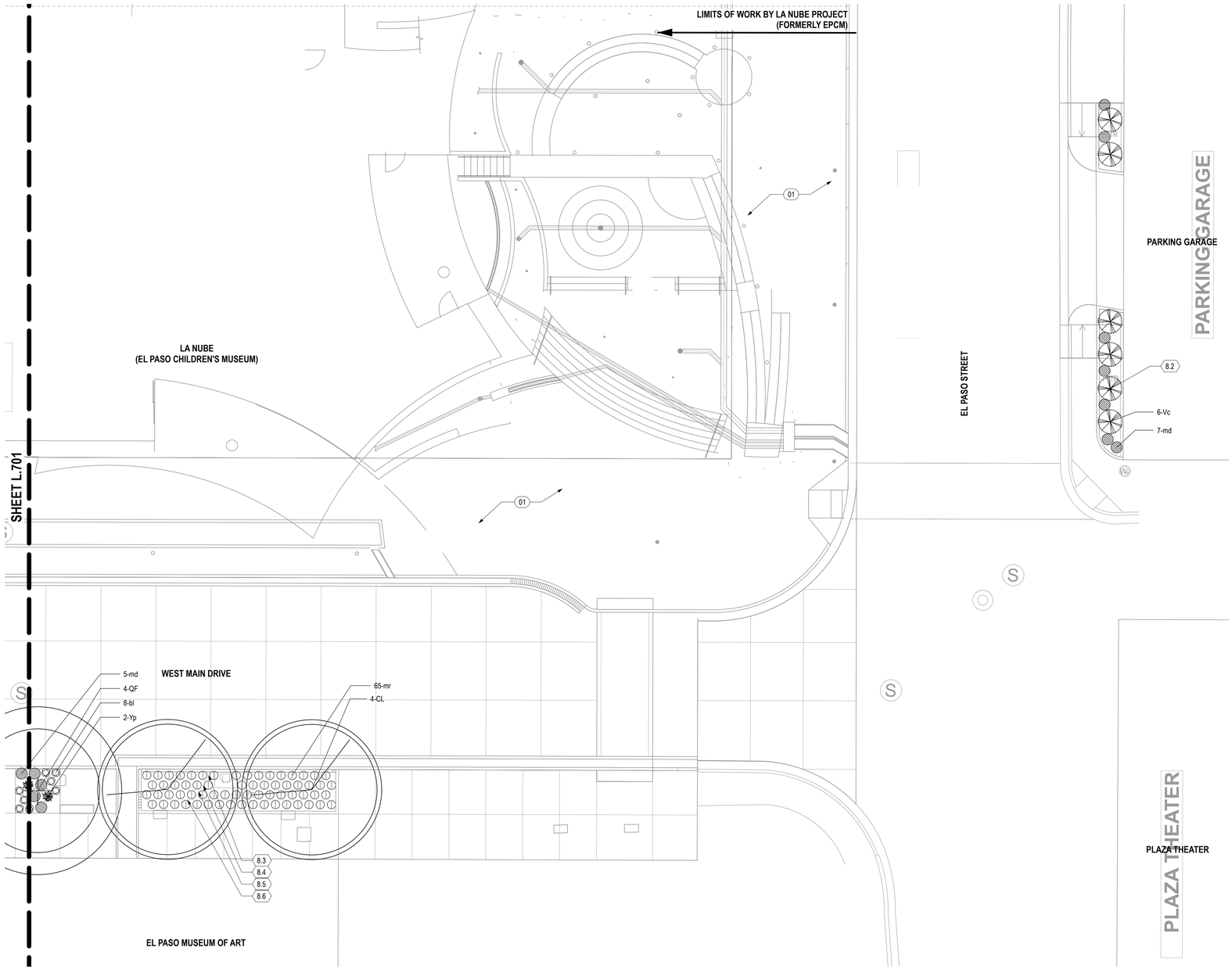
WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	JC

PLANTING PLAN

L.701



GENERAL PLANTING NOTES

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PLANTING NOTES

(01) REFER TO LA NUBE DRAWINGS FOR TREES ON NORTH SIDE OF W MAIN DRIVE

PLANTING DETAIL KEYNOTES

(8.1)	PLANTING NOTES	L.702
(8.2)	SHRUB PLANTING	L.702
(8.3)	GRAVEL MULCH	L.702
(8.4)	SOIL PROFILE AT BED	L.702
(8.5)	PERENNIAL PLANTING	L.702
(8.6)	PLANT SPACING (TRIANGULAR)	L.702

PLANT PALETTE

TREES

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SHRUBS

SYMBOL	ID	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	Vc	6	Vauquelinia californica	Arizona Rosewood	10 GAL
	Yp	6	Yucca pallida	Pale Leaf Yucca	5 GAL

PERENNIALS

SYMBOL	ID	QTY	BOTANICAL NAME	COMMON NAME	SIZE
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	md	23	Muhlenbergia dubia	Pine Muhly	1 GAL
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REVISIONS:

NO	DATE	NOTE

1.18.2023

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	JC

PLANTING PLAN

L.702

ES FOR PLANTING:

1). IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PREVENT PLANTS FROM FALLING OR BEING BLOWN OVER AND TO STRAIGHTEN OR REPLANT ALL PLANTS WHICH ARE DAMAGED DUE TO WIND. PLANTS BLOWN OVER BY HIGH WINDS SHALL NOT BE A CAUSE FOR ADDITIONAL EXPENSE TO THE OWNER, BUT SHALL BE THE FINANCIAL RESPONSIBILITY OF CONTRACTOR.

2). TOPSOIL MATERIAL FOR PLANTING,SHALL BE FREE FROM HARD CLODS, STIFF CLAY, HARD PAN, STONES LARGER THAN 1" IN DIAMETER, NOXIOUS WEEDS AND PLANTS, SOD, PARTIALLY DISINTEGRATED DEBRIS, INSECTS OR ANY OTHER UNDESIRABLE MATERIAL. PLANTS OR SEEDS THAT WOULD BE TOXIC OR HARMFUL TO GROWTH.

3). CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF PLANT MATERIAL QUANTITIES.

4). IN THE EVENT OF VARIATION BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND THE PLANS, THE PLANS SHALL CONTROL. IMPROPER PLANT COUNT MADE BY THE LANDSCAPE CONTRACTOR SHALL BE NO CAUSE FOR ADDITIONAL COSTS TO THE OWNER.

5). THE CONTRACTOR SHALL MEET BOTH THE CONTAINER SIZE AND CALIPER SIZE, AS WELL AS HEIGHT AND SPREAD SPECIFICATIONS SPECIFIED.

6). EXCAVATE TWO TIMES GREATER THAN THE ROOT BALL-DIAMETER OF THE SHRUB, TWO TIMES GREATER THAN THE ROOT BALL FOR TREES. SCARIFY BOTTOM OF PLANTING PIT BEFORE PLACING PLANT. PLACEMENT OF PLANT SHALL BE PERPENDICULAR TO GROUND.

7). CONTRACTOR WILL NOT PLANT MATERIAL SHOWN ON PLANS WHEN IT IS EVIDENT THAT FIELD CONDITIONS HAVE CHANGES SINCE PLANS WERE DRAWN. ANY CHANGES ARE TO BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE DESIGNER BEFORE ANY PLANTING IS DONE IN THE AREA.

8). PLANT SUBSTITUTIONS WILL BE PERMITTED, REQUEST SUBSTITUTION IN WRITING GIVING REASONS FOR SUCH SUBSTITUTIONS.

9). TURF QUANTITY TAKE-OFF ARE THE RESPONSIBILITY OF THE CONTRACTOR.

10). TREAT ALL PLANTING AREAS WITH AN APPLICATION OF SURF. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR APPLICATION.

11). REMOVE ALL WIRE, STRING, WIRE BASKETS, BURLAP, CONTAINERS, ETC., FROM THE ROOTBALL OF PLANTS BEFORE BACKFILLING THE PLANTING HOLE.

12). SEEDED AREAS SHOULD BE MAINTAINED UNTIL A FULL GROWTH OF WILD GRASS OR SEEDED MATERIAL IS ACHIEVED.

13). WARRANTY FOR THE PLANTING MATERIAL SHALL BE ONE YEAR FROM THE DATE OF ACCEPTANCE. (TREES, SHRUBS AND GROUNDCOVER).

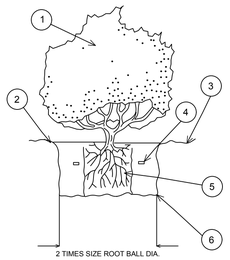
DETAIL NO.
202

CITY OF EL PASO
PARKS & RECREATION

DETAIL NAME

NOTES FOR PLANTING

8.1 PLANTING NOTES
NTS



LEGEND

1. SHRUB OR VINE PER PLAN
2. EARTH WATERING BASIN (COVER WITH SPECIFIED MULCH ON PLAN).
3. FINISH GRADE
4. 7 GRAM PLANT TABLETS
   1 GAL = 3, 5 GAL = 6, 10-15 GAL = 9
5. ROOTBALL (SET CROWN FLUSH WITH FINISH GRADE) COVER 2" SPECIFIED MULCH.
6. UNDISTURBED NATIVE SOIL

EXCAVATE AND REPLACE WITH SAME SOIL. REMOVE STONES 2" OR LARGER.

GENERAL NOTES:

1. TREES PLANTED IN ROCKY, CALICHE AND CLAY SOILS TO HAVE PIT EXCAVATED 5 TIMES THE SIZE OF THE ROOTBALL.
2. TREES PLANTED IN ROCKY, CALICHE AND CLAY SOILS TO HAVE 1/3 TO 1/2 TOP SOIL BLENDED WITH CLAY SOIL AND USED AS BACKFILL.
3. TREES PLANTED IN ROCKY SOIL ARE TO HAVE ALL ROCKY MATERIAL LARGER THAN 1" IN SIZE REMOVED.

DETAIL NO.
601

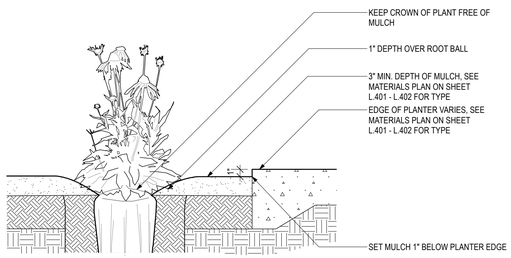
CITY OF EL PASO
PARKS & RECREATION

DETAIL NAME

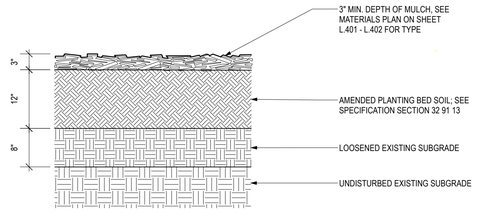
SHRUB PLANTING

NTS

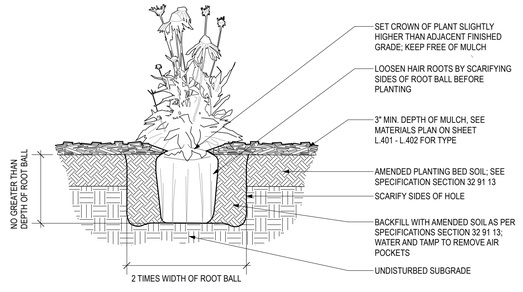
8.2 SHRUB PLANTING
NTS



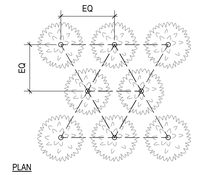
8.3 MULCH
NTS



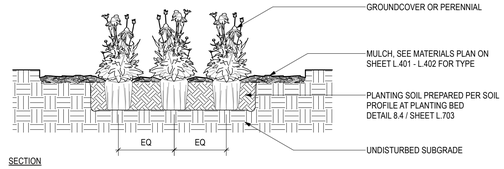
8.4 SOIL PROFILE AT BED
NTS



8.5 PERENNIAL PLANTING
NTS



PLAN



SECTION

8.6 PLANT SPACING (TRIANGULAR)
NTS

NOTE:
1. LANDSCAPE SOILS THAT ARE COMPACTED DURING CONSTRUCTION SHALL BE LOOSENED TO A DEPTH OF AT LEAST 12" BEFORE PLANTING.

surroundings
landscape
architecture
urbanism

1611 Paseo de Peralta
Santa Fe, NM 87501

t: 505 982 3454
www.surroundings.studio

100% CONSTRUCTION DOCUMENTS FOR BID

REVISIONS:

NO	DATE	NOTE

REGISTERED LANDSCAPE ARCHITECT
KENNETH E. FRANCIS
2771
STATE OF TEXAS

1.18.2023

WEST MAIN DRIVE STREETSCAPE

WEST MAIN DRIVE
EL PASO, TX 79901

SCALE:	AS NOTED
DATE:	18 JANUARY 2024
PROJECT:	1568
DRAWN BY:	JC

PLANTING DETAILS

L.703

WEST MAIN DRIVE STREETSCAPE

PROJECT SPECIFICATIONS

January 2024

surroundings
landscape
architecture
urbanism

18 JANUARY 2024

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work by Owner.
4. Work under separate contracts.
5. Future work.
6. Purchase contracts.
7. Owner-furnished products.
8. Contractor-furnished, Owner-installed products.
9. Access to site.
10. Coordination with occupants.
11. Work restrictions.
12. Specification and drawing conventions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: West Main Drive Streetscape

1. Project Location: West Main Drive, El Paso, TX 79901

B. Owner: EPCM Construction LLC

1. Owner's Representative: Stephanie Otero, Ph: (913) 533-4020, Sotero@epcf.org

C. Architect: Surroundings Studio, LLC, 1611 Paso de Peralta, Santa Fe, NM 87501. PH: (505) 982-3454. Contact: Kenneth Francis, kenneth@surroundings.studio.

1.4 WORK BY OWNER

A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

1.5 0po-ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

1.6 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the project site to normal business working hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, unless otherwise directed by Owner.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than 2 days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than 2 days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

F. Controlled Substances: Use of tobacco products and other controlled substances within the on Project site is not permitted.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

1. NOT USED

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:
   1. Section 012300 "Alternates" for products selected under an alternate.
   2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

   1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
   2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

   1. Substitution Request Form: CSI Form 13.1A
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

      a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
      b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
      c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific

features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from IBC-2015.
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 3 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 3 days of receipt of request, or 5 days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 3 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed unless otherwise indicated.

C. Substitutions for Convenience: Architect will consider requests for substitution if received within 10 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within 3 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect and Owner.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Changes Proposal Request, Construction Manager will issue a Change Order for signatures of Owner and Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Requests for Information (RFIs).
3. Project Web site.
4. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:
1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.
4. Section 019113 "General Commissioning Requirements" for coordinating the Work with Owner's Commissioning Authority.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 3 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project

site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, on Project Web site. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.6 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Construction Manager.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Software-generated form with substantially the same content as indicated above.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow 3 working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for approval of Contractor's means and methods.

d. Requests for coordination information already indicated in the Contract Documents.
e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Architect's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 3 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use software log that is part of Project Web site.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within 7 days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner**,** and Architect, within 3 days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 7 days after execution of the Agreement.

1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner**,** Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative construction schedule.
b. Critical work sequencing and long-lead items.

c. Designation of key personnel and their duties.
d. Lines of communications.
e. Procedures for processing field decisions and Change Orders.
f. Procedures for RFIs.
g. Procedures for testing and inspecting.
h. Procedures for processing Applications for Payment.
i. Distribution of the Contract Documents.
j. Submittal procedures.
k. Preparation of record documents.
l. Use of the premises.
m. Work restrictions.
n. Working hours.
o. Owner's occupancy requirements.
p. Responsibility for temporary facilities and controls.
q. Procedures for moisture and mold control.
r. Procedures for disruptions and shutdowns.
s. Construction waste management and recycling.
t. Parking availability.
u. Office, work, and storage areas.
v. Equipment deliveries and priorities.
w. First aid.
x. Security.
y. Progress cleaning.

4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Project Closeout Conference: **Schedule and conduct** a project closeout conference, at a time convenient to Owner and Architect, but no later than 15 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of record documents.
b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Submittal of written warranties.
d. Requirements for preparing operations and maintenance data.
e. Requirements for delivery of material samples, attic stock, and spare parts.
f. Requirements for demonstration and training.
g. Preparation of Contractor's punch list.
h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
i. Submittal procedures.
j. Coordination of separate contracts.
k. Owner's partial occupancy requirements.
l. Installation of Owner's furniture, fixtures, and equipment.
m. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

D. Progress Meetings: **Conduct** progress meetings at regular.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Resolution of BIM component conflicts.
        4) Status of submittals.
        5) Deliveries.
        6) Off-site fabrication.
        7) Access.
        8) Site utilization.
        9) Temporary facilities and controls.
        10) Progress cleaning.
        11) Quality and work standards.
        12) Status of correction of deficient items.
        13) Field observations.
        14) Status of RFIs.
        15) Status of proposal requests.
        16) Pending changes.
        17) Status of Change Orders.
        18) Pending claims and disputes.
        19) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

    a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's construction schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Special reports.

B. Related Requirements:
1. Section 013300 "Submittal Procedures" for submitting schedules and reports.
2. Section 014000 "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF electronic file.

B. Startup construction schedule.

1. Approval of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at weekly intervals.

H. Material Location Reports: Submit at weekly intervals.

I. Site Condition Reports: Submit at time of discovery of differing conditions.

J. Special Reports: Submit at time of unusual event.

K. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including work stages, interim milestones and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for Project closeout and Owner startup procedures.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the commencement of the work to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 30 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.

4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work under More Than One Contract: Include a separate activity for each contract.
3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
6. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use of premises restrictions.
    f. Provisions for future construction.
    g. Seasonal variations.
    h. Environmental control.

7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Subcontract awards.
    b. Submittals.
    c. Purchases.
    d. Mockups.
    e. Fabrication.
    f. Sample testing.
    g. Deliveries.
    h. Installation.
    i. Tests and inspections.
    j. Adjusting.
    k. Curing.
    l. Building flush-out.
    m. Startup and placement into final use and operation.

8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

    a. Structural completion.
    b. Temporary enclosure and space conditioning.
    c. Permanent space enclosure.
    d. Completion of mechanical installation.

e. Completion of electrical installation.
f. Substantial Completion.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion

E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and Contract Time.

G. Recovery Schedule: When periodic update indicates the Work is 10 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1. Use Scheduling component of Project Web site software specified in Section 013100 "Project Management and Coordination.

2.2 STARTUP CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit startup, horizontal, bar-chart-type construction schedule within 7 days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 30 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Startup Network Diagram: Submit diagram within 3 days of date established for commencement of the Work. Outline significant construction activities for the first 30 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's construction schedule using a cost and resource-loaded, time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 7 days after date established for commencement of the Work.

    a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.

CI. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

    a. Preparation and processing of submittals.
    b. Mobilization and demobilization.
    c. Purchase of materials.
    d. Delivery.
    e. Fabrication.
    f. Utility interruptions.
    g. Installation.
    h. Work by Owner that may affect or be affected by Contractor's activities.
    i. Testing
    j. Punch list and final completion.
    k. Activities occurring following final completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

    a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Architect's approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance

manuals, punch list activities, Project record documents, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.

a. Each activity cost shall reflect an appropriate value subject to approval by Architect.
b. Total cost assigned to activities shall equal the total Contract Sum.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Main events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.

1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.

a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
b. Submit value summary printouts one week before each regularly scheduled progress meeting.

2.4 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate 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 (see special reports).
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.

B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within 1 day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.

1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.

B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

C. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
3. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
4. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
5. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 90 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Architect's final release or approval.
    g. Scheduled date of fabrication.
    h. Scheduled dates for purchasing.
    i. Scheduled dates for installation.
    j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals.

1. Architect will NOT furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on **Architect's** receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 3 calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 3 calendar days for review of each resubmittal.

CI. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information for processing and recording action taken:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Name of subcontractor.
g. Name of supplier.
h. Name of manufacturer.
i. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

j. Number and title of appropriate Specification Section.
k. Drawing number and detail references, as appropriate.
l. Location(s) where product is to be installed, as appropriate.
m. Other necessary identification.

4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.
a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

1) Project name.
2) Date.
3) Destination (To:).
4) Source (From:).
5) Name and address of Architect.
6) Name of Construction Manager.
7) Name of Contractor.
8) Name of firm or entity that prepared submittal.
9) Names of subcontractor, manufacturer, and supplier.
10) Category and type of submittal.
11) Submittal purpose and description.
12) Specification Section number and title.
13) Specification paragraph number or drawing designation and generic name for each of multiple items.
14) Drawing number and detail references, as appropriate.
15) Indication of full or partial submittal.
16) Transmittal number**,** numbered consecutively.
17) Submittal and transmittal distribution record.
18) Remarks.
19) Signature of transmitter.

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.

    a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:

    a. Project name.
    b. Date.
    c. Name and address of Architect.
    d. Name of Construction Manager.
    e. Name of Contractor.
    f. Name of firm or entity that prepared submittal.
    g. Names of subcontractor, manufacturer, and supplier.
    h. Category and type of submittal.
    i. Submittal purpose and description.
    j. Specification Section number and title.
    k. Specification paragraph number or drawing designation and generic name for each of multiple items.
    l. Drawing number and detail references, as appropriate.
    m. Location(s) where product is to be installed, as appropriate.
    n. Related physical samples submitted directly.
    o. Indication of full or partial submittal.
    p. Transmittal number**,** numbered consecutively.

q. Submittal and transmittal distribution record.
r. Other necessary identification.
s. Remarks.

5. Metadata: Include the following information as keywords in the electronic submittal file metadata:

a. Project name.
b. Number and title of appropriate Specification Section.
c. Manufacturer name.
d. Product name.

F. Options: Identify options requiring selection by Architect.

G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Post electronic submittals as PDF electronic files directly to Project Web site specifically established for Project.

a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Submit electronic submittals via email as PDF electronic files.

a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

3. Action Submittals: Submit 3 paper copies of each submittal unless otherwise indicated. Architect will return 2 copies.
4. Informational Submittals: Submit 2 paper copies of each submittal unless otherwise indicated. Architect will not return copies.
5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

    a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
    b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:

    a. PDF electronic file.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.

g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
3. Submit Shop Drawings in the following format:

a. PDF electronic file.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of applicable Specification Section.
e. Specification paragraph number and generic name of each item.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and

physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit 3 sets of Samples. Architect will retain 2 Sample sets; remainder will be returned.

1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.
5. Submit product schedule in the following format:

a. PDF electronic file.

F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."

G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."

I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

K. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."

L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure

Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

W. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

X. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads.

Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
1. Approved; Approved as Noted; Revised and Resubmit; or Not Approved.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

C. Related Requirements:

1. Section 012100 "Allowances" for testing and inspecting allowances.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.
2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.

1. Indicate manufacturer and model number of individual components.
2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data : For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than 5 days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may NOT also serve as Project superintendent.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
3. Owner-performed tests and inspections indicated in the Contract Documents.

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.

4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to **ASTM E 329** and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
   d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
   e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
   f. When testing is complete, remove test specimens, assemblies, unless otherwise directed.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect 7 days in advance of dates and times when mockups will be constructed.
3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

a. Allow 7 days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed unless otherwise indicated.

L. Integrated Exterior Mockups: Construct integrated exterior mockup as indicated on Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will engage construction materials testing, to include soils and compaction, as well as concrete testing.

2. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor**.**

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and

conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect and with copy to the Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 ACCEPTABLE TESTING AGENCIES

A. Not Used.

3.2 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for reference during normal working hours.

3.3 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
8. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
9. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
10. AF&PA - American Forest & Paper Association; www.afandpa.org.
11. AGA - American Gas Association; www.aga.org.
12. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
13. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
14. AI - Asphalt Institute; www.asphaltinstitute.org.
15. AIA - American Institute of Architects (The); www.aia.org.
16. AISC - American Institute of Steel Construction; www.aisc.org.
17. AISI - American Iron and Steel Institute; www.steel.org.
18. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
19. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
20. ANSI - American National Standards Institute; www.ansi.org.
21. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
22. APA - APA - The Engineered Wood Association; www.apawood.org.
23. APA - Architectural Precast Association; www.archprecast.org.
24. API - American Petroleum Institute; www.api.org.
25. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
26. ARI - American Refrigeration Institute; (See AHRI).
27. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
28. ASCE - American Society of Civil Engineers; www.asce.org.
29. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
30. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
31. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
32. ASSE - American Society of Safety Engineers (The); www.asse.org.
33. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
34. ASTM - ASTM International; (American Society for Testing and Materials International); www.astm.org.
35. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
36. AWEA - American Wind Energy Association; www.awea.org.

37. AWI - Architectural Woodwork Institute; www.awinet.org.
38. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
39. AWPA - American Wood Protection Association; (Formerly: American Wood-Preservers' Association); www.awpa.com.
40. AWS - American Welding Society; www.aws.org.
41. AWWA - American Water Works Association; www.awwa.org.
42. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
43. BIA - Brick Industry Association (The); www.gobrick.com.
44. BICSI - BICSI, Inc.; www.bicsi.org.
45. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.com.
46. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
47. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bwfbadminton.org.
48. CDA - Copper Development Association; www.copper.org.
49. CEA - Canadian Electricity Association; www.electricity.ca.
50. CEA - Consumer Electronics Association; www.ce.org.
51. CFFA - Chemical Fabrics & Film Association, Inc.; www.chemicalfabricsandfilm.com.
52. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
53. CGA - Compressed Gas Association; www.cganet.com.
54. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
55. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
56. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
57. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
58. CPA - Composite Panel Association; www.pbmdf.com.
59. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
60. CRRC - Cool Roof Rating Council; www.coolroofs.org.
61. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
62. CSA - Canadian Standards Association; www.csa.ca.
63. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
64. CSI - Construction Specifications Institute (The); www.csinet.org.
65. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
66. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
67. CWC - Composite Wood Council; (See CPA).
68. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
69. DHI - Door and Hardware Institute; www.dhi.org.
70. ECA - Electronic Components Association; (See ECIA).
71. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
72. ECIA ? Electronic Components Industry Association; www.eciaonline.org
73. EIA - Electronic Industries Alliance; (See TIA).
74. EIMA - EIFS Industry Members Association; www.eima.com.
75. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
76. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
77. ESTA - Entertainment Services and Technology Association; (See PLASA).
78. EVO - Efficiency Valuation Organization; www.evo-world.org.
79. FIBA - F?d?ration Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
80. FIVB - F?d?ration Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
81. FM Approvals - FM Approvals LLC; www.fmglobal.com.
82. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
83. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
84. FSA - Fluid Sealing Association; www.fluidsealing.com.

85. FSC - Forest Stewardship Council U.S.; www.fscus.org.
86. GA - Gypsum Association; www.gypsum.org.
87. GANA - Glass Association of North America; www.glasswebsite.com.
88. GS - Green Seal; www.greenseal.org.
89. HI - Hydraulic Institute; www.pumps.org.
90. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
91. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
92. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
93. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
94. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
95. IAS - International Accreditation Service; www.iasonline.org.
96. IAS - International Approval Services; (See CSA).
97. ICBO - International Conference of Building Officials; (See ICC).
98. ICC - International Code Council; www.iccsafe.org.
99. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
100. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
101. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
102. IEC - International Electrotechnical Commission; www.iec.ch.
103. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
104. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
105. IESNA - Illuminating Engineering Society of North America; (See IES).
106. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
107. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
108. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
109. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
110. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
111. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
112. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
113. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
114. ISO - International Organization for Standardization; www.iso.org.
115. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
116. ITU - International Telecommunication Union; www.itu.int/home.
117. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
118. LMA - Laminating Materials Association; (See CPA).
119. LPI - Lightning Protection Institute; www.lightning.org.
120. MBMA - Metal Building Manufacturers Association; www.mbma.com.
121. MCA - Metal Construction Association; www.metalconstruction.org.
122. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
123. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
124. MHIA - Material Handling Industry of America; www.mhia.org.
125. MIA - Marble Institute of America; www.marble-institute.com.
126. MMPA - Moulding & Millwork Producers Association; (Formerly: Wood Moulding & Millwork Producers Association); www.wmmpa.com.
127. MPI - Master Painters Institute; www.paintinfo.com.
128. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
129. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
130. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
131. NADCA - National Air Duct Cleaners Association; www.nadca.com.
132. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
133. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.

134. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
135. NCMA - National Concrete Masonry Association; www.ncma.org.
136. NEBB - National Environmental Balancing Bureau; www.nebb.org.
137. NECA - National Electrical Contractors Association; www.necanet.org.
138. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
139. NEMA - National Electrical Manufacturers Association; www.nema.org.
140. NETA - InterNational Electrical Testing Association; www.netaworld.org.
141. NFHS - National Federation of State High School Associations; www.nfhs.org.
142. NFPA - NFPA; (National Fire Protection Association); www.nfpa.org.
143. NFPA - NFPA International; (See NFPA).
144. NFRC - National Fenestration Rating Council; www.nfrc.org.
145. NHLA - National Hardwood Lumber Association; www.nhla.com.
146. NLGA - National Lumber Grades Authority; www.nlga.org.
147. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
148. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
149. NRCA - National Roofing Contractors Association; www.nrca.net.
150. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
151. NSF - NSF International; (National Sanitation Foundation International); www.nsf.org.
152. NSPE - National Society of Professional Engineers; www.nspe.org.
153. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
154. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
155. NWFA - National Wood Flooring Association; www.nwfa.org.
156. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
157. PDI - Plumbing & Drainage Institute; www.pdionline.org.
158. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
159. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
160. RFCI - Resilient Floor Covering Institute; www.rfci.com.
161. RIS - Redwood Inspection Service; www.redwoodinspection.com.
162. SAE - SAE International; (Society of Automotive Engineers); www.sae.org.
163. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
164. SDI - Steel Deck Institute; www.sdi.org.
165. SDI - Steel Door Institute; www.steeldoor.org.
166. SEFA - Scientific Equipment and Furniture Association; www.sefalabs.com.
167. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
168. SIA - Security Industry Association; www.siaonline.org.
169. SJI - Steel Joist Institute; www.steeljoist.org.
170. SMA - Screen Manufacturers Association; www.smainfo.org.
171. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
172. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
173. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
174. SPIB - Southern Pine Inspection Bureau; www.spib.org.
175. SPRI - Single Ply Roofing Industry; www.spri.org.
176. SRCC - Solar Rating and Certification Corporation; www.solar-rating.org.
177. SSINA - Specialty Steel Industry of North America; www.ssina.com.
178. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
179. STI - Steel Tank Institute; www.steeltank.com.
180. SWI - Steel Window Institute; www.steelwindows.com.
181. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
182. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
183. TCNA - Tile Council of North America, Inc.; (Formerly: Tile Council of America); www.tileusa.com.
184. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.

185. TIA - Telecommunications Industry Association; (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
186. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
187. TMS - The Masonry Society; www.masonrysociety.org.
188. TPI - Truss Plate Institute; www.tpinst.org.
189. TPI - Turfgrass Producers International; www.turfgrasssod.org.
190. TRI - Tile Roofing Institute; (Formerly: National Tile Roofing Manufacturing Association); www.tileroofing.org.
191. UBC - Uniform Building Code; (See ICC).
192. UL - Underwriters Laboratories Inc.; www.ul.com.
193. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
194. USAV - USA Volleyball; www.usavolleyball.org.
195. USGBC - U.S. Green Building Council; www.usgbc.org.
196. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
197. WASTEC - Waste Equipment Technology Association; www.wastec.org.
198. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
199. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
200. WDMA - Window & Door Manufacturers Association; www.wdma.com.
201. WI - Woodwork Institute; (Formerly: WIC - Woodwork Institute of California); www.wicnet.org.
202. WMMPA - Wood Moulding & Millwork Producers Association; (See MMPA).
203. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
204. WPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
   1. ICC - International Code Council; www.iccsafe.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up-to-date as of the date of the Contract Documents.

   1.
   2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
   3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
   4. DOE - Department of Energy; www.energy.gov.
   5. EPA - Environmental Protection Agency; www.epa.gov.
   6. OSHA - Occupational Safety & Health Administration; www.osha.gov.
   7. FS - Federal Specification; Available from Department of Defense Single Stock Point; http://dodssp.daps.dla.mil.

PART 2 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
2. Section 321313 "Concrete Paving" for construction and maintenance of cement concrete pavement for temporary roads and paved areas.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to**,** Architect**,** testing agencies, and authorities having jurisdiction.

B. Sewer Service: Pay sewer-service use charges for sewer usage by all entities for construction operations.

C. Water Service: Pay water-service use charges for water used by all entities for construction operations.

D. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.

E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.

1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste handling procedures.
5. Other dust-control measures.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Accessible Temporary Egress: Comply with applicable provisions in [the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch- OD corner and pull post.

B. Portable Chain-Link Fencing: Minimum 2-inch galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide galvanized-steel bases for supporting posts.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:

1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
3. Drinking water and private toilet.
4. Coffee machine and supplies.
5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.

3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

F. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

G. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.

    a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

H. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.

I. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

J. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service indicated by local utility authorities.
2. Connect temporary service to Owner's existing power source, as directed by Owner.

K. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
2. Install lighting for Project identification sign.

L. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install line for each field office.

1. At each telephone, post a list of important telephone numbers.

    a. Police and fire departments.
    b. Ambulance service.
    c. Contractor's home office.
    d. Contractor's emergency after-hours telephone number.
    e. Architect's office.
    f. Engineers' offices.
    g. Owner's office.
    h. Principal subcontractors' field and home offices.

2. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

M. Electronic Communication Service: Provide a desktop computer in the primary field office adequate for use by Architect and Owner to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:

1. Processor: Intel Pentium D or Intel CoreDuo, min. 3.0 GHz processing speed.
2. Memory: min. 8 gigabyte.
3. Disk Storage: min 500 gigabyte hard-disk drive and combination DVD-RW/CD-RW drive.
4. Display: 22-inch monitor with min. 256-Mb dedicated video RAM.
5. Full-size keyboard and mouse.
6. Network Connectivity: 10/100BaseT Ethernet.
7. Operating System: Microsoft Windows XP Professional or Microsoft Windows Vista Business.
8. Productivity Software:

    a. Microsoft Office Professional, XP or higher, including Word, Excel, and Outlook.
    b. Adobe Reader 7.0 or higher.
    c. WinZip 7.0 or higher.

9. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions.
10. Internet Service: Broadband modem, router and ISP, equipped with hardware firewall, providing minimum 384 Kbps upload and min. 1 Mbps download speeds at each computer.
11. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
12. Backup: External hard drive, minimum 40 gigabyte, with automated backup software providing daily backups.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas project boundary.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary

roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Section 312000 "Earth Moving."
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Section 321216 "Asphalt Paving."

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Provide temporary parking areas for construction personnel.

F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

    a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touchup signs so they are legible at all times.

H. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

I. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

K. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

1. Do not load elevators beyond their rated weight capacity.
2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

L. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

M. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

N. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Temporary Erosion and Sedimentation Control: Comply with requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Section 311000 "Site Clearing."

D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

F. Tree and Plant Protection: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."

G. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

H. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

I. Site Enclosure Fence: Before construction operations begin furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

J. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.

K. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

L. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

M. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.

1. Construct covered walkways using scaffold or shoring framing.
2. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
3. Paint and maintain appearance of walkway for duration of the Work.

N. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

O. Temporary Partitions: Provide floor-to-ceiling dust-proof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants]from fumes and noise.

1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
2. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up

the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.

a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.

3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
4. Insulate partitions to control noise transmission to occupied areas.
5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
6. Protect air-handling equipment.
7. Provide walk-off mats at each entrance through temporary partition.

P. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking in construction areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 MOISTURE AND MOLD CONTROL

A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard, replace, or clean stored or installed material that begins to grow mold.

7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use permanent HVAC system to control humidity.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

    a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 24 hours are considered defective.
    b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
    c. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.

D. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

E. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Temporary Controls: barriers and fencing, protection of the Work, water control, dust control, erosion and sediment control, noise control, and pollution control.

1.2 RELATED SECTIONS

A. General Conditions

B. Section 01 00 00 - General Requirements.

1.3 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damange from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way.

C. Provide protection for plant life designated to remain. Replace damaged plant life.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.4 WATER CONTROL

A. Grade site to drain. Maintain excavations free of water.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.5 SECURITY

A. Coordinate with Owner's security program.

1.6 DUST CONTROL

A. Execute Work by methods to minimize raising dust from construction operations.

B. Provide positive means to prevent air-borne dust from dispensing into atmosphere.

C. Contractor to water site with water truck 2 times per day, once in the morning and in the afternoon.

1.7 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize amount of bare soil exposed at one time.

C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

F. All phases of sedimentation and erosion control shall comply with the U.S. Environmental Protection Agency NPDES Regulations and the state regulations, which require the preparation of a Stormwater Pollution Prevention Plan (SWPPP). The Contractor shall conform to the plans and maintain the SWPPP at all times.

1.8 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise produced by construction operations.

1.9 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

B. Comply with all applicable federal, state, and local laws and regulations concerning environmental pollution control and abatement.

PART 2 MEASUREMENT AND PAYMENT

2.1 FORM MATERIALS

A. No additional payments will be made for temporary controls. Cost of temporary controls shall be incorporated to the overall lump sum project cost.

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:
   1. Section 012300 "Alternates" for products selected under an alternate.
   2. Section 012500 "Substitution Procedures" for requests for substitutions.
   3. Section 014200 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 3 days of receipt of request, or 5 days of receipt of additional information or documentation, whichever is later.

    a. Form of Approval: As specified in Section 013300 "Submittal Procedures."
    b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:
   a. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:
   a. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor and professional engineer.

B. Cutting and Patching Plan: Submit plan describing procedures at least 7 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.

4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

    a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

D. Certified Surveys: Submit 2 copies signed by land surveyor as electronic PDF files, on 2 separate flash drives.

A. Final Property Survey: Submit 2 copies as electronic PDF files, on 2 separate flash drives showing the work performed and record survey data.

1.5 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect**.**

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of 2 permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

E. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces 90 inches in unoccupied spaces.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:
1. Section 017300 "Execution" for progress cleaning of Project site.
2. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
3. Section 017900 "Demonstration and Training" for requirements for instructing Owner's personnel.

1.3 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.

5. Submit test/adjust/balance records. Retain first subparagraph below when sustainable design submittals are required for Project.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in heat and other utilities.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
3. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Contractor.
e. Page number.

4. Submit list of incomplete items in the following format:
a. PDF electronic file. Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 10 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access to building.
    f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    h. Sweep concrete floors broom clean in unoccupied spaces.
    i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
    j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
    k. Remove labels that are not permanent.
    l. Wipe surfaces of mechanical and electrical equipment, similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
    o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

        1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.

    p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
    q. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

D. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly

adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:
1. Section 017300 "Execution" for final property survey.
2. Section 017700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up record prints.
2. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:
1) Submit PDF electronic files of scanned record prints and one of file prints.
2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:
1) Submit two PDF electronic files of scanned record prints on flash drives.
2) Include each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit two annotated PDF electronic files of Project's Specifications, including addenda and contract modifications on two separate flash drives. Provide one hard copy, with annotations in color. PDF files shall have tabs for each spec section.

C. Record Product Data: Submit two annotated PDF electronic files and directories of each submittal on two separate flash drives. Provide one hard copy. PDF files shall have tabs for each product section.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit two annotated PDF electronic files and directories of each submittal on two separate flash drives, and one hard copy. PDF files shall have tabs for each submittal section.

E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued on site, and accessible to sub-contractors.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an acceptable drawing technique.
c. Record data as soon as possible after obtaining it.
d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of foundations below first floor.
d. Soccer field elevations | topography confirming slopes.
e. Locations and depths of underground utilities.
f. Revisions to routing of piping and conduits.
g. Revisions to electrical circuitry.
h. Actual equipment locations.
i. Duct size and routing.
j. Locations of concealed internal utilities.

k. Changes made by Change Order or Construction Work Change Directive.
l. Changes made following Architect's written orders.
m. Details not on the original Contract Drawings.
n. Field records for variable and concealed conditions.
o. Record information on the Work that is shown only schematically.
p. Control points for Phase Two.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect and Construction Manager. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file with comment function enabled.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect, through Construction Manager for resolution.
4. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.

a. See Section 013300 "Submittal Procedures" for requirements related to use of Architect's digital data files.
b. Architect will provide data file layer information. Record markups in separate layers.

C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult Architect and Construction Manager for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

D. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.

3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect and Construction Manager.
    e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

2.3 RECORD PRODUCT DATA

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as annotated PDF electronic file.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

1.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's and Construction Manager's reference during normal working hours.

END OF SECTION 017839

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes demolition of items specified herein and shown on the drawings.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 31 1100, Clearing and Grubbing

1.3 DEFINITIONS

A. Demolish: Completely remove and legally dispose off of the City of El Paso (CoEP) R.O.W. for on-site demolition.

B. Pavement Removal: Asphalt and portland cement concrete pavement, curbs, and sidewalks excavated full depth.

C. Cold Plane Pavement Removal:
   1. Asphalt concrete removed to full depth from existing pavement surface by cold planing.
   2. Portland cement concrete removed to full depth from existing pavement surface by cold planing or grinding.

1.4 WORK ITEMS

A. The work includes but is not limited to, demolition of the following:
   1. Slabs:
      a. Concrete steps and porches.
   2. Footings:
      a. Concrete or block footings and foundations.
      b. Retaining walls.
   3. Pavement:
      a. Asphaltic or portland cement concrete surfacing and any associated base material.
      b. Curbing.
      c. Sidewalks, driveways, parking areas, etc.
      d. Aggregate surfacing.
   4. Debris shall include but is not limited to:
      a. Concrete, asphalt, stone, brick, tile, etc.
      b. Building wood, glass, tar paper, metal, cloth, paper, etc.
      c. Abandoned vehicles, and automotive parts, tires, boxes, crates, barrels, fencing, etc.
      d. Be responsible for removing material dumped within the work areas during the time of the contract.
   5. Materials or structures called out by word description on the drawings or in the specifications shall be included as work items.
   6. City of El Paso signs: “No Trespassing” and “No Dumping” signs and other signs posted by the City of El Paso on work items to be removed shall be removed and turned over to the City of El Paso Street and Maintenance Department.

B. Protection:
   1. Perform demolition in such manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas, utilities and structures or interruption of use of such utilities; and to provide free passage to and from such adjacent areas of structures.
   2. Provide safeguards, including warning signs, barricades, temporary fences, warning lights, and other similar items that are required for protection of all personnel during demolition and removal operations.
   3. Maintain fences, barricades, lights, and other similar items around exposed excavations until such excavations have been completely filled.
   4. Prevent spread of flying particles and dust. Sprinkle rubbish and debris with water to keep dust to a minimum. Do not use water if it results in hazardous or objectionable condition such as, but not limited to; ice, flooding, or pollution. Vacuum and dust the work area daily.
   5. No wall or part of wall shall be permitted to fall outwardly from structures.
   6. Wherever a cutting torch or other equipment that might cause a fire is used, provide and maintain fire extinguishers nearby ready for immediate use. Instruct all possible users in use of fire extinguishers.
   7. Keep hydrants clear and accessible at all times. Prohibit debris from accumulating within a radius of 15 feet of fire hydrants.
   8. The contractor shall take necessary precautions to avoid damages to existing items to remain in place, to be reused, or to remain the property of the CoEP for work within the CoEP R.O.W.; any damaged items shall be repaired or replaced as approved by the CoEP for work within the CoEP R.O.W. at contractor's expense. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition or removal works. Repairs, reinforcement, or structural replacement must have the the CoEP's approval (work within CoEP R.O.W.).
   9. Contractor to abide by Policy and Standards Manual for the Care of Trees and Shrubs in the City of El Paso Section 15 Tree Protection.

PART 2 - **PRODUCTS**

Not Used.

PART 3 - **EXECUTION**

3.1 GENERAL

A. Demolish and remove all work items within area in the manner specified.

B. Stones and/or concrete rubble 12 inches or larger shall be disposed of off CoEP (for work within CoEP R.O.W.).

3.2 ENVIRONMENTAL CONSIDERATIONS

A. Nuisance Dust Control:

1. Demolition debris that contains dust or other material that could become airborne or create a nuisance shall either be removed from the work site daily, or shall be covered and secured with tarps or sheeting until removed from the site.
2. Apply a water mist, or other means approved by the City of El Paso, on debris to control or mitigate airborne dust or airborne nuisances, unless the material will become friable (i.e., crumble easily) or will dissolve in water. Friable material and material that may dissolve in water shall be securely covered with tarps or sheeting.
3. Demolition debris that becomes friable when wetted or will dissolve in water shall be stored only on impervious surfaces, field-installed ground sheeting, or other barriers.

B. Demolition Debris:
1. The Contractor shall manage demolition material as hazardous waste or solid waste in accordance with these specifications.
2. Unless specifically identified in the contract documents or approved by CoEP, no demolition debris shall be placed as fill material or otherwise disposed of off the CoEP.
3. In addition to the conditions described in this Section, the Contractor shall use applicable special demolition techniques, material handling, and disposal requirements for demolition debris.
4. The Contractor shall minimize the volume of accumulated demolition debris.
5. Metal and other material salvage or recycling operations shall be performed in a defined area within the work site.
6. Salvage by cutting torch or other mechanical cutting means of any vessel, tank, pipe, or other equipment that contains any liquid (except potable water) shall not be performed on City of El Paso R.O.W. unless prior written approval has been obtained from the CoEP.
7. Temporary storage and piling of demolition debris outside of the property line is not permitted.

3.3 DEMOLITION AND/OR REMOVAL WITHIN THE WORK AREA

A. The work area is defined within the R.O.W. line or as shown on plans.

B. Debris resulting from demolition shall be immediately removed from CoEP property.

C. Cap and seal sewer, drainage, and water lines at a minimum of 2 feet below adjacent ground level.

D. Brush and trees may be removed to facilitate removal of buildings.

E. Cap wells with a tamper-proof cap.

3.4 MISCELLANEOUS DEMOLITION AND/OR REMOVAL WITHIN THE WORK AREA

A. The work area is defined as the area within the R.O.W. line.

B. Work items include, footings, pavement, debris, and materials or structures other than buildings called out by the work description on the drawings.

C. Underground Structures: Comply with Article 3.3 above.

D. Remove trees as necessary for the completion of the specified work. See demolition drawings. If a tree must be removed, its stump must also be removed. No extra payment will be made for tree removal.

E. Blasting will not be permitted.

3.5 REMOVAL AND PLUGGING OF ABANDONED PIPES, CULVERTS, AND MISCELLANEOUS STRUCTURES

A. Abandoned pipes or portions of other exposed items shall be removed a minimum of 2 feet back of face of slope or 2 feet below subgrade.

B. Cap or plug the ends of partially removed pipes, culverts, and miscellaneous structures with concrete to produce a watertight seal.

C. Contact the Engineer and CoEP for direction if unidentified utilities are uncovered during the work.

D. Dispose of removed pipes, culverts, and miscellaneous structures off of the CoEP property at no added cost to the CoEP.

3.6 PAVEMENT REMOVAL

A. Do not begin pavement removal until approved by the City of El Paso.

B. Remove pavement to the limits shown on the drawings. Replace pavement removed beyond the limits as directed and at no added cost to the CoEP.

C. Cut pavement by methods approved by the CoEP, except at those locations shown on the drawings which specifically designate saw cutting.

D. Dispose of pavement removal off the CoEP R.O.W.

3.7 COLD PLANE PAVEMENT REMOVAL

A. Using a cold planer or grinder, excavate to the limits and depths shown on the drawings.

B. Leave the bottom of the removal area in a roughened condition.

C. Sweep or vacuum the removal area to remove loose asphalt, rock, dirt, and other foreign materials.

D. Dispose of swept and/or vacuumed material off of the CoEP R.O.W.

E. Dispose of cold planer cuttings and/or grindings off of the CoEP R.O.W.

3.8 SITE RESTORATION

A. Clear and scarify the surface of the work area to achieve a smooth and bare earth surface free of heavy growth of vegetation and cut natural growth and/or foreign material. Such surface may be obtained by dragging blade or bucket from demolition equipment over the work area.

B. Grade fill material and borrow sites in a manner to avoid causing interference with existing drainage patterns and to avoid water ponding.

C. Fill shall be made with existing earth from the site and compacted to the extent that it will support rubber-tired construction equipment.

D. See Section 311100, Clearing and Grubbing.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from the work site and dispose of them off the CoEP R.O.W. in accordance with local, state, and federal laws and regulations.
   1. Do not allow demolished materials to accumulate within the city's R.O.W.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Do not burn demolished materials.

3.10 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by the demolition operations. Return adjacent areas to condition existing before demolition operations began. Leave site in clean condition satisfactory to the CoEP.

END OF SECTION

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. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Concrete Pavement
2. Foundation walls
3. Landscape walls
4. Benches
5. Footings

B. Related Sections include the following:
1. Division 32 Section "Concrete Paving" for concrete pavement and walks.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. In-place 4'x4' mockup of benches, sidewalk, street pavement concrete for approval before full install.

C. Design Mixtures: Each concrete mix design to be used on the project shall be reviewed and approved by the Engineer and Architect prior to concrete being delivered to site. Submit proposed mix designs for each class of concrete on the Mix Design submittal form included at the end of this specification. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. For each concrete mixture, the following information shall be included: where the mix is to be used, all materials and admixtures including their source and proportions in the mix; Water content, water-to-cement ratio, slump, and aggregate grading; whether the mixture is appropriate for pumping; and total chloride content.

2. Provide shrinkage test results for mixes with shrinkage criteria showing that mix meets performance criteria. The mix design number must match with the mix design number shown on the test data.
3. Indicate compressive strength and method used to determine strength. The compressive strength of the concrete shall be proportioned per ACI. Include all calculations and tests required by ACI 318 Section 5.3 and 5.4. Laboratory test data must be submitted along calculations that show with each mix design meets the strength requirement. Mix design number must match the mix design number shown on the test data. Include all test results or past history back up data specific as part of the submittal. Test results within the past two years shall be used to indicate performance in accordance with past history.
4. Indicate amounts of mixing water to be withheld for later addition at Project site.
5. Each mix shall be stamped and signed by a Professional Engineer licensed in the State of Texas.

D. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Direct copies of the contract documents are not acceptable as a submission from the Contractor.

E. Show on one or more plans and/or elevations, locations of construction, contraction and expansion of joints, slab edges, curbs, equipment pads, depressions, sleeves and openings.

F. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.

G. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing reshoring.

H. Qualification Data: For installer, manufacturer and testing agency. Submit qualification of Concrete Foreman, showing 5 years experience with this type of concrete installation.

I. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Lightweight aggregate (per ASTM C330).
2. Normal weight aggregate (per ASTM C33). Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity. Include evaluation of reactivity and the following:

    a. Abrasion Resistance: ASTM C131; Los Angeles Machine.
    b. Cleanness Value: Test Method NO. C 227; coarse aggregate only.
    c. Fineness: ASTM C117.
    d. Organic Impurities: ASTM C40.
    e. Potential Reactivity: ASTM C289.
    f. Sand Equivalent: Test Method No. C 217.
    g. Sieve Analysis: ASTM C136.
    h. Soundness: ASTM C88.

i. Absorption for lightweight aggregate: Maximum 15%.

J. Product Test Reports and Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials, per ASTM C150.
2. Admixtures. Where more than one admixture is used, include certification that admixtures are compatible. Per ASTM C494 for each type used; include chloride ion content.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Welding Electrodes
6. Fiber reinforcement.
7. Waterstops.
8. Curing compounds.
9. Non-shrink grout, per ASTM C1107 Grade B.
10. Bonding agents.
11. Adhesives.
12. Vapor retarders.
13. Semirigid joint filler.
14. Joint-filler strips.
15. Post-installed concrete anchors.
16. Repair materials.

K. Submit a complete description of the system proposed for meeting the specified pavement flatwork tolerances. Submit survey data from a minimum of two previous pavement slab installations to demonstrate capability to satisfy specified tolerances.

L. Field quality-control test and inspection reports.

M. Submit an affidavit identifying cementitious material used, including manufacturer's lot number, date of shipment by manufacturer, date of receipt by the concrete supplier, place of storage and date of use. If such information is not available, a sample of cementitious material used on the Project shall be taken for each day's pour and shall be tested as directed by the Architect/Engineer.

N. Transit-Mix Delivery Slips

1. Keep record at the Site showing time and place of each pour of concrete, together with transit mix delivery slip certifying contents of the pour per ASTM C94. Include the time water was added to dry mix.
2. Make the record available for inspection at the Site and to the Architect/Engineer for his review upon request.
3. Upon completion of this portion of the Work, deliver the record and the delivery slips to the Architect/Engineer.

O. Minutes of pre-installation conference.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to test concrete mixtures.

E. Prefabrication and Preinstallation Conference: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preapartaions for the particular activity under consideration, including requirements for the following:
   a. Contract Documents
   b. Options
   c. Related RFI’s
   d. Related Change Orders
   e. Purchases
   f. Deliveries
   g. Submittals
   h. Review of mockups.
   i. Possible conflicts.
   j. Compatibility problems.
   k. Time Schedules.
   l. Weather limitations.
   m. Manufacturer’s written recommendations.

n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspection requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Required performance results.
z. Protection of adjacent work.
aa. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

6. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

   a. Contractor's superintendent.
   b. Independent testing agency responsible for concrete design mixtures.
   c. Ready-mix concrete manufacturer.
   d. Concrete subcontractor.

7. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement:

1. Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement, if applicable.
2. Deliver reinforcing to Site properly bundled and tagged. Use tags that indicate bar size, lengths and marks corresponding to markings shown on shop drawings. Segregate so as to maintain identification after bundles are broken.
3. Store reinforcement in a manner that will prevent excessive rusting or fouling with/ grease, oil, dirt, and other bond weakening materials.
4. Do not use damaged, reworked, or deteriorated material.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

C. Formwork: Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use.

D. Concrete Materials:

1. Protect cement from moisture and rotate stock to ensure fresh materials.
2. Protect aggregates as necessary to maintain saturated condition when batched.
3. Storage methods should comply with ACI 301 4.1.4.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

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. Structural 1, B-B or better; mill oiled and edge sealed.
d. B-B (Concrete Form), Class 1 or better; and edge sealed. Mill oil not allowed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. For exposed surfaces not otherwise specified use Special exterior Type Douglas Fir, Grade AB plywood, conforming to NBS PS-1, minimum 3/4 in. thick and constructed so that finished concrete will be straight, smooth, dense, free from honeycombs, bulges, or depressions. Keep joints between plywood sections to a minimum and make tight and strongly backed so that adjoining edges remain flush and true.

D. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

E. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation. For areas exposed to view, use new forms or specially selected forms.

F. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

G. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

H. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

I. Form Gaskets (for sealing form panel joints) Gaskets shall be closed cell, completely skinned, foam rubber or neoprene, with pressure sensitive paperbacked adhesive on surfaces to be bonded to forms. Gaskets shall be of sufficient thickness, widths and compressibility for specific use.

J. Form Sealer (Wood Forms): All form sealers shall be of a type which will not harmfully affect the appearance and/or utility of the concrete surface or the application of sealers, paint, vinyl fabric or any other finishes. In addition, form sealer shall prevent the development of bond or adhesion to concrete.

K. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

L. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1-1/2 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface and permit neat and solid patching at every hole.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

M. Expansion Joint Filler:

1. Fiber Type: Preformed asphalt impregnated fiber, ASTM D1751, 1/2 inch thick unless otherwise noted.
2. Cork Type: Preformed cork expansion joint, ASTM D1752. Type II, 1/2 inch thick unless otherwise noted.

N. Expansion Joint Sealant: ASTM C920, Type M, Class 2 5; two part polyurethane traffic grade sealant, gray color.

1. Horizontal Joints: Pourable, Grade P, Use T.
2. Vertical Joints: Nonsag, Grade NS, Use NT.

O. Foundation Formwork – Leave in Place: Ribbed mesh fabricated from galvanized sheet steel; stay-form, or equal.

2.3 STEEL REINFORCEMENT

A. Recycled Content of Steel Products: Concrete reinforcement shall contain a minimum of 25% combined post-industrial and post-consumer recycled content where the percentage of recycled content is based on the weight of the component materials.

B. Contractor to provide reinforcement submittal for approval by Engineer (Architect).

C. Reinforcing Bars (see plans for size and location):

1. ASTM A615, Grade 60, deformed, unless noted otherwise.
2. ASTM A706, deformed, where bars are welded, where #6 or larger bars are mechanically coupled, or where designated on drawings.

D. Galvanized Reinforcing Bars: ASTM A615 Grade 60 ASTM A706, deformed bars, ASTM A767, Class I zinc coated after fabrication and bending.

E. Epoxy-Coated Reinforcing Bars: ASTM A615, Grade 60 ASTM A706, deformed bars, ASTM A775 or ASTM A934, epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length.

F. Headed Bar Reinforcement: ASTM A970.

G. Steel Bar Mats: ASTM A 184/A 184M, fabricated from ASTM A615, Grade 60 deformed bars, assembled with clips.

H. Tie Wire: American Wire 16 gauge or heavier black annealed wire.

I. Spiral Reinforcement: Use Plain-Steel Wire if specified as wire or ASTM A615 Grade 60 if specified by bar size.

J. Plain-Steel Wire: ASTM A82, as drawn.

K. Deformed-Steel Wire: ASTM A496.

L. Plain-Steel Welded Wire Reinforcement: ASTM A185, plain, fabricated from as-drawn steel wire into flat sheets.

M. Deformed-Steel Welded Wire Reinforcement: ASTM A497, flat sheet.

N. Galvanized-Steel Welded Wire Reinforcement: ASTM A185, plain, fabricated from galvanized steel wire into flat sheets.

2.4 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615, Grade 60, plain-steel bars, cut bars true to length with ends square and free of burrs.

B. Epoxy-Coated Joint Dowel Bars: ASTM A615, Grade 60, plain-steel bars, ASTM A775 epoxy coated.

C. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A775.

D. Zinc Repair Material: ASTM A780, zinc-based solder, paint containing zinc dust, or sprayed zinc.

E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view or where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports, unless noted otherwise.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

F. Mechanical Bar Couplers: Provide coupler capable of achieving Type 1- splice, unless otherwise noted on Drawings.

1. Type 1: ICC-ES approved; capable of developing 125% of specified minimum yield strength of bar in tension or compression.
2. Type 2: ICC-ES approved; capable of developing the lesser of 95% of the ultimate tensile strength or 160% of the specified minimum yield strength of the bar in tension or compression.

G. Welding Electrodes: As required in AWS D1.4. As a minimum, use E90XX electrodes.

H. Deformed Bar Anchors: Nelson, flux filled deformed bar anchors, type D2L, as manufactured by Nelson Stud Welding Division of TRW or approved equal.

2.5 REINFORCEMENT FABRICATION

A. Fabricate reinforcing in accordance with ACI 301, 315 or CRSI "Manual of Standard Practice."

B. Bending:

1. Do not bend or kink reinforcing except as shown on the Drawings.
2. Minimum bend diameters and hook extensions as shown on the drawings or per ACI.
3. In case of fabrication errors do not rebend or straighten reinforcement in a manner that will injure or weaken the material.
4. Reinforcing bars are to be bent cold, do not preheat, unless approved by Architect.
5. Do not rebend reinforcement that has previously been bent within 6 inches of new bend except as allowed in section 3.3.2.8 of ACI 301.

C. Spirals: Provide a minimum of 1-1/2 finishing turns top and bottom.

D. Unacceptable Materials: Reinforcement with any of the following defects shall not be permitted in the Work and will be replaced without cost:

1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
2. Bend or kinks not shown on the Drawings or final shop drawings.
3. Bars with reduced cross-section due to rusting or other cause.
4. Bars with dirt, mud, grease or form release agent.

2.6 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement:

a. ASTM C150, Type I or II, unless noted otherwise.

2. Supplement Portland Cement with the following Supplementary Cementitious Materials (SCM):

a. Fly Ash: ASTM C618, Class F.
b. Ground Granulated Blast-Furnace Slag: ASTM C989, Grade 100 or 120.
c. The SCM producer shall have a minimum of 5 years experience in the production of acceptable SCM and shall practice an effective quality control program to guard against contamination of the SCM.

3. Cementitious material used shall have at least 2 years of use with proposed aggregates without detrimental reaction.
4. Alkali content shall not exceed 0.6% when tested in accordance with ASTM C114.
5. The temperature of cement delivered to the plant shall not exceed 150 degrees F.

B. Silica Fume: ASTM C1240, amorphous silica.

C. Normal-Weight Aggregates: ASTM C33, Class 3S, 3M, or 1N coarse aggregate or better, graded. Provide aggregates from a single source.

1. Coarse Aggregate:

a. Maximum Size: 3/4 inch nominal, unless noted otherwise.
b. Minimum Specific Gravity: 2.65.
c. Aggregate shall contain no thin or elongated pieces. Any piece having a major dimension more than 2-1/2 times the average thickness shall be considered thin or elongated.
d. If shrinkage controlled concrete, Coarse Aggregate shall be crushed limestone, granite, or accepted equal.
e. Aggregates shall consist mainly of calcium or magnesium carbonate, e.g., limestone or dolomite, and containing 40 percent or less quartz, chert or flint.
f. The maximum size used in a particular location shall be consistent with the form and dimensions of the section being placed, with the location and spacing of the reinforcing steel and with the method of vibration. The aggregate sizes shall be such as will produce dense, uniform concrete, free of rock pockets, honeycombs, or other irregularities.
g. Combined aggregate gradation for slabs and other designated concrete shall be 8% to 18% for large top size aggregates (1-1/2-inch) or 8% - 22% for smaller top size aggregates (1-inch or 3/4-inch) retained on each sieve below the top size and above the No. 100.

2. Fine Aggregate: Uniformly graded, clean sand, free from excessive fines, organic materials or other deleterious materials. Free of materials with deleterious reactivity to alkali in cement.

D. Lightweight Aggregate: ASTM C330, 3/4-inch nominal maximum aggregate size.

1. Lightweight cellular and granular inorganic materials, free from oil, organic matter, or other deleterious substances.
2. Uniformly graded from 1/4-inch to maximum size. The combined grading shall be such that the percentage of weight of the combined aggregates shall fall within the limits established by ASTM C330.
3. Dry weight of lightweight concrete shall not be greater than 115 pcf.
4. Lightweight Aggregates Rotary Kiln Produced: Expanded shale slate, clay or slag aggregate, the maximum size used in a particular location shall be consistent with the form and dimensions of the section being placed, with the location and spacing of the reinforcing steel and with the method of vibration. The aggregate sizes shall be such as will produce dense, uniform concrete, free of honeycombs, or other irregularities.

E. Water: ASTM C94, clean, free from deleterious matter.

2.7 ADMIXTURES

A. General: Only if accepted by the Owner's Representative in accordance with ACI 318/318R 3.6 if they comply with requirements of ASTM C494. Where more than one is used, admixtures shall be compatible. Use of admixtures shall be consistent throughout Work.

1. Where specified herein do not use other admixtures without the written acceptance of the Architect.
2. Prohibited Admixtures: Admixtures containing more than 0.05 percent chloride ions, fluorides, sulphites, thiocyanates, and/or nitrates are not permitted. Do not use admixtures that will negatively impact the visual finish of concrete exposed to view.

B. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other admixtures.

C. Delete following if air-entrainment is not allowed.

1. Products:

a. Grace Construction Materials; Darex AEA or Daravair
b. Master Builders, Inc.; MB-VR or Micro Air
c. Euclid Chemical Company (The); Air Mix

D. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing (Plasticizing) Admixture: ASTM C494, Type A. Products:

a. Grace Construction Products, W. R. Grace & Co.; "WRDA with Hycol"
b. Master Builders, Inc.; "Pozzolith 220N"
c. Euclid Chemical Company (The); “WR-75, WR-91 or Eucon MR”

2. Retarding Admixture: ASTM C494, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494, Type D. Products:

a. Sika Corporation; “Sikament 30,”
b. Euclid Chemical Company (The); “Eucon Retarder-75”

4. High-Range, Water-Reducing (Superplasticizers) Admixture: ASTM C494, Type F. Products:

a. Grace Construction Products, W. R. Grace & Co.; "WRDA 19 or Daracem 100"
b. Sika Corporation; "Sikament 300"
c. BASF Construction Products; “Rheobuild 1000”
d. Euclid Chemical Company (The); “Eucon 37, 1037 or Plastol 5000”

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017, Type II.
7. Non-Chloride, Non-Corrosive Accelerating Admixture: ASTM C494, Type C or E. Manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least a year's duration) using an acceptable accelerated corrosion test method. Products:

    a. Euclid Chemical Company (The); "Accelguard 80, 90, or NCA"

2.8 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C171, polyethylene film, fiber reinforced asphaltic vapor barrier building paper, or white burlap-polyethylene sheet.

1. Provide in a thickness of 42 mils; standard weight of 53 lbs./1000 ft2; tensile strength (machine direction) of 36 lbs./in.; and puncture resistance of 70 lbs.

D. Water: Potable.

E. Curing compounds shall have a VOC limit of 200 g/l.

F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating. Sodium silicate compounds are prohibited.

G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering. Sodium silicate compounds are prohibited.

H. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, 18 to 25 percent solids, nondissipating**,** certified by curing compound manufacturer to not interfere with bonding of floor covering. Sodium silicate compounds are prohibited.

I. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A. Sodium silicate compounds are prohibited.

J. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A. Sodium silicate compounds are prohibited.

2.9 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork or ASTM D1752, gray sponge rubber.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 or aromatic polyurea with a Type A shore durometer hardness range of 90 to 95 per ASTM D2240.

C. Bonding Agent: ASTM C1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types I and II, non-load bearing, IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

E. Post-Installed Concrete Anchors:

1. Expansion Anchors: Kwik Bolt III or TZ by Hilti Inc, Trubolt Wedge by ITW Ramset/Red Head, Power-Stud by Powers-Rawl, or approved equal.
2. Epoxy Dowels / Epoxy Anchors: HIT HY 150 by Hilti, Inc., CIA-Gel 7000 by Covert Operations, SET by Simpson Strong Tie, Power-Fast by Powers-Rawl, or approved equal.
3. Grouted Dowels / Grouted Anchors: High strength non-shrink grout to anchor reinforcing steel or threaded rods in concrete shall be Masterflow 928 grout as manufactured by Master Builders, Sika Grout 212 as manufactured by Sika Corporation, or approved equal.

F. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 22 gauge, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.10 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C109.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C109.

5. Product shall exhibit the following properties: Chaplin Abrasion Test – 0.0079-inches maximum at 28 days.

2.11 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
   1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Supplementary Cementitious Materials (SCM): Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent, or as noted otherwise within this specification, without exceeding the following limits:

   1. Fly Ash: 25.
   2. Ground granulated blast-furnace slag: 50 percent.
   3. Combined Fly Ash and Ground Granulated Blast-Furnace Slag: 50 percent, where neither component exceeds 25 percent.
   4. Silica Fume: 10 percent.
   5. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to:

   1. 1.00 percent by weight of cement

D. Admixtures: Use admixtures according to manufacturer's written instructions.

   1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
   2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
   3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.45.
   4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.12 CONCRETE MIXTURES

A. Definition of Mix Properties:

1. Concrete strength (f'c) is the minimum compressive strength at 28 days, tested in accordance with ASTM C39.
2. Concrete strength (f'ci) is the minimum compressive strength at time of initial stressing for post-tensioned concrete.
3. Aggregate size is the largest of the coarse aggregate.
4. Slump shall be measured at the point of delivery in accordance with ASTM C143 prior to the addition of superplasticizer (if used). Slump tolerance shall meet the requirements of ACI 117. Slump can be increased with use of a superplasticizer to improve workability of mix. After addition of superplasticizer, slump shall not exceed 8" at point of delivery.
5. Air content is by volume and may be plus or minus 1.5 percent at point of delivery.
6. Water/cement ratio is specified by weight.
7. Drying shrinkage limit is percentage change in length after 21 days of drying when tested as per ASTM C157 with 4 inches x 4 inches x 11 inches specimen moist cured 7 days prior to drying.

B. Foundations, concrete elements (drilled shafts, grade beams), retaining walls: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength (f'c): 4000 psi.
2. Maximum Water-Cementitious Materials Ratio: 0.50.
3. Maximum Aggregate Size: 3/4-inch.
4. Slump Limit:

    a. Drilled shafts: 8-10 inches, plus or minus 1 inch.
    b. Elsewhere: 5 inches, plus or minus 1 inch.

5. Air Content: not applicable at non-exposed conditions.
6. Shrinkage Limit: .045 percent.

C. Landscape Benches: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength (f'c): 3000 psi.
2. Slump Limit: 4 inches
3. Maximum air content: <3%.

D. Fill Below Foundations (Lean Concrete): Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength (f'c): 2500psi.

2.13 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.14 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. The batching plant shall be equipped with an electric metering device capable of determining moisture content of sand.
2. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.
3. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

C. Lightweight Concrete: Mix lightweight concrete in accordance with the directions of the approved lightweight aggregate manufacturer.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads and such that formwork can withstand excessive deflection when filled with wet concrete.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, camber and position indicated, within tolerance limits of ACI 117

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement. Do not allow excess form coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install concrete accessories in accordance with manufacturer’s recommendations: straight, level, and plumb.

B. Provide pipe sleeves when pipes pass through concrete. Fill voids in sleeves, inserts and anchor slots with readily removable material to prevent entry of concrete into voids.

C. Coring of concrete after placement is not permitted without prior approval by the Engineer of Record.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its specified design compressive strength, f'c.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORES AND RESHORES

A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete. Where there is a potential of rust staining adjacent finish surfaces, take necessary steps to prevent staining.

C. Accurately position, support, and secure reinforcement against displacement, particularly under the weight of workmen and the placement of concrete. Use bar supports in sufficient number, size and location to prevent vertical displacement of the reinforcement and gouging of the formwork. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Do not exceed the tolerances specified in ACI 117.
2. Reinforcement shall be held in place by means of supports adequate to prevent displacement and to maintain reinforcement at proper distance from form face. The use of wood supports and spacers inside the forms is not permitted.
3. Dowels shall be tied securely in place before concrete is deposited. In the event there are no bars in position to which dowel may be tied, No 3 bars (minimum) shall be added to provide proper support and anchorage.
4. Do not place reinforcement in floor slabs or beams until concrete has been placed in columns and walls, except where bars extend down into columns or walls.
5. Use templates for placement of column dowels.
6. Where Drawings do not show the spacing of the reinforcing, the minimum clear spacing shall conform to ACI 318 Section 7.6.
7. Reinforcing partially embedded in concrete shall not be field bent except as shown on the Drawings or accepted by the Architect.
8. Wherever conduits, piping, inserts, sleeves, etc., interfere with placing of reinforcing steel, obtain acceptance of method of procedure before any concrete is placed. Bending of bars around openings or sleeves not permitted.
9. Weld reinforcing bars according to AWS D1.4, only where indicated on drawings. Welding is not permitted on bars where the carbon equivalent is unknown. Do not weld within 2 bar diameters of where bars have been bent cold. Welding material, wire cuttings and tramp metal shall be thoroughly cleaned from forms for exposed concrete before any concrete is placed.

D. Splicing: Make splices only at those locations shown on the Drawings or as accepted by the Architect. Splice locations not shown on the Drawings shall be approved in shop drawings before fabrication. Stagger splices in adjacent bars wherever possible.

E. Reinforcing shall be rigidly and securely tied with steel tie wire. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. If allowed, field bending or straightening shall be in accordance with section 3.3.2.8 of ACI 301.

G. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing plus 2 inches or 6 inches, whichever is greater. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

H. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D3963. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

I. Zinc-Coated Reinforcement: Repair cut and damaged zinc coatings with zinc repair material according to ASTM A780. Use galvanized steel wire ties to fasten zinc-coated steel reinforcement.

J. Install deformed bar anchors in accordance with the manufacturer's recommendations.

K. Install mechanical splices and reinforcing couplers in accordance with manufacturers' recommendations.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints at indicated locations. Embed keys at least 1-1/2 inches into concrete.
3. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
4. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
5. Roughen surface at all construction joints where key is not used and under baseplates. Roughen concrete surface while concrete is still green where possible. Do not leave laitance, loosened particles of aggregate or damaged concrete at surface. Forms and reinforcing shall be cleaned of drippings. Dampen contact surfaces of construction joints, leaving them free of standing water, before placing fresh concrete.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.7 WATERSTOPS

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions. Comply with ACI 301.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable. Comply with ACI 301.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. The addition of water to the mix after leaving the plant is not permitted unless approved by Architect.

B. Method: Convey concrete as rapidly and directly as practicable to preserve quality and to prevent segregation.

1. Do not deposit concrete that has initially set. Retempering of concrete, which has partially set, is not permitted.
2. Maximum time for discharge of concrete shall be per ASTM C94.

C. Sequence: Pour all walls and columns full height to designated construction joints. Pour all beams, and horizontal structures to designated construction joints. Construction joints to be made in walls only where indicated on the Drawings.

D. Placement: Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete. Deposit concrete to avoid segregation.

1. When placing is once started, carry it on as a continuous operation until placement of the panel or section is complete. Construction joints to be made only where indicated on the Drawings or on approved shop drawings. Prevent the formation of cold joints at other locations.
2. Deposit concrete in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. Deposit concrete in a manner to avoid inclined construction joints.
3. Particular care shall be used when starting a concrete pour to maintain the continuity of appearance. Use all means necessary to avoid blemishes, imperfections, or changes in the finish.
4. Maintain reinforcement in position on chairs during concrete placement.

E. Consolidation: Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301. Use and type of vibrator shall conform to ACI 309, Guide for Consolidation of Concrete.
2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. Place vibrating element directly in concrete and not attached to either inside or outside of forms or to reinforcing steel.
3. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate. Do not over-vibrate concrete.

F. Initial Finishing:

1. Screed slab surfaces with a straightedge and strike off to correct elevations.
2. Where floor drains or floor slopes are indicated, slope slabs uniformly to provide even fall for drainage.
3. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

G. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When concrete is expected to be placed at air temperatures of less than 40 deg F, contractor shall review with Architect all special procedures that will be used including mix design modifications and methods of protection. This review shall occur prior to the expected extreme temperatures.
2. Provide sufficient protection material and equipment on the Project site in advance of the time when the mean daily temperatures are expected to drop below 40 degrees F.
3. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301. In addition, take precautions including, but not limited to:

    a. Use non-chloride, non-corrosive accelerating admixture in accordance with previously accepted submittals.
    b. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
    c. Do not use calcium chloride, salt, or other materials containing antifreeze agents unless otherwise specified and approved in mixture designs.

H. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. When concrete is expected to be placed at air temperatures of greater than 80 deg F, contractor shall review with Architect all special procedures that will be used including mix design modifications and methods of protection. This review shall occur prior to the expected extreme temperatures.
2. Provide sufficient protection material and equipment on the Project site in advance of the time when the mean daily temperatures are expected to rise above 80 degrees F.
3. When air temperature exceeds 80 deg F, take special precautions to prevent slump loss, rapid setting, and plastic shrinkage; including but not limited to:

    a. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
    b. Use set retarding admixture in accordance with previously accepted submittals.

c. Convey, deposit, finish and commence curing of concrete as rapidly as practicable.

4. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.9 FINISHING FORMED SURFACES

A. Contractor to reference Landscape Architect Sheets L.401, L.402, and L.403 for finish at concrete.

B. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections exceeding 1/4 inch.

C. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

D. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

E. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.10 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by 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 at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

E. Post-Installed Concrete Anchors

1. Install in accordance with the manufacturer’s recommendations and ICC-ES reports.
2. Use washers on all bolts.
3. Use care to avoid cutting or damaging reinforcing bars.
4. When exposed to view in the final structure, bolts shall be of a length that will extend entirely through but not more than 1/4-inch beyond the nuts unless otherwise shown on the Drawings.

3.11 CONCRETE PROTECTING AND CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Where supplementary cementitious materials are used, extra precautions shall be taken to prevent premature drying.

C. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

E. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

F. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven (7) days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven (7) days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

   a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
5. Exterior Flatwork: Apply 1 coat of curing compound as soon as possible after finishing. Apply a second coat 24 hours after pouring, then cover as specified above.

3.12 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

A. Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval. Repair and replacement work will be done at Contractor's expense.

B. Defective Concrete is defined as concrete which is under strength, out of line, level or plumb, or shows objectionable cracks, honeycombing, rock pockets voids, spalling, exposed reinforcement, that has any sawdust, wood, or debris embedded in it, or is otherwise defective, and in the Engineer's/Architect's judgment these defects impair the proper strength or appearance of the work. Any concrete work not in accordance with the Specification and Drawings will be deemed to be defective.

C. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

D. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer/Architect.

E. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to

manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

F. Perform structural repairs of concrete, subject to Engineer’s/Architect's approval, using epoxy adhesive and patching mortar.

G. Repair materials and installation not specified above may be used, subject to Engineer’s/Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Post-installed concrete anchors, per ICC-ES recommendations.
5. Verification of use of required design mixture.
6. Concrete placement, including conveying and depositing.
7. Curing procedures and maintenance of curing temperature.
8. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231, pressure method, for normal-weight concrete; ASTM C173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Water Content: In accordance with AASHTO T318.
5. Concrete Temperature: ASTM C1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
6. Unit Weight: ASTM C567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
7. Compression Test Specimens: ASTM C31.

    a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
    b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

8. Compressive-Strength Tests: ASTM C39; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at days.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of

concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28 -day tests.

12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42 or by other methods as directed by Architect.

    a. If test results indicate that compressive strength requirements have not been met, the Contractor shall justify that the load carrying capacity of the structure has not been reduced. Carry out tests of cores drilled from the area in question as directed by the Architect in accordance with ASTM C43 and ACI 318 Section 5.6.5.
    b. If the compressive tests of the core specimens fail to show the compressive strength specified, the concrete shall be deemed defective and shall be replaced or adequately strengthened in a manner acceptable to the Architect. Perform load tests as outlined in ASTM C39, as directed by the Architect, on the questionable portion of the Work.

14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
15. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

D. Reinforcing Steel

1. Notify the Inspector and the Architect at least 48 hours before concrete is to be poured or reinforcing is covered up.
2. Before any concrete is poured on any particular portion of the building, the reinforcing steel and form dimensions will be inspected by the Inspector. Any errors or discrepancies shall be corrected before concrete is placed.
3. As a minimum, all testing and inspection as per the requirements of the 2012 International Building Code. Reinforcing steel to be assumed to have been designed for calculated stresses in excess of 70 percent of the basic allowable values.
4. In addition to other required inspections, the following are subject to Special Inspection as per IBC Chapter 1704.4:

    a. Placement of Reinforcing Steel
    b. Welding of Reinforcing Steel

5. A special inspector from the Testing Agency shall be present during all field bending of reinforcement.

6. Installation of deformed bar anchors to be tested in accordance with Section 7.1 of AWS D1.1.
7. Welding of Reinforcement: There shall be continuous inspection during all welding of reinforcement. All butt welds to be inspected using radiographic testing. At the Owners option recognized non-destructive tests such as resistance, Magnetic Particle Examination, and Liquid Penetrant Inspection may be used to inspect the welds.
8. Comply with ICC-ES approvals with respect to special inspection required during installation.
9. Testing and inspection of mechanical splices and reinforcing couplers to conform to manufacturer's recommendations and ICC-ES approval.

E. Survey and Adjustment: Continuously observe formwork operations, record such observations on a daily basis, and submit reports of the results. Instrument check forms before and during concrete placement to assure no movement has taken place. Make appropriate corrections to reposition displaced forms.

1. Measure floor and slab flatness and levelness according to ASTM E1155 within 48 hours of finishing.
2. Certify, by written report submitted on a weekly basis, for each level and story that the elevations, finish lines and building lines of the hardened concrete are within tolerances, as substantiated by transit survey; also that all embeds and inserts have been installed within tolerance.

END OF SECTION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.02 SECTION INCLUDES

A. Tree Grates.

1.03 DESIGN REQUIREMENTS

A. It is the intent of these drawings and specifications to result in complete accordance with all applicable codes and ordinances and the City of El Paso Downtown Tree Master Plan.

1.04 RELATED WORK

A. Division 3, Section 329400 – Planting

1.05 SUBMITTALS

A. Product Data: Manufacturer's current printed specifications and catalogue cuts of the following as listed in the Part 2, Products, or approved equals.
   1. Tree Grate.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Packaging and Labeling: Furnish materials in manufacturer's unopened, original packaging, bearing original labels showing quantity, description, and name of manufacturer. Verify that materials and components are adequately padded and securely bound in such a manner that no damage occurs to the product during delivery and unloading at the site.

B. Storage: Damaged materials will be rejected. Remove damaged materials from the job site immediately and pay cost of replacement. Determination of damage shall be the sole authority of the Owner.

1.07 SEQUENCING AND SCHEDULING

A. Acceptance: Do not install site furnishings prior to acceptance by Landscape Architect of area to receive such materials.

B. Coordination: Coordinate with the work of other sections to insure the following sequence of construction.

C. Set anchors or footings prior to installation of adjacent paving.

1.08 MANUFACTURER'S INFORMATION AND MATERIAL

A. Manufacturer's Information: Provide manufacturer's information in Maintenance and Operations manual for project. Turn over to Owner 10 days prior to Substantial Completion walk through.

B. Extra Materials: Provide items necessary to re-tighten, clean up, restore or replace all items as required to ensure continued use of specified products.

PART 2 PRODUCTS:

2.01 TREE GRATE

1. Manufacturer: Urban Accessories or approved equal.
2. Model: Custom
3. Size: 4-feet by 8-feet
4. Material: Iron
5. Load Capacity: Pedestrian
6. Finish: Raw
7. Frame: Steel with rebar anchors embedded into concrete.
8. Installation Method: Mount to frame.

2.02 MANUFACTURER'S INFORMATION

A. Submit copy of manufacturer's information on site furnishings in Operations and Maintenance manual for project.

2.03 PROTECTION

A. Do not remove protective wrappings from furnishings until instructed by Landscape Architect.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Aggregate materials.

1.2 RELATED SECTIONS

A. Section 31 2213 - Rough Grading.

B. Section 31 2323 – Excavation and Fill.

C. Section 32 1123 - Aggregates For Base Course.

1.3 REFERENCES

A. AASHTO - M147 - Materials for Aggregate and Soil-Aggregate.
B. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb (4.54 kg) Rammer and an 18-in. (457 mm) Drop.
C. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
D. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
E. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
F. ASTM D2487 - Classification of Soils for Engineering Purposes.
G. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
H. ASTM D3017 - Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
I. ASTM D4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.4 SUBMITTALS FOR REVIEW

A. Samples: Submit, in air-tight containers, 10 lb (4.5 kg) sample of each type of fill to testing laboratory. This includes Product Data (submittal package) for select fill, and aggregates for base course.

PART 2 PRODUCTS

2.1 COARSE AGGREGATE MATERIALS

A. Coarse Aggregate Type A1 (Gravel): Angular crushed stone free of shale, clay, friable material and debris; graded in accordance with ASTM D2487 Group Symbol GW; within the following limits:

Sieve Size	Percent Passing
2 inches (50 mm)	100
1 inch (25 mm)	95
3/4 inch (19 mm)	95 to 100
5/8 inch (16 mm)	75 to 100
3/8 inch (9 mm)	55 to 85
No. 4	35 to 60
No. 16	15 to 35
No. 40	10 to 25
No. 200	5 to 10

B. Aggregate Type A2 (Pea Gravel): Natural stone; washed, free of clay, shale, organic matter; graded in accordance with ASTM D2487 Group Symbol GM; to the following limits:
   1. Minimum Size: 1/4 inch (6 mm)
   2. Maximum Size: 5/8 inch (16 mm)

C. Coarse aggregate materials should be placed in maximum loose lift thicknesses of 8 inches and compacted to a minimum of 98 percent of the maximum dry density at a moisture content within the range of 2 percentage points below and 2 percentage points above the optimum moisture content as determined by ASTM D 1557.

2.2 FINE AGGREGATE MATERIALS

A. Fine Aggregate Type A3 (Sand): Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter; graded in accordance with ASTM D2487 Group Symbol SP; within the following limits:

Sieve Size	Percent Passing
No. 4	100
No. 14	10 to 100
No. 50	5 to 90
No. 100	4 to 30
No. 200	0

B. Fine aggregate materials should be placed in maximum loose lift thicknesses of 8 inches and compacted to a minimum of 98 percent of the maximum dry density at a moisture content within the range of 2 percentage points below and 2 percentage points above the optimum moisture content as determined by ASTM D 1557.

2.4 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations. All borrow soils shall meet the requirements for satisfactory soils and the geotechnical report.

B. Satisfactory Soils: The following soils classified according to the USCS can be considered satisfactory for use as select fill: GW, GP, GM, GC, GC-GM, GP-GM, GP-GC, SW, SP, SM, SC, SP-SM, SP-SC, SC-SM, CL; free of clay lumps, deleterious materials, cobblers and boulders over 3-inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soils that are not considered suitable for use as select fill and backfill material according to the USCS are as follows: CH, MH, ML, OH, OL and PT or where the plasticity index exceeds 15.

D. The select fill shall have a liquid limit of 35 or less and plasticity index of 15 or less. The select fill should be placed in maximum 8-inch loose lifts, moisture conditioned to +/- 3 percent of its optimum moisture content and uniformly compacted to a minimum of 95% in accordance with ASTM D 1557.

2.5 BLENDED AGGREGATE MATERIALS

A. Blended Aggregate (Crushed Aggregate Base for Paving): Blended crushed aggregate conforming to City of El Paso (CoEP) Standards. Reference CoEP Title 13

and CoEP Design Standards for Construction (DSC).

2.6 SOURCE QUALITY CONTROL

A. Section 01410 - Testing Services.

B. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with ASTM C136.

C. Fine Aggregate Material - Testing and Analysis: Perform in accordance with ASTM C136.

D. If tests indicate materials do not meet specified requirements, change material or material source and retest.

E. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 STOCKPILING

A. Stockpile materials on site at locations designated by the Contracting Officer.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE

A. The work covered by this section of the specifications consists of preparing the jobsite for construction operations by the removal and disposal of all obstructions from the construction area, right-of-way and from designated easements, where removal of such obstructions is not otherwise provided for in the plans and specifications.

Such obstructions shall include abandoned structures and utility lines, fences, trees, shrubs, vegetation, curbs, gutters, sidewalks, driveways, pavement, concrete and stone rubble, rubbish and all miscellaneous debris.

PART 2 - PRODUCTS

2.1 MATERIAL

A. N/A

PART 3 - EXECUTION

3.1 OBSTRUCTIONS OTHER THAN VEGETATION

A. All concrete, pavement, fences, rubble, trash and miscellaneous debris shall be removed to a depth of 1 foot below natural ground. All remaining holes shall be backfilled with material meeting the requirements for fill and backfill material and then tamped as directed by the Engineer. The Contractor shall complete this operation by blading, bulldozing, or other approved methods so that the jobsite shall be free of holes, ditches, and other abrupt changes in elevation and irregularities of contour.

3.2 CLEARING

A. Clearing shall consist of removal and disposal of trees and other vegetation as well as downed timber, snags, brush and rubbish within the areas to be cleared within the working areas as shown in the drawings. Individual trees, groups of trees or other vegetation not required to be removed and occurring outside the earthwork area shall be protected against unnecessary cutting, breaking or skinning of roots, skinning and brushing of bark, or smothering of trees by stockpiling construction materials or excavated materials within drip lines.

3.3 GRUBBING

A. Stumps, matted roots and roots larger than 2 inches in diameter shall be removed from within 6 inches of the surface of areas on which fills are to be constructed except in roadways. Materials as described above within 18 inches of finished subgrade of roadways in either cut or fill sections shall be removed. Areas disturbed by grubbing will be filled as with material meeting the requirements for fill and backfill material.

3.4 DISPOSAL

A. The Contractor shall dispose of all material removed from the jobsite in a manner satisfactory to the Engineer.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removal of subsoil and subgrade.

B. Cutting, grading, filling, rough contouring and compacting the site for site structures.

1.2 REGULATORY REQUIREMENTS

A. Obtain required permits from authorities.

B. Conform to applicable codes for grading.

1.3 REFERENCES

A. ASTM D1557 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using 10 lb (4.54 Kg) rammer and 18 inch (457 mm) Drop.

B. ASTM D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

C. ASTM D3017 – Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

PART 2 PRODUCTS

2.1 MATERIALS

A. Select Fill.

B. Crushed Stone Base Course.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions.

B. Verify that survey benchmark and intended elevations for the Work are as indicated.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect utilities that remain, from damage.

D. Notify utility field locators to identify existing utilities and depths.

E. Protect above and below grade utilities that remain.

F. Protect plant life, lawns and other features remaining as a portion of final landscaping.

G. Protect benchmarks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 SUBSOIL EXCAVATION

A. Excavate subsoil from areas to be further excavated or re-graded. Reference Civil engineering grading plans for existing and proposed elevations. Along the street pavement and upon removal of the existing asphalt and/or concrete paving, the contractor shall excavate to a depth that includes the proposed 8” of concrete pavement, the 6” base course and the 6” subgrade section (Detail 4, Sh C-600) as shown on the on the proposed Civil Engineering Set.

B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.

C. When excavating through roots, perform work by hand and cut roots with sharp axe.

D. Remove subsoil from site.

E. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

3.4 FILLING

A. Install Work in accordance with City of El Paso (CoEP) standards. Reference CoEP Title 13, Title 18 and CoEP Design Standards for Construction (DSC).

B. Fill areas to contours and elevations with unfrozen materials.

C. Place fill material on continuous layers and compact as shown on plans.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Make grade changes gradual. Blend slope into level areas.

F. Remove surplus fill materials from site.

3.5 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

3.6 FIELD QUALITY CONTROL

A. Testing: In accordance with ASTM D1557, ASTM D2922 and ASTM D3017.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Frequency of Tests:
1. One Laboratory Compaction Characteristic of Soil using Modified Effort (Proctor) for each type of material encountered or import material used, according to ASTM D1557.
2. One Soil Classification for each type of material encountered or import material used, according to ASTM D422 and ASTM D4318.
3. A minimum of one density test per 100 linear feet for the cleared surfaces, bottom of excavation, each lift of subbase, base course, and hot-mix asphaltic concrete, according to ASTM D2922, ASTM D1556, and ASTM D2950, as applicable.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE: Work in this section includes furnishing all labor, materials, equipment, and services required to construct, shape, and finish earthwork to the required lines, grades, and cross sections as specified herein and on the plans.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 31 1100 - Clearing and Grubbing.

B. Grading Plan: Refer to plan sheets.

1.03 REFERENCES

A. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort

B. ASTM D6938 – Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

C. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.

PART 2 - PRODUCTS

2.01 UNCLASSIFIED EXCAVATION: Unclassified excavation shall consist of all excavation, unless separately designated, within the limits of the work. Unclassified excavation includes all material encountered regardless of its nature or the manner in which it is to be excavated.

2.02 UNCLASSIFIED FILL

A. Unclassified fill shall consist of all fill within the limits of the work. All suitable native materials removed in unclassified excavation, or similar imported materials, shall be used insofar as practicable as unclassified fill. Properly deposited, conditioned, and compacted fill is hereinafter referred to as "earth embankment."

2.03 TOPSOIL

On-Site Topsoil: Topsoil shall consist of an average depth of six inches (6”) of native surface soil left in place after the ground cover of herbaceous vegetation and other objectionable matter has been cleared by "blading," as specified in Section 31 1100, "Clearing and Grubbing." Topsoil may be greater or less, than the upper six inches (6”) in depth.

2.04 IMPORTED FILL

A. Imported fill materials shall be used for the construction of earth embankment in the event that (1) the volume of unclassified excavation is less than the volume of fill required for earth embankment and/or (2) the condition of materials removed in

unclassified excavation makes them unsuitable for use in the construction of earth embankment.

B. The Contractor shall haul and place imported fill obtained from off-site sources as necessary to construct the embankment and various other details of the construction plans. All costs related to such imported fill will be included in the contract price, and no additional or separate payment for imported fill will be due the Contractor.

C. A sample of the proposed imported fill must be provided by the Contractor and be approved by the Owner. In general, imported material must be equal to or better than native material in quality and engineering characteristics. The Architect/ Engineer may also require the Contractor to provided a material analysis test of the proposed fill.

2.05 SELECT MATERIALS

A. Select materials shall be imported from offsite sources, unless they are available from specifically designated areas on the site as marked on the plans. Select Fill (shall be verified by independent geotechnical investigation):

1. Material shall be granular and free of deleterious material, cobbles or boulders over 3-inches in nominal size.
2. The select fill shall have a liquid limit of 35 or less and plasticity index of 15 or less.
3. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
4. Subsoil-Subgrade, Subsoil-Select Fill: Place and compact material in equal continuous layers not exceeding eight (8) inches compacted depth. Compact to a minimum 95 percent of maximum density.
5. Soils classified in the following list according to the USCS can be considered satisfactory for use as structural or select fill: GW, GP, GM, GC, GC-GM, GP-GM, GP-GC, SW, SP, SM, SC, SP-SM, SP-SC, SC-SM, CL.
6. Soils classified as CH, MH, ML, OH, OL and PT under the USCS are not considered suitable for use as select fill.
7. The moisture content of the fill shall be maintained within the range of 3-percentage points of the optimum moisture content until final compaction.

2.06 UNSUITABLE MATERIALS

A. Topsoil, select material, imported fill, or unclassified fill will be declared as '"unsuitable" by the Owner if, in his opinion, any of the following conditions or matter and particles are present to a degree that is judged detrimental to the proposed use of the material.
1. Moisture
2. Decayed or undecayed vegetation
3. Hardpan clay, heavy clay, or clay balls
4. Rubbish
5. Construction rubble
6. Sand or gravel

7. Rocks, cobbles, or boulders
8. Cementious matter
9. Foreign matter of any kind

B. Unsuitable materials will be disposed of as "waste" as specified in Section 31 1100.

C. Wet Material: If fill material is unsatisfactory for use as embankment solely because of high moisture content, the Architect/Engineer may grant the Contractor permission to process the material to reduce the moisture content to a usable optimum condition.

PART 3 - EXECUTION

3.01 SITE CLEARING: In general, "site clearing," as specified in Section 31 1100, shall be performed in advance of grading and earthwork operations and shall be completed over the entire area of earthwork operations.

3.02 TOPSOIL

A. The removal and storage of topsoil shall occur after site preparation is complete and before excavation and embankment construction begin. Likewise, topsoil will be replaced after excavation and embankment construction are complete.

B. Removal: Topsoil shall be stripped to an average depth of six inches (6”) from areas where excavation and embankment construction are planned. Topsoil may be obtained from greater depths if it is uncontaminated by the substratum and it is of good quality, in the opinion of the Architect/Engineer.

C. Storage: Topsoil shall be stored in stockpiles conveniently located to areas that will later receive the topsoil. Stockpiles shall be out of the way of earthwork operations in locations approved by the Owner or Architect/Engineer. Stored topsoil shall be kept separate from other excavated materials and shall be protected from contamination by objectionable materials that would render it unsuitable.

D. Timing: Topsoil will not be replaced (deposited) until construction activities are complete that would create undesirable conditions in the topsoil, such as overcompaction or contamination. Trenching for items such as electrical conduit and irrigation pressure lines must be complete before topsoil replacement may begin.

D. Replacement: Topsoil will be deposited in a single layer or lift. It will be placed, processed, compacted, and graded to leave a finished layer of topsoil not less than five inches in depth. Unless otherwise indicated, topsoil will be replaced over all areas of earthwork (including slopes), except where pavement is planned.

F. Grading: Topsoil will be final graded to the elevations shown on the plans. Fine grading will be accomplished with a weighted spike harrow, weighted drag, tractor box blade, light maintainer, or other acceptable machinery. All particles of the finish grade shall be reduced to less than one inch in diameter or they shall be removed. All rocks

of one inch or greater shall also be removed. Grading operations and equipment will be such that topsoil does not become overcompacted. Bulldozer blades and front-end loader buckets are not acceptable devices for topsoil grading operations. **Final grading within five feet of constructed or installed elements shall be hand raked.**

G. Acceptability: Finished areas of topsoil are satisfactory if they are true to grade, true in plane, even in gradient (slope), uniform in surface texture, and of normal compaction. Areas of loose granular pockets or of overcompacted soils are not acceptable and will be reworked. Finished areas will promote surface drainage and will be ready for turfgrass planting.

3.03 UNCLASSIFIED EXCAVATION

A. All excavated areas shall be maintained in a condition to assure proper drainage at all times, and ditches and sumps shall be constructed and maintained to avoid damage to the areas under construction.

B. Surplus Material:

1. Surplus excavation is that quantity of material that may be left over after the grading plan is executed, and all earthwork operations, including excavation, embankment construction, topsoil replacement, and final grading, are completed. Any other surplus material shall be disposed of as "waste" as specified in Section 31 1100. All such cost for removal shall be considered as incorporated into Earthwork costs

C. Excavation in Rock: The use of explosives will not be permitted. Unless otherwise indicated on the plans, excavation in solid rock shall extend six inches (6”) below required subgrade elevation for the entire width of the area under construction and shall be backfilled with suitable materials as indicated on the plans.

3.04 EARTH EMBANKMENT

A. Earth embankment is defined as embankment composed of suitable materials removed in unclassified excavation and/or imported fill. The construction of embankment includes preparing the area on which fill is to be placed and the depositing, conditioning, and compaction of fill material.

B. General: Except as otherwise required by the plans, all embankment shall be constructed in layers approximately parallel to the finished grade of the graded area, and each layer shall be so constructed as to provide a uniform slope as shown on the grading plan. Embankments shall be constructed to correspond to the general shape of the typical sections shown on the plans, and each section of the embankment shall correspond to the detailed section or slopes established by the drawings. After completion of the graded area, embankment shall be continuously maintained to its finished section and grade until the project is accepted.

C. Preparation: Prior to placing any embankment, all preparatory operations will have been completed on the excavation sources and areas over which the embankment is

to be placed. The subgrade shall be proof rolled to detect soft spots, which if exist, should be reworked. Proof rolling shall be performed using a heavy pneumatc tired roller, loaded dump truck, or similar piece of equipment weighing approximately twenty five (25) tons except as otherwise specified for tree protection and areas inaccessible to vehicular compactors. Stump holes or other small excavations in the limits of the embankments shall be backfilled with suitable material and thoroughly tamped by approved methods before commencing embankment construction. The surface of the ground, including plowed, loosened ground, or surfaces roughened by small washes or otherwise, shall be restored to approximately its original slope by blading or other methods, and, where indicated on the plans or required by the Owner, the ground surface, thus prepared, shall be compacted by sprinkling and rolling.

D. Scarification: The surface of all areas and slopes over which fill is to be placed, other than rock, shall be scarified to a depth of approximately six (6”) inches to provide a bond between the existing surface and the proposed embankment. Scarification shall be accomplished by plowing, discing, or other approved means. Prior to fill placement, the loosened material shall be adjusted to the proper moisture content and recompacted to the density specified herein for fill.

E. Benching: Scarification is normally adequate for sloping surfaces. However, in certain cases where fill is to be placed against hillsides or existing embankment with slopes greater than 4:1, the Owner may direct the Contractor to key the fill material to the existing slopes by benching. A minimum of two feet (2’) normal to the slope shall be removed and recompacted to insure that the new work is constructed on a firm foundation free of loose or disturbed material.

F. Depositing: Fill material shall be placed in horizontal layers or lifts, evenly spread, not to exceed eight (8”) inches in loose depth before conditioning and compaction. Unless otherwise permitted, each layer of fill material shall cover the length and width of the area to be filled and shall be conditioned and compacted before the next higher layer of fill is placed. Adequate drainage shall be maintained at all times.

G. Watering: At the time of compaction, the moisture content of fill material shall be such that the specified compaction will be obtained, and the fill will be firm, hard, and unyielding. Fill material which contains excessive moisture shall not be compacted until it is dry enough to obtain the specified compaction.

H. Compacting: Each layer of earth fill shall be compacted by approved tamping or sheepsfoot rollers, pneumatic tire rollers, or other mechanical means acceptable to the Owner. Hand-directed compaction equipment shall be used in areas inaccessible to vehicular compactors.

I. Grading: Embankments shall be constructed in proper sequence and at proper densities for their respective functions. All embankment serves in one capacity or another as subgrade (e.g., under topsoil, under concrete and asphalt pavement, under structures, etc.). Accordingly, the upper layer of embankment shall be graded to within plus or minus 0.10 foot of proper subgrade elevation prior to depositing topsoil, and prior to the construction of pavements, slabs, etc.

3.05 MOISTURE MAINTENANCE: The specified moisture content shall be maintained in all embankments that are to function as subgrade for structures, areas of pavement, or for select embankment. After completion of the embankment, the Contractor shall prevent excessive loss of moisture in the embankment by sprinkling as required. Loss of moisture in excess of two percent (2%) below optimum in the top twelve inches (12”) of the fill will require that the top twelve inches (12”) of the embankment be scarified, wetted, and recompacted prior to placement of the structure, select fill or pavement. If desired, the Contractor may place an asphalt membrane of emulsified or cutback asphalt over the completed embankment and thus eliminate the sprinkling requirement.

3.06 TOPSOIL REPLACEMENT: Topsoil shall be carefully placed to avoid any displacement or damage to the subgrade. If any of the subgrade is rutted, damaged or displaced it shall be restored prior to placing topsoil. Topsoil shall be replaced as specified herein per Item 3.02.

3.07 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over organic, porous, wet, frozen or spongy subgrade.

C. Granular Fill: Place and compact materials in equal continuous layers not exceeding 8 inches (200 mm) compacted depth.

D. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches (200 mm) compacted depth.

E. Employ a placement method that does not disturb or damage other work.

F. Maintain optimum moisture content of backfill materials to attain required compaction density.

G. Backfill against supported foundation walls and piers. Do not backfill against unsupported foundation walls and piers.

H. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.

I. Slope grade away from building minimum 2 inches in 10 ft (50 mm in 3 m), unless noted otherwise.

J. Make gradual grade changes. Blend slope into level areas.

K. Remove surplus backfill materials from site.

L. Leave fill material stockpile areas free of excess fill materials.

3.08 TOLERANCES

A. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch (25 mm) from required elevations.

B. Top Surface of General Backfilling: Plus or minus 1 inch (25 mm) from required elevations.

3.09 FIELD QUALITY CONTROL

A. Laboratory Compaction testing will be performed in accordance with ASTM D1557. Density Tests for soils and soil aggregate mixtures will be performed in accordance with ASTM D6938 or ASTM D1556.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Frequency of Tests: perform one test per lift at the following rate:
1. Perform one test per lift per every 5000 square feet or less under under all paved areas.
2. Perform one test per lift per every 100 lineal feet or less under all wall footings.

3.10 PROTECTION OF FINISHED WORK

A. Protect finished Work from vehicular traffic and other equipment or operations which disturb the placed and compacted fill.

B. Reshape and re-compact fills subjected to vehicular traffic or other damage.

3.11 SCHEDULE

A. Exterior side of foundation walls and retaining walls:
1. Fill to subgrade elevation, each lift, compacted to 95 percent maximum density, ASTM D1557.

B. Fill Under Concrete Paving:
1. Compact subsoil to 95 percent of its maximum dry density.
2. Fill to bottom of concrete paving, compacted to 95 percent maximum density, ASTM D1557.

C. Fill to Correct Over-excavation: Contractor's option of the two following methods:
1. Lean concrete to minimum compressive strength of 2500 psi.
2. Fill flush to required elevation, compacted to 95 percent maximum density, ASTM D1557.

END OF SECTION

PART 1 - GENERAL

1. SCOPE

A. Work under this section consists of installing a complete underground drip system as shown on the drawings and as specified hereafter. The CONTRACTOR performing this work shall furnish all labor, equipment, materials, and permits necessary for the completion of the system, except those specified to be furnished by others. Unless otherwise specified or indicated on the drawings or authorized by the LANDSCAPE ARCHITECT. The construction of the drip system shall include the furnishing, installing, and testing of all pipes, fittings, valves, heads, controllers, wires, air release and vacuum valves, backflow preventers, inlet and discharge piping, automatic drain valves, valve boxes, and all other components pertinent to the drawings and specifications of this system. The CONTRACTOR shall perform all trenching, excavating, boring, backfilling, compacting, concrete pouring, electrical work, welding, and any other work necessary for the completion of the project.

2. APPLICABLE STANDARDS AND REFERENCES

A. Drawings and general provisions of the Contract, including City of El Paso Irrigation Requirements and current applicable codes and TCEQ requirements. General Conditions and any Supplemental Special Provisions, apply to this Section.

B. Related Requirements:

1. American Society for Testing and Materials (Latest Editions) (ASTM)

D-1784 Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

D-1785 Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120.

D-1875 Test Method for Density of Adhesives in Fluid Form.

D-2241 Specifications for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe.

D-2466 Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

D-2467 Specification for Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, schedule 80.

D-2564 Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

D-2774 Recommended Practices Underground Installation of Thermoplastic Pressure Piping.

D-2855 Recommended Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.

D-3139 Specification for Joints for Plastic Pressure Pipe Using Flexible Elastomeric Seals.

3. SUMMARY

A. Section Includes:
1. Piping.
2. Encasement for piping.
3. Manual valves.
4. Pressure-reducing valves.
5. Automatic control valves.
6. Automatic drain valves.
7. Transition fittings.
8. Dielectric fittings.
9. Miscellaneous piping specialties.
10. Quick couplers.
11. Drip irrigation specialties.
12. Controllers.
13. Boxes for automatic control valves.

4. DEFINITIONS

A. Lateral Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.

B. Mainline Piping: Downstream from point of connection and/or master valve to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.

C. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling power-limited circuits.

D. Sub-grade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before mulch is placed.

5. PERFORMANCE REQUIREMENTS

A. Irrigation zone control shall be automatic operation and automatic control valves.

B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Provide 100 percent irrigation coverage of areas indicated.

6. ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Delegated-Design Submittal: For irrigation systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional Licensed Irrigator responsible for their preparation.

7. INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. For qualified Irrigation Contractor with a minimum 5 projects of similar size and scope.

2. Professional Licensure for Texas Licensed Irrigator: Contractor shall have a Texas Licensed Irrigator with a minimum 5 year's experience and in good standing with TCEQ on-site for the entire duration of the irrigation installation.

B. Controller Timing Schedule: Indicate timing settings for each automatic controller zone.

C. Field quality-control and testing reports.

8. CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For sprinklers controllers and automatic control valves to include in operation and maintenance manuals.

9. MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Drip Emitters: Equal to 5% percent of amount installed for each type indicated, but no fewer than two (2) units.

10. QUALITY ASSURANCE

A. Contractor Qualifications: An employer of workers that include a Texas Licensed Irrigator and Texas Licensed Irrigation Installers.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

11. DELIVERY, STORAGE, AND HANDLING

A. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic piping protected from direct sunlight and freezing temperatures. Support to prevent sagging and bending.

12. PROJECT CONDITIONS

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by OWNER or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:
1. Notify the Owner no fewer than THREE (3) days in advance of proposed interruption of water service.
2. Do not proceed with interruption of water service without the Owner's written permission.

13. RECORD DRAWINGS

A. The CONTRACTOR shall provide and keep up to date a complete set of Record "as-built" Drawing's markings which shall be corrected daily in red to show all changes in the location of drip components, controllers, backflow preventers, valves, drains, meters, points of connection, wire splice points, pipe and wire routing and other changes that may have been made from the original drawings and specifications.

B. At the time of Substantial Completion, the CONTRACTOR shall furnish Record Drawing “as-built” drawing mark-ups to the OWNER for inclusion in the final Record Drawings.

PART 2 - PRODUCTS

1. GENERAL

1. All materials shall be new and without flaws or defects of any type and shall be the best of their class and kind. All materials shall be of the brands and types noted on the plans or as specified herein or approved as equal.

2. The irrigation system was designed around equipment manufactured by specific companies as a standard. Approved as equal equipment by other manufacturers may be used only with the approval of the Irrigation Designer.

3. Contractor is responsible for all coordination and costs associated with EP Water for one new water meter, and one connection to existing meter, temporary service, and service transfer to the owner at the end of the project.

C. Submittals

1. Submit manufacturer’s product data and installation instructions for each of the system components, materials, and equipment for approval. Submit the following material samples:
   1. Piping and fittings. (With all markings)
   2. Glue, primer and cleaner.
   3. Wire.
   4. Wire connectors and sealer.

2. Submit the following equipment samples:
   1. Drip Emitter
   2. Valves.
   3. Valve boxes, valve box extensions and flat lid covers with vandal proof bolts.
   4. Controller.
   5. Remote control valve wire.

3. Approved equipment samples will be returned to the Contractor and may be used on the project.

D. Construction Site, Delivery, Storage, and Handling

1. Construction Site shall be properly secured with fencing and appropriate signage.

2. Deliver irrigation system components in manufacturers’ original undamaged and unopened containers with labels intact and legible to the site.

3. Deliver plastic piping in bundles, packaged to provide adequate protection of pipe ends, both: threaded or plain type piping as applicable.

4. Store and handle materials to prevent damage and deterioration.

5. Store materials out of the sun to prevent weatherizing and discoloration.

6. Store materials above grade to prevent contamination with soils and corrosion.

7. Provide secure, locked storage for piping, valves, sprinkler heads, and similar components that cannot be immediately replaced, to prevent installation delays.

E. Contractor is responsible to coordinate with all utility agencies to verify underground and above ground utility lines, and existing park infrastructure to include irrigation lines, irrigation control valve wiring, area lights wiring, athletic field lights wiring, etc. Any damaged utilities will be restored at Contractor's expense.

F. Protect existing trees, plants, lawns, and other features designated to remain as part of the landscape work. Refer to most current version Policy and Standards Manual for the Care of Trees and Shrubs in the City of El Paso and the details in the Contract Documents.

G. Promptly repair damage to adjacent facilities caused by irrigation system work operations. Cost of repairs is at the Contractor's expense.

H. Promptly notify Landscape Architect, Licensed Irrigator, or designee, and Designer of unexpected subsurface conditions.

I. Irrigation system layout is diagrammatic. Exact locations of piping, sprinkler heads, valves, and other components shall be established by Contractor in the field at time of installation and coordinated with Landscape Architect, or designees, and Designer prior to start of any work.

J. Space sprinkler components as indicated on plans, or as required to be modified in field after obtaining acceptance of locations by Landscape Architect, or designees, and Designer.

K. Minor adjustments in system layout will be permitted to clear existing fixed obstructions. Final system layout shall be acceptable to Landscape Architect, Licensed Irrigator, or designee, and Designer.

L. Cutting and Patching:

1. Cut through concrete and masonry with core drills. Sawcut concrete and asphalt, prior to removal of material.
2. Materials and finishes for patching shall match existing cut surface materials and finish.
3. Method and materials used for cutting and patching shall be acceptable to the Owner's Representative, Engineer, Landscape Architect, and Licensed Irrigator or designee.

PART 3 - MATERIALS

1. GENERAL

A. Provide only new material, without flaws or defects, of the highest quality of their specified class and kind. No pipe or fittings with sunburn, visible crack, holes, foreign materials, blisters, or wrinkles shall be used on the project.

B. Comply with pipe sizes indicated. No substitution of smaller pipes will be permitted without approval of the Landscape Architect, Licensed Irrigator, or designee.

C. Remove damaged and defective pipe from the site immediately.

D. Provide pipe continuously and permanently marked with manufacturers name or trademark, size, schedule, type of pipe, working pressure at 73 degrees F., and National Sanitation Foundation (NSF) approval.

1. Plastic pipe, fittings, and connections:
   a. PVC pipe: ASTM D2241, rigid, un-plasticized PVC
   b. Pressure mains:
2. PVC Schedule 40 IPS plastic pipe for 4.0 inch or smaller main lines.
3. PVC Class 200 IPS plastic pipe for main lines larger than 4.0 inch.
   a. Distribution laterals: SDR 21, Class 200
4. PVC pipe fittings: ASTM D2241 schedule 40 PVC molded fittings suitable for solvent weld, or screwed connections.
   a. Saddle fittings and cross fittings are not permitted on new installations.
   b. Schedule 80 PVC pipe may be threaded.
   c. Use male adapters for plastic to metal connections.
   d. Use ASTM D-2466 to insert type fittings.

E. Backflow Prevention Device
1. Backflow Prevention Device shall be as indicated on Irrigation Legend.
2. Shall meet all TCEQ codes and City of El Paso Plumbing and Irrigation Codes.

F. Valve boxes
1. Shall be heavy duty, structural plastic with high stiffness to weight ratio with lockable flat lid and secured by tamper proof bolt or approved equal.
2. Extensions shall be provided as needed and cover shall match mulch except where reclaimed water is being used and purple covers and valve boxes are required.
3. Size to provide sufficient space for component and maintenance or as indicated on detail or legend.

G. Irrigation system controllers
1. Rain Bird TBOS-BT or approved equal
2. Rain Bird RSD-BEx Commercial level irrigation controller Sensor or approved equal and connect to controller per manufacturer's recommendations. Set the rain sensor to 1/8 inch.
3. Battery Operated, operates with 9 Volt alkaline battery
4. Bluetooth enabled
5. Programming enabled with smartphone mobile app.
6. Vandal-proof case
7. Multiple programs and start time functionality ranging from 1 minute to 12 hours in 1-minute increments.
8. 12 hours in 1-minute increments.
9. Control Modules and Stations have built-in ID naming capability and can be individually named.
10. With a battery indicator that reports the status of the control module's battery.
11. Operates one valve per station.

H. Pipe fittings – all pipe assembly fittings must be Schedule 40 or 80 PVC Pipe fittings.

I. Pipe Solvent welding procedures on all joints shall be specified as follows: first use IPS weld-on cleaner, next use IPS weld-on purple primer P68 or P70, then use IPS weld-on gray glue #711 heavy duty. Lastly, wipe off all excess cement and let it set as per manufacturer's recommendations. Once weld is set, pipe shall not be moved for any reason until set times have been achieved, water shall not be turned on until all cure times have been achieved.

J. Copper Tubing for feed from water meter shall be used on all installations from meter or stub-out, past Backflow Prevention Device or past pump as applicable.
1. Provide Type K copper for all copper applications.

K. Electrical control valve low voltage wire:

1. Electrical control and ground wire: Direct burial Type UF 600-volt AWG control
2. Cable #14 gauge or larger as required by the manufacturer based on total distance.
3. Wire color code:
   a. Provide control or "hot" wires either black or red in color.
   b. Provide common or "ground" wires white in color.
   c. Provide a minimum of three (3) spare hot wires in three (3) different colors other than black, red, or white.

L. Other
1. Valve box fill material to be used shall be 3/8-inch washed pea gravel in sufficient quantity to provide a minimum depth of 4 inch inside the box and clear equipment and piping underside.
2. Backfill material around all valve boxes will be clean soil free of stones larger than 1-inch diameter, foreign matter, organic material, and debris and properly compacted to prevent settling.
3. Low voltage wire connectors: Dry-Splice Prefilled Socket seal type wire connectors with properly filled waterproof silicone sealer or approved equal.
4. All electrical work must be conducted by a licensed electrician.
5. License to be provided to Owner as part of the irrigation submittal.

PART 4 - EXECUTION

1. GENERAL

A. Commencement of work shall be contingent on review and release of all project submittals. Any work performed without the review and release of project submittals may be subject to rejection.

B. Inspection Process
1. Inspect final grades and obtain approval from Landscape Architect or City of El Paso Owner’s Representative, or designee prior to installation of irrigation system, site amenities, site flat work, utilities, etc. Do not start any work until all identified unsatisfactory conditions are corrected.

C. Preparation
1. Layout and stake the location of each pipe run and all sprinkler heads and sprinkler valves for approval.
2. Remove existing paving or saw cut existing paving to provide uniform straight transition at new to existing paving for sleeve installation or as applicable.
3. Place sleeves for installation of main and lateral lines piping and control wires where hard surfaces will be traversed.
4. Extend sleeves 24 inches beyond the edge of the hard surface; keep clean of debris; wrap with 4-mil plastic, and tape with good quality non-cloth heavy duty plastic duct tape.

D. Installation
1. Excavating and backfilling:
   a. All excavation shall be considered unclassified excavation and include all materials encountered.
   b. Excavate trenches at 18” min/24” max depth for main pipe, 12” min/18” max depth for lateral pipe and 12” to top of wire bundle for wiring in conduit and caution tape at 8” from finished grade. For width, allow 6” on each side of pipe or bundle of piping/wiring to permit proper handling and installation of pipe and fittings.
   c. Fill to match adjacent grade elevations with clean construction sand.
   d. Place markers at all joints or assembly points of main and lateral lines for ease

of access during the pressure test of the system.

e. Backfill soils material may be native soils if it is free of caliche or stones larger than 1" in size and organic matter or waste debris soils compaction in planted areas to be 80% to 85% density by ATSM, D-1557 standard and at 95% density under paved or hardscape surfaces.

E. Plastic pipe

1. Make plastic to metal joints with plastic threaded male adapters or flanges as applicable.
2. Maintain pipe interiors free of dirt and debris. Close open ends of pipe by acceptable methods when pipe installation is in progress.
3. In preparation for pipe solvent welds, any cut piping must be completed with a miter box and cut ends must be beveled and burrs removed thoroughly.
4. Make solvent weld joints in accordance with manufacturers' recommendations or as specified herewith. Solvent welds are to be consistent with the three-step gluing process to include: cleaner, primer and solvent.
5.

F. Sprinklers, Fittings, Valves, and Accessories

1. Install fittings, valves, drip emitters, and accessories in accordance with manufacturers' instructions. If applicable, adjust sprinkler heads to provide head-to-head coverage.
2. Install backflow prevention valve, fittings, and accessories as shown on construction drawings and as required to complete the system.

G. Control Wiring

1. Install electric control cable in separate trenches with minimum twelve (12) inches of cover side of main as applicable. Install wire with slack to allow for thermal expansion and contraction. Tape and bundle at 20-foot intervals.
2. Expansion joints in wire shall be provided at 200-foot intervals by making 5-6 turns of the wire around a piece for 0.5-inch pipe for slack.
3. Provide sufficient slack at site connections at remote control valve boxes to allow raising the valve bonnet or valve splice to the surface without disconnecting the wires when repair is required.
4. Connect one (1) battery operated controller and valve for each meter to a dedicated controller and valve that will function as a master valve and be dedicated to the meter. The controller shall be set to begin before the first valve starts and be shut off after the last valve ends. otherwise indicated.

H. Controllers

1. Irrigation controllers shall be installed in a valve box below grade.
2. Shall be installed outside of existing or proposed tree's anticipated root zones.
3. Shall be installed to facilitate future maintenance and replacement of batteries.

I. Sleeves

1. Irrigation remote control valve wires: Provide new sleeves for all locations where hardscape exists. Install new sleeves prior to paving or sidewalk installation at all applicable locations.
2. Irrigation main and lateral lines: Provide sleeves minimum two (2) sizes larger than the total diameter of the piping it will hold. Place sleeves as indicated for installation of main and lateral line piping – extend 24 inches beyond edge of hard surface - wrap ends with 4-mil plastic and tape with good quality plastic tape. Gray, cloth duct tape is not acceptable.
3. Install pipe sleeves under existing concrete or asphalt surface by jacking, boring, or hydraulic driving of the sleeve.

J. Backflow Prevention Device

1. Support backflow prevention device during dry fitting process.
2. Backflow prevention device needs to be supported at all times by temporary or permanent methods.
3. Copper risers shall not be used at any time to support the backflow prevention device.
4. Shall be installed with insulated enclosure and must comply with ASSE 1060 Class I

K. Flushing, Testing, and Adjustment
1. Flushing
   a. Flush main lines prior to installation of remote-control valves.
   b. Flush main lines after irrigation valves are installed and in preparation for main line pressure test.
   c. Flushing is performed prior to installation of drip manifold and emitters and in preparation for pressure test.
   d. Flush lateral lines – after successful pressure test, flush lateral lines before installing drip manifold and/or emitters. Once the system is flushed satisfactorily install drip manifold and/or emitters.
2. Testing
   a. Pressure test main line – after all main line piping, isolation valves, pump piping, stub-outs, all irrigation remote control valves and all related components are installed, conduct the pressure test for a period of 24 hours. Test main water line at 50 psi above static pressure or design pressure, based on highest value; with a maximum pressure loss of 2% allowed to pass. Water main must be pressurized hydraulically and not pneumatically.
   b. Pressure test lateral lines – for a period of two (2) hours, test lateral lines at static or design pressure, based on highest value, with a maximum loss of 2% allowed to pass. Lateral lines must be pressurized hydraulically.
   c. The main line pressure test must be conducted from Monday through Thursday so that completion of the test is conducted on a regularly scheduled working day.
   d. Failed Pressure Tests - any failed pressure tests will be re-tested as applicable after all necessary repairs are completed.
   e. Test and demonstrate the controller by operating appropriate day, hour, and station selection features as required to automatically start and shut down irrigation cycles to accommodate plant requirements.
3. Service and Guarantee
   a. Contractor shall guarantee the irrigation system for one year (365 days) from the date of project acceptance against defects in materials and workmanship, the guarantee does not include vandalism.
   b. Contractor shall respond to callbacks within 24 hours of notification within the one-year warranty period. Contractor will be required to provide a report of repairs performed to correct callback deficiencies.
   c. Emergency repairs performed by the owner shall not void the warranty.
   d. Emergency or other repairs performed due to contractors‟ lack of timely response will be invoiced and charged to the Contractor. Checks will be made payable to the owner.

L. Disposal of Waste Material
1. Stockpile and keep site free of loose and airborne debris, perform daily clean-up of site and dispose of waste material in an appropriate container.
2. Stockpile, haul from site, and legally dispose of waste materials, including unsuitable excavated materials, rock trash, and debris on a weekly basis.
3. Maintain disposal routes clear, clean, and free of debris.

M. Acceptance
1. Test and demonstrate to the Landscape Architect, and/or the City of El Paso Owner’s

Representative the satisfactory operation of the system free of leaks and mechanical or electrical flaws.

2. The irrigation schedule must be properly programmed in the controller(s) to reflect actual operating conditions.
3. Instruct owner or City of El Paso staff in the operation of the system, including functioning of emitters, controller(s), valves, pump controls, and moisture sensing control(s) and related irrigation equipment.
4. Perform cleaning upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from irrigation system installation.
5. Upon irrigation system acceptance, submit written operating and maintenance instructions.
6. Provide as-built irrigation system record (as-built) drawing mark-ups to City of El Paso Owner's Representative.
7. Legibly mark drawings to record actual construction to include dimensions.
8. Indicate horizontal and vertical locations, referenced to permanent surface improvements.
9. Identify field changes of dimension and detail and changes made by change order.

PART 5 - MEASUREMENT AND PAYMENT

1. GENERAL

A. Measurement of the landscape irrigation systems shall be lump sum and shall include the entire irrigation system including all water meters.

B. Payment shall be at the contract price per lump sum in the Bid Proposal, which shall include all material, equipment, labor and testing, coordination with El Paso Water, and coordination with Planning & Inspection required to install and make operational the irrigation systems. This shall include boring and any topsoil used to cover trenches and any damage to existing site due to irrigation system additions and revisions.

END OF SECTION 32 84 00

PART 1 GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Clearing and Grubbing: Section 31 1100.

B. Rough Grading: Section 31 2213.

C. Aggregates for Earthwork: Section 31 0516.

1.2 QUALITY ASSURANCE

A. Contractor is responsible to include sampling and testing base materials proposed, and tests and calculations for base course.

B. Field quality control tests to be provided through laboratory accepted and paid for by the Contractor.

C. Install base course to meet the requirements of EPDOT.

1.3. INSPECTION:

A. In-place compacted thickness shall not be acceptable if exceeding 1/4 inch allowable variation from thickness shown on drawings.

B. Contractor shall repair holes from test specimens as specified for patching defective work.

C. Surface Smoothness:
1. Inspect finished surface of each base course for smoothness, using a 10 foot straightedge applied parallel to and at right angles to centerline of paved areas.
2. Surfaces will not be acceptable if exceeding the following:
a. Base Course: 1/4 inch in 10 feet

1.4 SUBMITTALS

A. Samples: Provide samples of materials for laboratory testing and job-mix design.

B. Certificates:
1. Provide certificates, in lieu of laboratory test reports.
2. Certify that materials comply with specification requirements.
3. Signed by base course producer and Contractor.

PART 2 PRODUCTS

2.1 MATERIALS

Furnish uncontaminated materials of uniform quality that meet the requirements of the plans and specifications. Notify the Engineer of the proposed material sources and of changes to material sources. The Engineer may sample and test project materials at any time before compaction throughout the duration of the project to assure specification compliance. Use Tex-100-E material definitions.

A. BASE COURSE MATERIALS: Furnish aggregate of the type and grade shown on the plans and conforming to the requirements of Table 1. Each source must meet Table 1 requirements for liquid limit, plasticity index, and wet ball mill for the grade specified. Do not use additives such as but not limited to lime, cement, or fly ash to modify aggregates to meet the requirements of Table 1, unless shown on the plans.

TABLE 1: Base Course Materials

Property	Test Method	Grade 1-2	Grade 3	Grade 4 (2)	Grade 5
Sampling	Tex-400-A				
Master gradation sieve size (cumulative % retained)	Tex-110-E				
2-1/2 in.		0	0	As shown on the plans	0
1-3/4 in.		0-10	0–10		0–5
7/8 in.		10–35	–		10–35
3/8 in.		30–65	–		35–65
No. 4		45–75	45–75		45–75
No. 40		65–95	50–85		70–90
Liquid limit, % max.	Tex-104-E	40	40	As shown on the plans	35
Plasticity index, max.1	Tex-106-E	10	12	As shown on the plans	10
Plasticity index, min.1		As shown on the plans			
Wet ball mill, % max.	Tex-116-E	40	-	As shown on the plans	40
Wet ball mill, % max. increase passing the No. 40 sieve		20	-	As shown on the plans	20
Min. compressive strength, psi	Tex-117-E			As shown on the plans	
lateral pressure 0 psi		35	-		-
lateral pressure 3 psi		-	-		90
lateral pressure 15 psi		175	-		175

1. Determine plastic index in accordance with Tex-107-E (linear shrinkage) when liquid limit is unattainable as defined in Tex-104-E.
2. Grade 4 may be further designated as Grade 4A, Grade 4B, etc.

2.2 MATERIAL TOLERANCE

The Engineer may accept material if no more than 1 of the 5 most recent gradation tests has an individual sieve outside the specified limits of the gradation. When target grading is required by the plans, no single failing test may exceed the master grading by more than 5 percentage points on sieves No. 4 and larger or 3 percentage points on sieves smaller than No. 4. The Engineer may accept material if no more than 1 of the 5 most recent plasticity index tests is outside the specified limit. No single failing test may exceed the allowable limit by more than 2 points.

PART 3 EXECUTION

3.1 STOCKPILING

A. Stockpile materials on site at locations designated by the Contracting Officer.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Concrete curb and gutter, sidewalks, driveways, bus stop, benches.

1.2 RELATED SECTIONS

A. Section 31 2213 - Rough Grading.

B. Section 31 2323 – Subgrade Fill.

C. Section 32 1123 – Aggregates Base Course.

1.3 REFERENCES

A. ACI 301 – Specifications for Structural Concrete for Buildings.

B. ACI 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

C. ASTM A185 – Welded Steel Wire Fabric for Concrete Reinforcement.

D. ASTM A497 – Welded Deformed Steel Wire Fabric for Concrete Reinforcement.

E. ASTM A615 – Deformed and Plain Billet-Steel for concrete Reinforcement.

F. ASTM C33 – Concrete Aggregates.

G. ASTM C94 – Ready Mix Concrete.

H. ASTM C150 – Portland Cement.

I. ASTM C309 – Liquid Membrane-Forming Compounds for Curing Concrete.

K. ASTM C494 – Chemical Admixtures for Concrete.

L. ASTM D1751 – Preformed Expansion joint Fillers for Concrete Paving and Structural Construction.

M. ACI 305R-20 – Guide to Hot Weather Concreting.

N. ACI 306R-16 – Guide to Cold Weather Concreting.

O. ACI 308R-16 - Guide to External Curing of Concrete

1.4 SUBMITTALS

A. Product Data: Provide data on joint filler, admixtures and curing compounds.

B. In-place 4'x4' mockup of benches and sidewalk concrete for approval before full install.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301.

B. Obtain cementitious materials from same source throughout.

1.6 REGULATORY REQUIREMENTS

A. Conform to applicable standards for paving work on public property.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when base surface temperature is less than forty (40 degrees F) degrees Fahrenheit.

B. Do not place concrete during rain, sleet, or snow.

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. Form Materials:
1. Steel, used or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.
2 Use flexible spring steel forms or laminated boards to form radius bends as required.
3. Coat forms with a non-staining form release agent that will not discolor or deface of concrete.

2.2 REINFORCEMENT

A. Reference Civil engineering details for reinforcement size and location.

B. Reinforcing Steel: ASTM A615; 60 ksi yield grade; deformed billet steel bars; unfinished finish.

C. Welded Steel Wire Fabric: Plain type, ASTM A185; in coiled rolls finish.

D. Dowels: ASTM A615; 60 ksi yield grade, plain steel, unfinished finish.

2.3 CONCRETE MATERIALS

A. Concrete Materials: As specified in this section.

2.4 ACCESSORIES

A. Curing Compound: ASTM C309, Type 1, Class A.

B. Joint Materials: AASHTO M-33, ½" bituminous type preformed joint filler.

2.5 CONCRETE MIX - BY PERFORMANCE CRITERIA

A. Mix concrete in accordance with ACI 304. Deliver concrete in accordance with ASTM C94.

B. Select proportions for normal weight concrete in accordance with ACI 301 Method 3.

C. Provide concrete for pedestrian sidewalk and ADA ramps to the following criteria:
1. Compressive Strength: 3,000 psi @ 28 days.
2. Slump: 4 inches.
3. Maximum air Content: < 3%

Provide concrete for vehicular traffic (referred to as heavy duty) along W. Main Dr. such as street pavement, driveways, sidewalks at vehicular crossings, curbs/curb and gutters, and street flumes to the following criteria:
1. Compressive Strength: 4,000 psi @ 28 days.
2. Slump: 4 inches.
3. Maximum air Content: < 3%

D. Use accelerating admixtures in cold weather only when approved by Engineer. Use of admixtures will not relax cold weather placement requirements.

E. Use calcium chloride only when approved by Engineer.

F. Use set retarding admixtures during hot weather only when approved by Engineer.

2.6 SOURCE QUALITY CONTROL AND TESTS

A. Provide mix design for concrete.

B. Submit proposed mix design to the Engineer for review and approval prior to commencement of work.

C. Tests on cement and aggregates will be performed to ensure conformance with specified requirements.

D. All test results that fail to meet the 28-day specified strength, contractor will remediate at their own expense.

D. Test samples in accordance with ACI 301.

PART 3 EXECUTION

3.1 INSTALLATION

A. Density Test will be required for subgrade compaction in order to verify as acceptable and ready to support paving and imposed loads. Density Test will only be acceptable for 3 consecutive calendar days.

B. Gradient and elevations of base will be verified through blue topping upon contractor. Contractor responsible to procure surveyor.

3.2 SUBBASE

A. Section 31 1123 – Aggregate Base Course, Part 2, Section 2.1.A, forms the base construction for work of this Section.

B. Replace defective work if patching is not acceptable to the City of El Paso.

3.3 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Notify Engineer minimum twenty-four (24) hours prior to commencement of concreting operations.

3.4 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.5. REINFORCEMENT

A. Interrupt reinforcement at expansion joints.

B. Place dowels and reinforcement to achieve pavement and curb alignment as detailed.

C. Provide doweled joints on center at transverse joints and interruptions of concrete.

D. Provide diamond shaped dowels at construction joints as shown on plans.

3.6 PLACING CONCRETE

A. Place concrete by methods that prevent segregation of mix.

B. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator.

C. Keep vibrator away from joint assemblies, reinforcement, or side forms.

D. Use only square-faced shovels for hand spreading and consolidation.

E. Consolidate with care to prevent dislocation of reinforcing, dowels and joint devices.

F. Use bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

G. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

H. Place concrete continuously over the full width of the panel and between predetermined construction joints.

I. Place concrete to pattern indicated.

J. Deposit and spread concrete in a continuous operation between transverse joints as far as possible.

K. If interrupted for more than ½ hour, place a construction joint.

3.7 JOINTS

A. Expansion Joints
1. Place expansion joints at twenty (20) foot intervals. Align curb, gutter, and sidewalk joints.
2. Place joint filler between paving components and building or other appurtenances. Recess top of filler ¼ inch for sealant placement.
3. Provide scored joints at five (5) feet intervals between sidewalks.
4. Provide keyed joints as indicated.
5. Provide premolded joint filler for expansion joints abutting concrete curbs, structures, walks and other fixed objects, unless otherwise indicated.
6. Furnish joint fillers in one piece lengths for full width being placed wherever possible. When more than one length is required, or clip joint filler sections together.
7. Protect top edge of joint filler during concrete placement with a metal cap or other temporary materials.
8. Remove protection after concrete has been placed on both sides of joint.

B. Construction Joints
1. Place construction joints at end of placements and at locations where placement operations are stopped for more than ½ hour.
2. Where load transfer-slip dowel devices are used, install so that one end of each dowel bar is free to move.

C. Fillers and Sealants
1. Where joints in concrete construction are shown to be sealed, the joint sealing compound shall be a cold-applied two-component poly-sulfide sealant.
2. The handling, mixing, and placing of the material and preparation of the joint prior to sealing shall be in strict accordance with the recommendations of the manufacturer.
3. A two component epoxy primer compatible with the sealer shall be used in all joints.
4. Provide joint sealers and other related materials that are compatible with one another and with joint substrates.

D. Joint Sealants and Fillers for Heavy Duty Area

1. Provide Class 5 or Class 8 joint-sealant materials and fillers unless otherwise shown on the plans or approved and other sealant materials of the size, shape, and type shown on the plans in accordance with DMS-6310, “Joint Sealants and Fillers.”
2. Seal all joints before opening the pavement to traffic.

E. Epoxy for Heavy Duty Area
1. Provide Type III epoxy in accordance with DMS-6100, “Epoxies and Adhesives,” for installing all drilled-in reinforcing steel.

F. Curb Joints
1. Provide joints in the curb of the same type and location as the adjacent pavement. Use expansion joint material of the same thickness, type, and quality required for the pavement and of the section shown for the curb. Extend expansion joints through the curb. Construct curb joints at all transverse pavement joints. For non-monolithic curbs, place reinforcing steel into the plastic concrete pavement as shown on the plans unless otherwise approved. Form or saw the weakened plane joint across the full width of concrete pavement and through the monolithic curbs.

3.8 SPREADING AND FINISHING: Finish all concrete pavement with approved self-propelled equipment. Use power-driven spreaders, power-driven vibrators, power-driven strike-off, and screed, or approved alternate equipment. Use the transverse finishing equipment to compact and strike off the concrete to the required section and grade without surface voids. Use float equipment for final finishing. Use concrete with a consistency that allows completion of all finishing operations without addition of water to the surface. Use the minimal amount of water fog mist necessary to maintain a moist surface. Reduce fogging if float or straightedge operations result in excess slurry.

A. Sidewalk Paving: See architectural/landscape architectural plans (Sh L.401, L.402, and L.403 Detail 1.6) for finish on sidewalk. Where finishing for sidewalk is not shown on landscape architectural plans or other specifications then use light broom finish, radius to ½ inch radius, broom to edge (no frames).

B. Curbs and Gutters: Light broom.

C. Direction of Texturing: Transverse to pavement direction.

D. Inclined Vehicular Ramp: Broomed perpendicular to slope.

E. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer’s instructions.

3.9 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Contractor shall follow ACI 308R-16 Guide to External Curing of Concrete, ACI 306R-16 Guide for proper cold weather concreting practices and ACI 305R-20 Guide to Hot Weather Concreting.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Cure floor surfaces in accordance with ACI 308.

D. Ponding: Maintain 100 percent coverage of water over slab areas continuously for four (4) days.

E. Spraying: Spray water over floor slab areas and maintain wet for seven (7) days.

3.10 TOLERANCES

A. Maximum Variation of Surface Flatness: ¼ inch in ten (10) ft.

B. Maximum Variation from True Position: 1/4 inch.

3.11 PATCHING

A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.

B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.

C. Patch imperfections as directed by Engineer.

3.12 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B. For all defective concrete, Contractor will submit a remediation plan for approval by Owner/Engineer. Remediation for all defective concrete will be at the expense of the contractor.

C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

D. Contractor will be responsible to procure a qualified material testing lab and maintaining records of all testing conducted. Reports will include record date, location of test, quantity, air temperature and test samples taken. Reports and Test results must be provided to Owner and Engineer.

3.13 FIELD QUALITY CONTROL

A. Three concrete test cylinders will be taken for every seventy-five (75) or less cubic yards of concrete placed each day.

B. One additional test cylinder will be taken during cold weather and cured on site under same conditions as concrete it represents.

C. One slump test will be taken for each set of test cylinders taken.

D. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.14 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury. Contractor shall follow ACI 308R-16 Guide to External Curing of Concrete, ACI 306R-16 Guide for proper cold weather concreting practices and ACI 305R-20 Guide to Hot Weather Concreting.

B. Do not permit pedestrian and vehicular traffic over pavement until seventy-five (75) percent design strength of concrete has been achieved.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Concrete paving slabs and joint sand.
2. Bitumen setting bed.
3. Asphalt tack coat.

B. Related Sections

1. Section 03 30 01 - Cast-in-Place Concrete – Civil Site
2. Section 32 11 23 – Aggregates for Base Course.
3. Section 32 13 13 – Portland Cement Concrete Paving.

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1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. C33 Specification for Concrete Aggregates.
2. C136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
3. C144 Standard Specification for Aggregate for Masonry Mortar.
4. C920 Specification for Elastomeric Joint Sealants.
5. C1645 Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Concrete Interlocking Paving Units.
6. C1782 Standard Specification for Utility Segmental Concrete Paving Slabs.
7. D977 Standard Specification for Emulsified Asphalt.
8. D1073 Standard Specification for Fine Aggregate for Bituminous Paving Mixtures
9. D3381 Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.

B. Interlocking Concrete Pavement Institute (ICPI) Technical Bulletins

1. Tech Spec 5 Cleaning, Sealing and Joint Sand Stabilization of Interlocking Concrete Pavements
2. Tech Spec 20 Construction of Bituminous-Sand Set Interlocking Concrete Pavement.

1.04 SUBMITTALS

A. In accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Manufacturer's drawings and details: Indicate perimeter conditions, relationship to adjoining materials and assemblies, expansion and control joints, concrete paving slab layout, patterns, color arrangement, installation and setting details.

C. Neoprene modified asphalt adhesive product catalog sheets with specifications.

D. Bituminous setting bed: asphalt cement mix design to be used in the bituminous setting bed conforming to ASTM D3381.

E. Sieve analysis per C136 for sand mixed with bitumen and sand for joints between concrete paving slabs.

F. Concrete paving slabs:

1. Four representative full-size samples of each slab type, thickness, color, finish that indicate the range of color variation and texture expected in the finished installation. Color(s) selected by Landscape Architect from manufacturer's available colors.
2. Test results from an independent testing laboratory for compliance of concrete slabs with C1782.
3. Accepted samples become the standard of acceptance for the work.
4. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.

G. Paving Slab Installation Subcontractor:

1. Current certificates from the Interlocking Concrete Pavement Institute Concrete

Paver Installer Certification program for job foremen on the project.

2. Job references from projects of a similar size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.

1.04 QUALITY ASSURANCE

A. Paving Subcontractor Qualifications:
   1. Utilize an installer having successfully completed concrete paving slab installation similar in design, material, and extent indicated on this project.
   2. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Certified Concrete Paver Installer program.

B. Regulatory Requirements and Approvals: Specify applicable licensing, bonding or other requirements of regulatory agencies.

C. Mock-Ups:
   1. Install a 7 ft x 7 ft (2 x 2 m) paving slab area.
   2. Use this area to determine surcharge of the bitumen-sand layer and adhesive, joint sizes,lines, laying pattern(s), color(s) and texture of the job.
   3. This area will be used as the standard by which the work will be judged.
   4. Subject to acceptance by Landscape Architect and Engineer, mock-up may be retained as part of finished work.
   5. If mock-up is not retained, remove and properly dispose of mock-up.

1.05 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers packaging with identification labels intact.
   1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.
   2. Deliver concrete paving slabs to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.
   3. Unload slabs at job site in such a manner that no damage occurs to the product.

D. Storage and Protection: Store materials protected such that they are kept free from mud, dirt, and other foreign materials. [Store concrete paving slab cleaners and sealers per manufacturer's instructions.]
   1. Cover joint sand with waterproof covering if needed to prevent exposure to rainfall or removal by wind. Secure the covering in place.

1.06 PROJECT/SITE CONDITIONS

A. Environmental Requirements:
   1. Do not install bitumen setting bed or paving slabs during heavy rain or snowfall.
   2. Do not install bitumen setting bed and paving slabs over frozen base materials.
   3. Do not install frozen bitumen setting bed materials.
   4. Do not install concrete paving slabs on frozen bitumen setting bed materials.

1.07 MAINTENANCE

A. Extra Materials: Provide 5% additional material for use by CoEP (Street and Maintenance) for maintenance and repair.

B. Slabs shall be from the same production run as installed materials.

PART 2 PRODUCTS

2.01 CONCRETE PAVING SLABS

A. Manufacturer: Techo Bloc or approved equal.

1. Contact: www.techo-bloc.com, kevin.foster@techo-bloc.com

B. Concrete paving slabs:

1. Slab type: Industria 300-150.

a. Material Standard: Comply with material standards in C1782; 725 psi (5 MPa) min. average flexural strength. Freeze-thaw testing requirements per ASTM C1645 shall be waived for applications not exposed to freezing conditions.

b. Color and finish: Champlain Grey, HD2 Smooth finish (Reference Landscape Architect Sh. L.401.

c. Paver Size: 3 15/16 inches x 11 13/16 inches x 5 7/8 inches thick.

2.02 PRODUCT SUBSTITUTIONS

A. Substitutions: To be approved by Landscape Architect and Engineer.

2.04 BITUMEN SETTING BED MATERIALS

A. Primer for base: Anionic asphalt emulsion SS-1 or SS-1h per ASTM D977.

B. Sand for asphalt bed

1. Clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.

2. Do not use limestone screenings, stone dust, or sand in the bedding sand material that does not conform to the grading requirements.

3. Graded according to ASTM C136.

4. Bedding Sand Material Requirements: Conform to the grading requirements of ASTM C33 with modifications as shown in Table 1.

Table 1
Grading Requirements for Bedding Sand
ASTM C33

Sieve Size	Percent Passing
No. 4 (4.75 mm)	100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10
No. 200 (0.075 mm)	2 to 10

C. Asphalt cement: heated to 300° F (150° C), 7% asphalt mixed with 93% sand in batches 145 lbs. (66 kg) asphalt to 1,855 lbs. (840 kg) sand. Exact proportions to be determined by the Contractor.

D. Neoprene modified asphalt adhesive: brush/squeegee grade with the following characteristics: Viscosity at 77° F (25° C): 12,000-18,000 centipoise (cps); specific gravity at 25° C: 1.02; weight per gallon at 25° C: 8.1 lbs; percent solids by weight: 70%; softening point of rubber Blend: 149° F (65° C); inorganic material: 6.5%; long fiber: 10%; neoprene: 2% min. [Karnak 237 2% neo-asphalt paving block adhesive or approved equal].

2.05 JOINT MATERIALS

A. Joint sand: grading conforming to ASTM C144.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Acceptance of Site Verification of Conditions:
   1. General Contractor shall inspect, accept and certify in writing to the paving slab installation subcontractor that site conditions meet specifications for the following items prior to installation of concrete paving slabs:

      a. Verify that concrete base materials, thickness, surface tolerances and elevations conform to specified requirements. Note: The elevations and surface tolerance of the concrete base determine the final surface elevations of concrete paving slabs. The paving slab installation contractor cannot correct deficiencies in the base surface with additional bitumen setting materials or by other means. Therefore, the surface elevations of the base should be checked and accepted by the General Contractor or designated party with written certification to the paving subcontractor, prior to placing bedding materials and concrete paving slabs.

      b. Verify location of 2 in. diameter weep holes at 20 ft centers at lowest elevations against curbs, walls, or other permanent structures. Verify holes filled with washed pea gravel. Provide temporary plugs for holes to prevent ingress of sand-asphalt setting bed or neoprene adhesive during construction. Remove plugs when paving adjacent to drain holes.
      c. Verify that concrete surfaces to receive the bitumen bedding material are free of dust, oil, grease, paint, wax, curing compounds, primer, sealers, form release agents, from cracks over 3/16 in. in width, or any deleterious substances and debris which may prevent or reduce bonding.
      d. Conduct moisture tests to verify that concrete surfaces are cured, free from hydrostatic pressure and having a moisture content of less than 5%.
      e. Verify location, type, and elevations of edge restraints, [concrete collars around] utility structures, and drainage inlets.
      f. Do not proceed with installation of bedding sand and concrete paving slabs until base conditions are corrected by the General Contractor or designated subcontractor.

3.03 PREPARATION

A. Verify base is dry, certified by General Contractor as meeting material, installation and grade specifications.
B. Verify that base is clean, dry, and ready to accept tack coat, bitumen setting bed, slabs, and imposed loads.

3.04 INSTALLATION

A. Concrete base preparation
   1. Fill any cracks under 3/16 in. (5 mm) wide with mortar.
   2. Sweep the surface clean.
B. Asphalt primer
   1. Application Rate: Undiluted emulsified asphalt primer tack coats are typically applied at a rate of 0.9 to 1.3 gal per 100 ft² to concrete base. Diluted 1:1 (cutback) asphalt tack coats are typically applied at a rate of 1.2 to 1.5 gal per 100 ft² to a concrete base. Once applied, the tack coat should not be disturbed and should be allowed to cure before covering with the setting bed material. This may take a few hours depending on weather conditions. Asphalt primer tack coats are recommended for vehicular applications.

C. Bituminous setting bed
   1. Place in panels between ¾ in. (20 mm) high screed rails spaced approximately 12 ft (4 m). Rake and screed smooth with strike board.
   2. Use screed rails to achieve a level setting bed conforming to elevations and slope shown on the drawings. After one panel is complete, advance screed rails to the next position in readiness for screeding adjacent panels with strike board. Fill depressions left from removed screed rails and smooth to height consistent with panel.
   3. Place an area in size that will remain at least 270° F (130° C) during compaction.
   4. Compact the setting bed with a powered roller [plate] compactor to an even, nominal thickness of ¾ in. (20 mm) after compaction.
   5. Re-heat, fill, and compact low areas with setting bed materials to conform to slope and elevation shown on the drawings.
   6. Re-heat, remove, level, and compact setting bed in high areas to conform to slope and elevation shown on the drawings.
   7. Irregularities or evenness in the grade of the concrete base surface may be corrected with setting bed materials only with approval by the [Architect].

D. Neoprene modified asphalt adhesive
   1. Apply to cold asphalt setting bed with notched trowel with serrations not exceeding 1/16 in. Do not apply slabs to adhesive until dry skin forms on surface of adhesive.

E. Concrete paving slabs
   1. Free from dust, dirt, and stains. Do not use soiled, cracked, or broken units.
   2. Place paving units firmly onto adhesive with joints not to exceed 1/8 in. (3 mm), or as recommended in manufacturer's literature. Maintain straight pattern lines, joint lines and coursing per the drawings.
   3. Cut pavers to fit edges with a masonry saw. No cut slab shall be smaller than 1/3 of a whole unit if exposed to vehicular traffic. Firmly place all edge units on adhesive.

F. Joint filler and sealant
   1. Extend control and structural joints through full depth of paving units. Do not extend joints through bituminous bedding materials from joints in concrete base that control shrinkage cracking.
   2. Install joints at all building facades or other vertical surfaces.
   3. Install pre-molded joint filler as units are set in bituminous bed. Maintain top of filler 3/8 in. (10 mm) below exposed faces of paving units for insertion of sealant.
   4. Install joint sealant per manufacturer's recommendations.

G. Joint sand
   1. After the slabs, joint filler, and sealant are installed, spread dry joint sand and fill joints between the slabs.
   2. Sweep surface clean.

3.05 FIELD QUALITY CONTROL

A. The final surface tolerance from grade elevations shall not deviate more than ±3/8 in under a 10 ft straightedge.
B. Check final surface elevations for conformance to drawings.
C. The surface elevation of slabs shall be 1/8 in. above adjacent drainage inlets, concrete collars or channels.
D. Lippage: No greater than 1/8 in. (3 mm) difference in height between adjacent slabs.

3.07 PROTECTION

A. After work in this section is complete, the General Contractor shall be responsible for protecting work from damage due to subsequent construction activity on the site.

END OF SECTION

PART 1- GENERAL

1.01 SUMMARY

Work to be done includes all labor, materials, transportation, equipment and services required to complete the soil preparation. Execute labor to achieve soil preparation, complete, as shown and as specified planting as indicated on the Construction Drawings, and as specified herein. Work includes, but is not necessarily limited to, the following items: soil amendments, and mulches.

1.02 RELATED WORK

The following items of related work are specified and included in other sections of the specifications:

Division 32, Section 329400: Planting

1.03 REFERENCES

The following standards will apply to the work of this Section:

A. MSA: Methods of Soil Analysis
B. ASTM: American Society for Testing and Materials

1.04 SUBMITTALS

At least thirty (5) days prior to ordering any materials, the CONTRACTOR shall submit three (3) sets of the items specified below to the OWNER PROJECT MANAGER for review and approval. No material shall be ordered, delivered or any work preceded in the field until the required submittals have been reviewed in its entirety and stamped approved. Provide samples and information for the following.

A. Samples:
   1. Compost, one (1) gallon container
   2. Mulches, one (1) quart size container of each as noted on the drawings

B. Testing Results:
   1. Imported Soils
   2. Soil amendments

C. Certifications:
   1. Certify strict compliance with accepted soil mixes and amendments, including rate of application.

1.05 QUALITY ASSURANCE

A. Testing Agency: Approved by the OWNER PROJECT MANAGER and paid for by the CONTRACTOR.

B. General: Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in air or that clods will not break readily. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and planting.

C. The work of this Section shall be performed by a Contracting firm that has successfully installed work of a similar quality, schedule requirement, and construction detailing with a minimum of five (5) years experience.

D. The Contractor shall examine all areas of work and surfaces before proceeding with any work of this section. Any defects such as incorrect grading and inadequate drainage shall be reported to the Owner's Project Manager prior to beginning work.

E. The Contractor shall secure Texas 811 permit number for the project to certify notification of all utilities. The Contractor shall not commence work until Texas 811 has responded.

F. It is the intent of this specification that all material herein specified and shown on the construction documents shall be of the highest quality available and meeting the requirements specified.

G. All work shall be performed in accordance with the best standards of practice relating to the trade.

H. The Contractor shall comply with all rules, licensing, regulations, laws and ordinance of the City, County and State, and other authorities having jurisdiction over this project site.

1.06 DEFINITIONS

A. Existing soil: Area of undisturbed native soil where no rough grading is to be done. No soil is to be placed. Only surface cultivation and soil amending are included in this Section. See Drawings.

B. Subgrade: Soil level resulting from the rough grading work under another Section. Cultivation of subgrade areas prior to amending is included in this section.

C. Imported Soil: Imported soil stockpiled for spreading over prepared subgrade. Soil imported and stockpiled under this Section, shall be spread and amended as work under this Section.

1.07 SUBMITTALS

A. Samples: Submit two (1) pound sample of imported soil.
B. Samples: Soil amendments.

C. Soils Test Analysis Reports:

1. Provide soils tests analysis of native soil prior to demolition.
2. Imported soils to be obtained from adjacent construction projects, by Owner's Project Manager, on property.
3. Provide soils tests analysis of imported soils to be used in planting areas. Soil amendments and additives shall be adjusted to the results of the soils test as directed by the Owner's Project Manager.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Imported Soil:

1. Quantity: The approximate quantity of imported soil will not be known until demolition and rough grading have been completed under earthwork.
2. Composition: Fertile, friable, well-drained soil, of uniform quality, free of stones over 1 in. diameter, sticks, oils, chemicals, plaster, concrete and any other materials deleterious to healthy plant growth.
3. Analysis: Obtain an agricultural suitability analysis of the proposed soil from an accepted, accredited Testing Agency at Contractor's cost.

4. Test Results: Request Testing Agency to send one (1) copy of test results direct to the Owner's Project Manager and one (1) copy to the Contractor. Imported soil shall be amended per soils analysis report.

2.02 AMENDMENTS

A. Plant backfill mix: Shall consist of four (4) inch depth of compost tilled in twelve (12) inches into the soil.

2.03 ACCESSORIES

A. Water: Contractor to supply as available until turnover of project to Owner's Project Manager. Transport may be required.

PART 3 – EXECUTION

3.01 SOIL MOISTURE CONTENT

A. General: Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in air or clods will not break readily. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and planting.

C. Range: Maintain within 2 percent above or below optimum moisture content during the work.

3.02 CLEARING AND CULTIVATION

A. Clearing: Clear planting areas of stones 2 in. diameter and larger, weeds, debris and other extraneous materials prior to soil preparation work.

B. Cultivation of Existing Soils:

1. Cultivation: Till or loosen existing soils to receive planting to a depth of twelve (12) inches immediately prior to applying amendments.

C. Cultivation of Subgrade Under Imported Soil

1. Verification:

a. Verify that subgrades for installation of soil have been established under rough grading. Do not spread imported soil prior to acceptance of subgrade work.

b. Depth: Verify that subgrades are within required sub-grade elevations.

2. Cultivation: Rip or cultivate subgrade in planting areas to a depth of 8" (eight) inches immediately prior to spreading imported soils.

3.03 SPREADING OF IMPORTED SOIL

A. General: Spread imported soil over accepted subgrade prior to incorporating amendments.

B. Restrictions: Do not commence spreading of imported soil prior to acceptance of subsoil cultivation. Do not place soil under muddy or frozen conditions.

1. Lay imported soil in 6” layers. Compact imported soil to maximum 85% modified proctor.

C. Soil Depth: Refer to finish grade and planting details per the Drawings.

3.04 SOIL AMENDMENT

A. Amending of Soil: Follow recommendations of soil tests for amendments composition.

1. Preparation: Do not commence amending of imported soil prior to acceptance of final subgrades. Do not work soils under muddy or frozen conditions.

2. Soil Amendments: Incorporate by tilling 2” depth of amendment into the top (4) inches of imported soil in all planting areas.

3.05 FIELD QUALITY CONTROL

A. Tests: The Owner reserves the right to take samples of soil mixes prepared soil for testing for conformity to the Specifications.

B. Rejected Materials: Remove off site at Contractor’s cost. Pay cost of testing of materials that do not meet Specifications.

3.06 CLEAN-UP

A. After completion of all soil preparation operations and before acceptance of the work, the CONTRACTOR shall remove all debris, rubbish, etc. from the site in a legal manner. The premises shall be left clean, presentable, and satisfactory.

END OF SECTION 32 9113

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to work of this section.

1.2 SUMMARY

A The work of this section includes furnishing all trees, shrubs, and other materials necessary to complete the landscape planting in accordance with the specifications and drawings contained in the Contract Documents. This shall include all labor, equipment and performance of operations including planting, mulching, fertilizing, watering, cleanup of planting areas and other related work as specified herein.

B. Related Work Specified Elsewhere:

1. Division 32, Section 328400 – Landscape Irrigation System
2. Division 32, Section 329113 – Soil Preparation

1.3 DESIGN REQUIREMENTS

A It is the intent of these drawings and specifications to result in complete accordance with all applicable codes and ordinances and the City of El Paso Downtown Tree Master Plan.

1.4 REFERENCE STANDARDS

A. American Standards for Nursery Stock (ANSI A 300,) American Association of Nurserymen, Washington, D.C.

B. ANSI A 300, ANSI Z 133.1 and ANSI Z60.1 - 2004

C. Hortus III, L.H. Bailey Hortorium and Staff, MacMillian Co., New York, 1976.

D. Manual of Woody Landscape Plants, M.A. Dirr, Stipes Publishing Co., Champaign, Illinois, 1995, Standardized Plant Names, Second Edition

E. MSMT603 New Mexico Standard Method of Tests (SHA).

1.5 QUALITY ASSURANCE

A. Contractor Qualifications: All work specified herein shall be performed by a Landscape Contractor with a minimum of five (5) years of experienced with the type and scale of work required and having equipment and personnel adequate to perform the work satisfactorily.

B. Source Quality Control:

1. Compliance with Laws. All plant materials shall comply with State and Federal Laws, with respect to inspection for disease infestation.
2. Plant Quality Standards: All plant material shall have been grown or dug and burlapped meet to standards set by American Association of Nurserymen and ANSI A 300.
3. Tagging of Trees. The Contractor shall submit to the OWNER PROJECT MANAGER, at least one week in advance of tagging date, an itemized list of trees along with a notice as to

where and when the nursery inspection of trees shall be made. The accepted trees will be tagged by the City Arborist for delivery to the site.

4. Plant Inspection: Inspection of all plant materials will be made for size, vigor, representativeness of species and variety, injury, condition of ball and roots, or latent defects. Inspection at delivery does not preclude the possibility of rejection of material after installation.
5. Substitutions. Substitutions of any plant materials requires the written approval of the Landscape Architect prior to ordering plants. Requests for substitutions must be submitted with any cost or quantity adjustments for approval.
6. Analysis and Standards: All packaged standard products shall have manufacturer's certified analysis. For other materials, provide analysis if required in this specification. Analysis is to be by recognized laboratory and made in accordance with methods established by the Association of Official Agricultural Chemists.
7. Tagging or Labeling of Plant Materials. All plant materials shall be true to species, variety and legibly tagged with origin, name and size of material. These tags shall be durable labels marked in weather resistant ink and securely attached to each plant of a single species, variety and size identification. They will remain on plants through final inspection.

1.6 SUBMITTALS

A. Qualifications of Landscape Contractor. Submit Contractor’s qualifications showing experience, quality, and capabilities as noted in Quality Assurance.

B. Plant Sources. Submit for approval by the Landscape Architect the nursery or sources for the plant materials to be used in the project.

C. Plant Photos. Submit photographic samples of representative trees from the plant sources. Photos shall include a scaled ruler or yardstick in the photo. The photos shall demonstrate the quality, size, and health of trees to be used in the project. Indicate true caliper.

D. Samples. Submit one (1) cubic foot sample of each type of mulch specified on the Drawings to the Landscape Architect for approval.

E. Product Data/Sources: Submit two copies of product names, literature, and application rates for fertilizer, anti-dessicant and amendments.

F. Maintenance Materials: Submit two copies of typewritten instructions bound in three-ring binder of recommended landscape maintenance procedures to be followed by the Owner for one full year. Submit prior to expiration of required maintenance periods.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery/ Storage of Materials

1. Delivery of Shipment to Site. The Contractor shall promptly notify the Landscape Architect and Owner’s Project Manager in advance of the time and manner of delivery of plant materials. The Contractor shall furnish, at the time of notice, an itemized list, in duplicate, of the actual quantities of plant materials in each delivery, in order to expedite the required inspection at the point of delivery. Plants rejected at this inspection any time prior to planting shall be removed immediately from the planting area. When shipment is made, all plant materials shall be packed to provide made in a closed vehicle or plants shall be completely covered to prevent drying or other wind damage. Particular care should be exercised in digging, wrapping and binding of plants to insure safe loading and shipment. Mushroomed or cracked rootballs shall be unacceptable for planting.

2. Packaged Materials: Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site.

B. Handling Materials:

1. Trunks, branches, and root balls shall not be damaged during lifting and planting operations.
2. Handle container-grown stock only in containers.

1.8 JOB CONDITIONS

A. Existing Conditions:

1. General: Proceed with and complete landscape work as rapidly as portions of site become available.
2. Determine the acceptability of each planting site and subgrade prior to the start of planting work.
3. Utilities: Locate all existing underground utilities in the construction area as accurately as is possible. Perform work in a manner, which will avoid damage to underground utilities. Hand excavate as required. Any damage to the utilities shall be repaired by the Contractor at his own expense to the satisfaction of the Owner.
4. Grade Stakes: Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.
5. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions or obstructions, notify the Owner's Project Manager before planting.

B. Protection/ Sequencing/ Scheduling:

1. Protect all existing items to remain.
2. Ensure proper timing of each phase of work in relationship to the normal planting season for each type of planting work.
3. Coordinate planting with the required maintenance period.
4. Coordination with seeding and/or sodding: Plant trees and shrubs after final grades are established and prior to seeding and/or sodding, unless otherwise accepted by the Landscape Architect. If planting of trees and shrubs occurs after seeding and/or sodding work, protect such areas and promptly repair damage resulting from planting operations.

1.9 GUARANTEE/WARRANTY

A. Warranty trees, shrubs and ground covers through maintenance period and until final acceptance. See section 3.05 for maintenance period.

B. Replace dead or unhealthy trees and shrubs at the end of warranty period.

C. Only one replacement per plant will be required during the warranty period, except for losses of original or replacement material due to failure to comply with the specification requirements.

PART 2 - PRODUCTS

2.01 PLANT MATERIALS

A. Plant Materials. All plants shall be as specified on the Planting Plans and shall be healthy, vigorous and representative of the species and variety. They shall have normal, well developed branch and root systems. All plants shall be free of mechanical injury, free of sun or frost damage, free from insects, insect eggs, weeds, and without disfiguring knots or other objectionable defects. All plant materials shall be selected for quality of the specimen. Plant material shall be nursery-grown.

B. Growing Conditions. Trees shall have been grown under climatic conditions similar to project locality for at least two (2) years.

C. Pruning. Plants shall not be pruned prior to or after delivery unless authorized by the Landscape Architect and must be done under the supervision of a qualified arborist or horticulturist.

D. Size. All plants shall equal or exceed minimum measurements specified on the plans. Grading of plant material shall be in accordance with the codes and standards of AAN. Any undergrade plants shall be removed and replaced prior to provisional acceptance.

E. Measurement. Caliper measurements shall be taken six (6) inches above natural ground line on the trunk.

F. Tree Orientation Marking. All trees prior to digging in the field shall be marked to indicate the north side of tree trunk. Mark is to be temporary and done in manner not deleterious to the long term health and growth of the tree.

G. Nomenclature. Nomenclature shall conform with Standardized Plant Names, Second Edition. Names not present in this listing shall conform to accepted botanical nomenclature in the nursery trade.

2.02 TREES

A. Deciduous Trees: All deciduous trees shall have been container or nursery grown (not collected or plantation grown) from an approved nursery. Trees not showing developed root flare at top of rootball shall not be accepted. Any root bound material shall not be accepted. Boxed or containerized trees shall be handled by container only. All trees shall be first-class representatives of their species; well-shaped and full. Tree trunks shall be straight and plumb unless otherwise specified. Single-trunked trees shall be delivered with temporary mark on trunk showing north orientation of tree. The Landscape Architect reserves the right to reject any trees not meeting these criteria. Balled and burlapped material will be rejected if wrapped with plastic burlap or plastic twine. All balled and burlapped material shall have been properly root pruned.

2.03 SHRUBS, PERENNIALS, AND GRASSES

A. Container Stock: Plants designated as "Container" grown in various sizes and type containers in the plant list shall be of a size and stage of development normal in the nursery industry for the size container in which they are specified. They shall have been grown in their containers long enough to have developed good, round root systems capable of holding the soil intact after removal from the container, but not so long as to have become root bound. Any root-bound material will not be accepted.

2.04 SOIL AMENDMENTS

A. Fertilizer. Shall be Gro-Power Plant Tablets, 12-8-8 formulation or approved equal. Apply 3 per 1 gal. 7 per 5 gal. and 12 per caliper inch of tree. Submit substitutions prior to bid.

B. Soil Additives/ Plant Stimulants. Soil additives such as Ironite and Super Phosphate shall be applied if needed as a result of the soils test analysis. The plant stimulant, Superthrive, shall be applied to all plants at five (5) times the rate recommended by the manufacturer.

C. Compost applied according to manufacturer's specifications. Utilize screened compost material. Submit chosen compost information with bid.

2.05 BOULDERS

A. Locally sourced, to match boulders selected for La Nube Children's Museum. Boulders to be sourced in three different sizes:
   a. Size 'A': 1.5'W x 2'L x 2'H
   b. Size 'B': 1.5'W x 3'L x 2'H
   c. Size 'C': 1.5'W x 4'L x 2'H

2.06 MISCELLANEOUS

A. Mulches as noted on the plans.

   1. Aggregate shall be Desert Tan or approved equal in color. No substitutions accepted.

B. Anti-Desiccant: Emulsion-type, film-forming agent designed to permit transpiration but retard excessive loss of moisture from plants. Deliver in manufacturer's containers and mix in accordance with manufacturer's instructions. Acceptable Product: "Wilt-Pruf."

2.07 WATER

A. Water for maintaining plants shall be clean and free from pollutants that may harm plant growth or contaminate the environment.

PART 3 - EXECUTION

3.01 PREPARATION

A. Plant Material Locations: Tree and shrub locations as shown on the planting plan are approximate only. Contractor is to stake all plant material locations as shown on the planting plan, and under the direction of the Landscape Architect, adjust the position and orientation of plants as required. Final positions of all plant material are subject to the approval of the Landscape Architect.

B. Preparation Ground Surface: Areas to be planted or mulched are to be free of rock/stones greater than one inch across, trash and other debris prior to beginning planting or mulching. Subgrades for planted and mulched areas are to be approved by the Landscape Architect prior to beginning planting or mulching.

3.02 INSTALLATION

A. Planting General.

   1. Soil amendments shall be as noted in Soil Preparation Section 329113.
   2. Plants shall not be planted deeper than the original ground line.

B. Trees/ Individual Locations: Excavate tree pits so that top of rootball will be level with the adjacent soil grade.

1. Tree pit excavations shall be three times as wide as the rootball in diameter and shall be no deeper than the maximum depth of the rootball.
2. Prior to setting the tree flood the tree pit and allow all water to percolate into soil.
3. Set rootball plumb in center of pit with a crane, set rootball such that root flare is placed slightly higher than finish soil grade. Orient tree north marking to face site north.
4. Remove burlap and wire from top half of root ball. Slice sides of remaining burlap at least three times, once tree is set firmly in planting hole and prior to backfill.
5. Unless otherwise directed on the Drawings, backfill with excavated soil in 6" tamped layers. Do not add compost to tree backfill.
6. Apply fertilizer tablets and other soil additives evenly around the perimeter of each tree root ball at a depth half way between the top and middle of the root ball.
7. Flood with water after two-thirds backfilled. After water is absorbed, continue backfilling and tamping to grade, leaving no voids or air pockets. Water again after placing final layer of backfill.
8. Form water well around each tree if noted on the Drawings for tree location and type. Fill the watering well with mulch as specified.
9. Trees shall only be staked or wrapped if directed by the Landscape Architect or specifically required in the drawings.

C. Shrub planting/ Individual Locations:

1. Shrub pit excavation shall be three times larger than width of rootball and shall only be as deep as the maximum depth of the rootball.
2. Prior to setting the plant, flood the pit and allow all water to percolate into soil.
3. Set shrub rootball plumb in center of pit.
4. Backfill with two (2) parts native soil and one (1) part compost, unless otherwise noted in Section 329400 - Soil Preparation.
5. Apply fertilizer tablets and other soil additives when shrub pit is two-thirds backfilled.
6. Continue backfilling to finish grade, create watering well, and thoroughly water.

D. Planting Beds/ Mass Planting Areas:

1. Grade existing soil to proper depth to meet finish grades for area. Grading shall allow for compost, soil additives, and mulch depths.
2. Spread compost at depth and rates as per Soil Preparation Section 329113.
3. Till compost to a minimum depth of twelve inches (12) throughout the planting bed. Till in two directions each at right angles to each other.
4. Spread soil additives and fertilizer as noted on the plans or specifications, and till 6" into compost amended soils. Till in two directions each at right angles to each other.
5. Rake and remove all rocks over 1 inch size, trash, debris or other deleterious material from the top three inches of the prepared bed.
6. Soak the amended area with water. Let the area dry. Fill any large depressions or settlement.
7. Set out plant materials designated for the planting area. If a formal arrangement is shown on the plan, align and measure plants in a uniform triangular pattern; or as shown on the Drawings; or as directed by the Landscape Architect.
8. Excavate pits large enough to set each plant. Backfill with excavated planter soil.
9. Water area thoroughly after planting. Fill depressions and level high spots. Fine rake bed.

E. Apply anti-desiccant to leafed out deciduous trees and shrubs, and broadleaf evergreens.

F. Mulch: Spread a uniform layer of specified mulch as noted on the Drawings. Planted areas shall be approved by the Landscape Architect prior to mulch installation.
G. Boulders: Set boulders on prepared, compacted subgrade to height specified in the drawings.

3.03 FIELD QUALITY CONTROL

A. Pruning: Pruning shall only be done under direct supervision of the Landscape Architect and in accordance with ANSI Z 133.1 and ANSI Z60.1 - 2004. Remove dead and broken branches. Prune deciduous trees and shrubs as approved by the Landscape Architect. Retain typical growth habit of individual plants. Make cuts with sharp instruments to branch collar. Do not pole or remove the leader from the trees. Remove trimmings from site.

3.04 PROTECTION AND CLEANING

A. During the installation and maintenance periods, protect planted areas against erosion and trespass. Any damaged planting shall be replaced by the Contractor at no cost to the Owner.

B. All walks and pavements shall be swept or washed clean upon completion of work in each section. Upon completion of all planting work, clean the portion of the project site used for storing planting materials and equipment of all debris, extra materials and equipment. All such materials and equipment shall be entirely removed from the project site.

3.05 MAINTENANCE PERIOD

A. Begin maintenance of all plants immediately after planting. Continue maintenance for 11 months from final inspection date.

B. Maintain trees, shrubs and other plants until final acceptance of all contract work.

C. Maintenance Activities: Maintenance shall include measures necessary to establish and maintain plants in vigorous and healthy growing condition:

1. Plants shall be watered, fertilized, and maintained by the Contractor until physical completion of all the contract work.
2. Water shall be applied to all plants by hand until the underground irrigation system is in place and operational.
3. Cultivate and weed beds every week during maintenance period. If herbicides are used for weed control, apply in accordance with the manufacturer's instructions. Remedy any damage resulting from use of herbicides.
4. Pruning including removal of dead or broken branches and treatment of prune wounds.
5. Maintain all trees in vertically plumb position
6. Disease and insect control.
7. Maintenance of turn buckles and stakes.
8. Maintain watering wells.
9. Replace dead or dying plant material with plants of the same kind and size as specified in the plant list.

D. The Owner’s Project Manager shall inspect maintenance work to verify that maintenance work has been satisfactorily undertaken and continued. The Contractor shall make all corrective measures, as directed by the Owner’s Project Manager, prior to release of maintenance responsibilities. All maintenance work as outlined herein is incidental to each planting item, and no additional payment will be made for maintenance operations.

E. Maintenance Manual Submittal: Prior to Final Inspection, the Contractor shall submit a plant maintenance manual that is acceptable to the Owner’s Project Manager.

END OF SECTION 32 9400

EXHIBIT D

A. AGREED PROJECT PRICE

Direct Costs $_____

Indirect Costs $_____

Construction $_____

Contingency $_____

PROJECT COST TOTAL

$ _____

A.1. Construction Costs Include but are not limited to:

A.1.1. Construction Related Costs

- Direct Costs including but not limited to:
    - utility infrastructure
    - construction cost
    - material testing laboratory services

- Indirect Costs including but not limited to:
    - General conditions
    - Insurances
    - Overhead
    - Profit
    - Agency inspections and permits

A.1.2. Contingency

- Owner, design, and Contractor, including labor and material escalation.

EXHIBIT E

LIQUIDATED DAMAGES

PROJECT NAME: WEST MAIN DRIVE STREETSCAPE

SUBSTANTIAL COMPLETION: 90 days

CITY OF EL PASO COST PER DAY

City Inspector rate per hour - $90.00 @ =1 hour per day = $90.00
Project Manager rate per hour = $90.00 @ 1 hour per day = $90.00

CONSULTANT COSTS PER DAY

Project Manager rate per hour = $185.00 X 0.5 hour per day = $92.50
Landscape Architect rate per hour = $125.00 x 0.5 hour per day = $62.50

Liquidated Damages Total per Day = $335.00

REMAINING WORK: 30 days

CITY OF EL PASO COST PER DAY

City Inspector rate per hour - $90.00 @ =0.5 hour per day = $45.00
Project Manager rate per hour = $90.00 @ 0.5 hour per day = $45.00

CONSULTANT COSTS PER DAY

Project Manager rate per hour = $185.00 X 0.25 hour per day = $46.25
Landscape Architect rate per hour = $125.00 x 0.25 hour per day = $61.25

Liquidated Damages Total per Day = $197.50