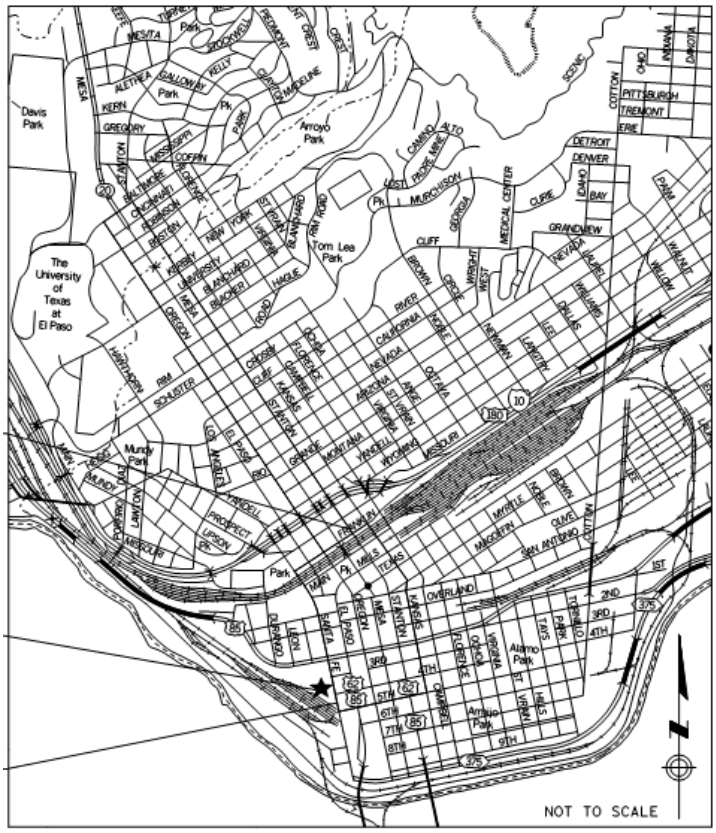
CAMINO REAL
REGIONAL MOBILITY
AUTHORITY

EL PASO STREETCAR MISCELLANEOUS PROJECTS
El Paso County, Texas
TECHNICAL SPECIFICATIONS & PLANS



Camino Real Regional Mobility Authority
801 Texas Avenue
El Paso, Texas 79901

R. GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS

PROJECT: EL PASO STREETCAR MISCELLANEOUS PROJECTS
COUNTY: EL PASO

Camino Real Regional Mobility Authority (CRRMA) GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS

ALL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE TO THIS PROJECT ARE IDENTIFIED AS FOLLOWS:

TXDOT STANDARD SPECIFICATIONS: ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION NOVEMBER 1, 2014. STANDARD SPECIFICATIONS ARE INCORPORATED INTO THE CONTRACT BY REFERENCE.

ITEMS 1L TO 9L INCL., GENERAL REQUIREMENTS

1L ABBREVIATIONS AND DEFINITIONS
2L INSTRUCTIONS TO BIDDERS
3L AWARD AND EXECUTION OF CONTRACT
4L SCOPE OF WORK
5L CONTROL OF THE WORK
6L CONTROL OF MATERIALS
7L LEGAL RELATIONS AND RESPONSIBILITIES
8L PROSECUTION AND PROGRESS
9L MEASUREMENT AND PAYMENT

TXDOT SPECIAL PROVISIONS: TXDOT SPECIAL PROVISIONS WILL GOVERN AND TAKE PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED HEREIN WHEREVER IN CONFLICT THEREWITH.

SP 000-002L	Nondiscrimination
SP 000-003L	Certification of Nondiscrimination in Employment
SP 000-004L	Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)
SP 000-005L	Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)
SP 000-241L	Cargo Preference Act Requirements in Federal Aid Contracts
SP 000-394L	Disadvantaged Business Enterprise in Federal-Aid Contracts
SP 000-1243L	Schedule of Liquidated Damages
SP 002-009L	Special Provision to Item 2L - Instruction to Bidders
SP 007-011L	Special Provision to Item 7L – Legal Relations and Responsibilities
SP 009-011L	Special Provision to Item 9L – Measurement and Payment

TECHNICAL SPECIFICATIONS

As noted in individual bid packages

GENERAL: THE ABOVE-LISTED SPECIFICATION ITEMS ARE THOSE UNDER WHICH PAYMENT IS TO BE MADE. THESE, TOGETHER WITH SUCH OTHER PERTINENT ITEMS, IF ANY, AS MAY BE REFERRED TO IN THE ABOVE LISTED SPECIFICATION ITEMS, AND INCLUDING THE SPECIAL PROVISIONS LISTED ABOVE, CONSTITUTE THE COMPLETE SPECIFI- CATIONS FOR THIS PROJECT.

S. ITEMS 1L–9L – LOCAL GOVERNMENT GENERAL REQUIREMENTS AND COVENANTS

Items 1L–9L

Local Government General Requirements and Covenants

1. ITEM 1L ABBREVIATIONS AND DEFINITIONS

1.1. APPLICABILITY

Wherever the following terms are used in these specifications or other Contract documents, the intent and meaning will be interpreted as shown below.

1.2. ABBREVIATIONS

AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALSC	American Lumber Standard Committee, Inc.
AMRL	AASHTO Materials Reference Laboratory
ANLA	American Nursery and Landscape Association
ANSI	American National Standards Institute
APA	The Engineered Wood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASBI	American Segmental Bridge Institute
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASTM	American Society for Testing and Materials
AWC	American Wood Council
AWG	American Wire Gage
AWPA	American Wood Protection Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BMP	Best Management Practices
CFR	Code of Federal Regulations
CMP	Corrugated Metal Pipe
COE	U.S. Army Corps of Engineers
CRSI	Concrete Reinforcing Steel Institute
DBE	Disadvantaged Business Enterprise
DMS	Departmental Material Specification
EIA	Electronic Industries Alliance
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration, U.S. Department of Transportation
FSS	Federal Specifications and Standards (General Services Administration)
GSA	United States General Services Administration
HUB	Historically Underutilized Business
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IESNA	Illuminating Engineering Society of North America
IMSA	International Municipal Signal Association
ISO	International Organization for Standardization
ITS	Intelligent Transportation System
ITE	Institute of Transportation Engineers
LG	Local Government
LRFD	Load and Resistance Factor Design
MASH	Manual for Assessing Safety Hardware

MPL	Material Producer List (TxDOT document)
NCHRP	National Cooperative Highway Research Program
NCR	Nonconformance Report (TxDOT form)
NEC	National Electrical Code (Published by NFPA)
NEMA	National Electrical Manufacturers Association
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
NRM	Nonhazardous Recyclable Material
NRMCA	National Ready Mixed Concrete Association
NSBA	National Steel Bridge Alliance
NTPEP	National Transportation Product Evaluation Program
OSHA	Occupational Safety & Health Administration, U.S. Department of Labor
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PE	Professional Engineer
PPI	Plastics Pipe Institute
PS&E	Plans, Specifications, and Estimates
PSL	Project-Specific Location
PTI	Post-Tension Institute
QA	Quality Assurance
QC	Quality Control
RCP	Reinforced Concrete Pipe
RPLS	Registered Public Land Surveyor
RRC	Railroad Commission of Texas
SBE	Small Business Enterprise
SFPA	Southern Forest Products Association
SI	International System of Units
SPIB	Southern Pine Inspection Bureau
SSPC	The Society for Protective Coatings
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDLR	Texas Department of Licensing and Regulation
TGC	Texas Government Code
TMUTCD	Texas Manual on Uniform Traffic Control Devices
TxDOT	Texas Department of Transportation
UL	Underwriters Laboratory, Inc.
USC	United States Code
WRI	Wire Reinforcement Institute
WWPA	Western Wood Products Association

1.3. DEFINITIONS

1.3.1. Abrasive Blasting. Spraying blasts of pressurized air combined with abrasive media.

1.3.2. Actual Cost. Contractor's actual cost to provide labor, material, equipment, and project overhead necessary for the work.

1.3.3. Addendum. Change in bid documents developed between advertising and bid submittal deadline.

1.3.4. Additive Alternate. A bid item contained in the bid documents that is not a regular item or a replacement alternate bid item. The additive alternate items include work that may be added to the base bid work.

1.3.5. Deductive Alternate. A bid item contained in the bid documents that is not a regular item or a replacement alternate bid item. The deductive alternate items include work that may be deducted from the base bid work**.**

1.3.6. Advertisement. The public announcement required by law inviting bids for work to be performed or materials to be furnished.

1.3.7. Affiliates. Two or more firms are affiliated if they share common officers, directors, or stockholders; a family member of an officer, director, or stockholder of one firm serves in a similar capacity in another of the firms; an individual who has an interest in, or controls a part of, one firm either directly or indirectly also has an interest in, or controls a part of, another of the firms; the firms are so closely connected or associated that one of the firms, either directly or indirectly, controls or has the power to control another firm; one firm controls or has the power to control another of the firms; or the firms are closely allied through an established course of dealings, including, but not limited to, the lending of financial assistance.

1.3.8. Air Blasting. Spraying blasts of pressurized air free of oil and moisture.

1.3.9. Air Temperature. The temperature measured in degrees Fahrenheit (°F) in the shade, not in the direct rays of the sun, and away from artificial heat.

1.3.10. Anticipated Profit. Profit for work not performed.

1.3.11. Apparent Low Bidder. The Bidder determined to have the numerically lowest total bid as a result of the tabulation of bids by the Owner.

1.3.12. Architect of Record. A person registered as an architect or licensed as a landscape architect, in accordance with State law, exercising overall responsibility for the design or a significant portion of the design and performs certain Contract administration responsibilities as described in the Contract; or a firm employed by the Owner to provide professional architectural services.

1.3.13. Arterial Highway. A highway used primarily for through traffic and usually on a continuous route.

1.3.14. Notice of Award. The Owner's acceptance of a Contractor's bid for a proposed Contract that authorizes the Owner to enter into a Contract.

1.3.15. Base Bid. The total bid amount without additive alternates.

1.3.16. Bid. The offer from the Bidder for performing the work described in the bid documents, submitted on the prescribed bid form, considering addenda issued and giving unit bid prices for performing the work described in the bid documents.

1.3.17. Bid Bond. The security executed by the Contractor and the Surety furnished to the Owner to guarantee payment of liquidated damages if the Contractor fails to enter into an awarded Contract.

1.3.18. Bid Documents. The complete set of documents necessary for a Bidder to submit a bid. The documents may include plans, specifications, special specifications, special provisions, addenda, and the prescribed form a Bidder is to submit as the Bid. Other terms used may include general conditions, proposal, instructions to bidders, and construction specifications.

1.3.19. Bid Error. A mathematical mistake made by a Bidder in the unit price entered into the bid documents.

1.3.20. Bidder. An individual, partnership, limited liability company, corporation, or joint venture submitting a bid for a proposed Contract.

1.3.21. Blast Cleaning. Using one of the blasting methods, including, but not limited to, water blasting, low-pressure water blasting, high-pressure water blasting, abrasive blasting, water-abrasive blasting, shot blasting, slurry blasting, water injected abrasive blasting, and brush blasting.

1.3.22. Bridge. A structure, including supports, erected over a depression or an obstruction (e.g., water, a highway, or a railway) having a roadway or track for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 ft. between faces of abutments, spring lines of arches, or extreme ends of the openings for multiple box culverts.

1.3.23. Brush Blasting. Sweeping lightly with an abrasive blast to remove loose material.

1.3.24. Building Contract. A Contract entered under State law for the construction or maintenance of an

Owner building or appurtenance facilities. Building Contracts are considered to be construction Contracts.

1.3.25. Certificate of Insurance. A form approved by the Owner covering insurance requirements stated in the Contract.

1.3.26. Change Order. Written order to the Contractor detailing changes to the specified work, item quantities or any other modification to the Contract.

1.3.27. Concrete Construction Joint. A joint formed by placing plastic concrete in direct contact with concrete that has attained its initial set.

1.3.28. Concrete Repair Manual. TxDOT manual specifying methods and procedures for concrete repair as an extension of the standard specifications.

1.3.29. Concrete Works©. TxDOT-owned software for concrete heat analysis. Software is available on the TxDOT's website.

1.3.30. Construction Contract. A Contract entered under State law for the construction, reconstruction, or maintenance of a segment of the Owner's transportation system.

1.3.31. Consultant. The licensed professional engineer or engineering firm, or the architect or architectural firm, registered in the State of Texas and under Contract to the Owner to perform professional services. The consultant may be the Engineer or architect of record or may provide services through and be subcontracted to the Engineer or architect of record.

1.3.32. Contract. The agreement between the Owner and the Contractor establishing the obligations of the parties for furnishing of materials and performance of the work prescribed in the Contract documents.

1.3.33. Contract Documents. Elements of the Contract, including, but not limited to, the plans, specifications incorporated by reference, special provisions, special specifications, Contract bonds, change orders, addendums, and supplemental agreements.

1.3.34. Contract Time. The number of days specified for completion of the work, including authorized additional working days.

1.3.35. Contractor. The individual, partnership, limited liability company, corporation, or joint venture and all principals and representatives with which the Contract is made by the Owner.

1.3.36. Controlled Access Highway. Any highway to or from which access is denied or controlled, in whole or in part, from or to abutting land or intersecting streets, roads, highways, alleys, or other public or private ways.

1.3.37. Control of Access. The condition in which the right to access of owners or occupants of abutting land or other persons in connection with a highway is fully or partially controlled by public authority.

1.3.38. Control Point. An established point shown on the plans to provide vertical and horizontal references for geometric control for construction.

1.3.39. Cross-Sections. Graphic representations of the original ground and the proposed facility, at right angles to the centerline or base line.

1.3.40. Culvert. Any buried structure providing an opening under a roadway for drainage or other purposes. Culverts may also be classified as bridges. (***See Article L1.3.22., "Bridge."***)

1.3.41. Cycle. The activity necessary for performing the specified work within the right of way project limits once.

1.3.42. Daily Road-User Cost. Damages based on the estimated daily cost of inconvenience to the traveling public resulting from the work.

1.3.43. Date of Written Authorization. Date of the written Notice to Proceed authorizing the Contractor to begin work.

1.3.44. Debar (Debarment). Action taken by the Owner, State, or federal government pursuant to regulation that prohibits a person or company from entering into a Contract, or from participating as a subcontractor, or supplier of materials or equipment used in a highway improvement Contract as defined in local, state, or federal law.

1.3.45. Detour. A temporary traffic route around a closed portion of a road.

1.3.46. Department. When used in the context of the party with whom the Contractor has a Construction Contract, Department refers to Owner. When used in other contexts such as technical specifications, refers to the Texas Department of Transportation.

1.3.47. Departmental Material Specifications. Reference specifications for various materials published by TxDOT's Construction Division with a DMS-XXXXX numbering system.

1.3.48. Direct Traffic Culvert. Concrete box culvert whose top slab is used as the final riding surface or is to have an overlay or other riding surface treatment.

1.3.49. Disadvantaged Business Enterprise. A small business certified through the Texas Unified Certification Program in accordance with 49 CFR Part 26, that is at least 51% owned by one or more socially and economically disadvantaged individuals, or in the case of a publicly owned business, in which is at least 51% of the stock is owned by one or more socially and economically disadvantaged individuals, and whose management and daily business operations are controlled by one or more of the individuals who own it.

1.3.50. Divided Highway. A highway with separate roadways intended to move traffic in opposite directions.

1.3.51. Easement. A real property right acquired by one party to use land belonging to another party for a specified purpose.

1.3.52. Engineer. The Professional Engineer licensed in Texas who represents the interests of the Owner.

1.3.53. Entity. Political subdivision for which the project is designed and constructed. Either a Municipality (City) or a County or other entity organized under the authority of State of Texas statutes. May also be referred to as an Owner.

1.3.54. Expressway. A divided arterial highway for through traffic with full or partial control of access and generally with grade separations at intersections.

1.3.55. Family Member. A family member of an individual is the individual's parent, parent's spouse, stepparent, stepparent's spouse, sibling, sibling's spouse, spouse, child, child's spouse, spouse's child, spouse's child's spouse, grandchild, grandparent, uncle, uncle's spouse, aunt, aunt's spouse, first cousin, or first cousin's spouse.

1.3.56. Force Account. Payment for directed work based on the actual cost of labor, equipment, and materials furnished with markups for project overhead and profit.

1.3.57. Freeway. An expressway with full control of access.

1.3.58. Frontage Road. A local street or road auxiliary to and located along an arterial highway for service to abutting property and adjacent areas and for control of access (sometimes known as a service road, access road, or insulator road).

1.3.59. Hazardous Materials or Waste. Hazardous materials or waste include, but are not limited to, explosives, compressed gas, flammable liquids, flammable solids, combustible liquids, oxidizers, poisons, radioactive materials, corrosives, etiologic agents, and other material classified as hazardous by 40 CFR 261, or applicable state and federal regulations.

1.3.60. High-Pressure Water Blasting. Water blasting with pressures between 5,000 and 10,000 psi.

1.3.61. Highway, Street, or Road. General terms denoting a public way for purposes of vehicular travel, including the entire area within the right of way. Recommended usage in urban areas is highway or street, in rural areas, highway or road.

1.3.62. Historically Underutilized Business. A corporation, sole proprietorship, partnership, or joint venture formed for the purpose of making a profit certified by the Texas Comptroller of Public Accounts, and 51% owned by one or more persons who are economically disadvantaged because of their identification as members of certain groups, including African Americans, Hispanic Americans, Asian-Pacific Americans, Native Americans, or women, and have a proportionate interest and demonstrate active participation in the control, operation, and management of the business' affairs. Individuals meeting the HUB definition are required to be residents of the State of Texas. Businesses that do not have their primary headquarters in the State of Texas are not eligible for HUB certification.

1.3.63. Incentive/Disincentive Provisions. An adjustment to the Contract price of a predetermined amount for each day the work is completed ahead of or behind the specified milestone, phase, or Contract completion dates. The amount of the incentive/disincentive is determined based on estimated costs for engineering, traffic control, delays to the motorists, and other items involved in the Contract.

1.3.64. Independent Assurance Tests. Tests used to evaluate the sampling and testing techniques and equipment used in the acceptance program. The tests are performed by the Owner or the Owner's representative and are not used for acceptance purposes.

1.3.65. Inspector. The person assigned by the Owner to inspect any or all parts of the work and the materials used for compliance with the Contract.

1.3.66. Intelligent Transportation System. An integrated system that uses video and other electronic detection devices to monitor traffic flows.

1.3.67. Intersection. The general area where 2 or more highways, streets, or roads join or cross, including the roadway and roadside facilities for traffic movements within it.

1.3.68. Island. An area within a roadway from which vehicular traffic is intended to be excluded, together with any area at the approach occupied by protective deflecting or warning devices.

1.3.69. Joint Venture. Any combination of individuals, partnerships, limited liability companies, or corporations submitting a single bid form.

1.3.70. Lane Rental. A method to assess the Contractor daily or hourly rental fees for each lane, shoulder, or combination of lanes and shoulders taken out of service.

1.3.71. Letting. The receipt, opening, tabulation, and determination of the apparent low Bidder.

1.3.72. Letting Official. The Owner representative empowered by the Owner to officially receive bids and close the receipt of bids at a letting.

1.3.73. Licensed Professional Engineer. A person who has been duly licensed by the Texas Board of Professional Engineers to engage in the practice of engineering in the State of Texas; also referred to as a Professional Engineer.

1.3.74. Limits of Construction. An area with established boundaries, identified within the highway right of way and easements, where the Contractor is permitted to perform the work.

1.3.75. Local Street or Road. A street or road primarily for access to residence, business, or other abutting property.

1.3.76. Low-Pressure Water Blasting. Water blasting with pressures between 3,000 and 5,000 psi.

1.3.77. Major Item. An item of work included in the Contract that has a total cost equal to or greater than 5% of the original Contract or $100,000 whichever is less. A major item at the time of bid will remain a major item. An item not originally a major item does not become one through the course of the Contract.

1.3.78. Manual of Testing Procedures. Department manual outlining test methods and procedures maintained by the Materials and Tests Division.

1.3.79. Material Producer List. `TxDOT-maintained list of approved products. Referenced as "Department's MPL".

1.3.80. Materially Unbalanced Bid. A bid that generates a reasonable doubt that award to the Bidder submitting a mathematically unbalanced bid will result in the lowest ultimate cost to the Owner.

1.3.81. Mathematically Unbalanced Bid. A bid containing bid prices that do not reflect reasonable actual costs plus a reasonable proportionate share of the Bidder's anticipated profit, overhead costs, and other indirect costs.

1.3.82. Median. The portion of a divided highway separating the traffic lanes in opposite directions.

1.3.83. Milestone Date. The date that a specific portion of the work is to be completed, before the completion date for all work under the Contract.

1.3.84. Monolithic Concrete Placement. The placement of plastic concrete in such manner and sequence to prevent a construction joint.

1.3.85. National Holidays. January 1, the last Monday in May, July 4, the first Monday in September, the fourth Thursday in November, and December 24 or December 25.

1.3.86. Nonhazardous Recyclable Material. A material recovered or diverted from the nonhazardous waste stream for the purposes of reuse or recycling in the manufacture of products that may otherwise be produced using raw or virgin materials.

1.3.87. Nonresident Bidder. A Bidder whose principal place of business is not in Texas. This includes a Bidder whose ultimate parent company or majority owner does not have its principal place of business in Texas.

1.3.88. Nonresponsive Bid. A bid that does not meet the criteria for acceptance contained in the bid documents.

1.3.89. Non-Site-Specific Contracts. Contracts in which a geographic region is specified for the work, and for which work orders, with or without plans, further detail the limits and work to be performed.

1.3.90. Notice to Proceed, Written notification to the Contractor authorizing work to begin.

1.3.91. Notification. Either written or oral instruction to the Contractor concerning the work. Voice mail is oral notification.

1.3.92. Owner, Political subdivision for whom the project is designed and constructed. Either a Municipality (City), a County or other entity organized under the authority of State of Texas statutes. May also be referred to as an Entity.

1.3.93. Pavement. That part of the roadway having a constructed surface for the use of vehicular traffic.

1.3.94. Pavement Structure. Combination of surface course and base course placed on a subgrade to support the traffic load and distribute it to the roadbed.

1.3.95. Surface Course. Pavement structure layers designed to accommodate the traffic load. The top layer resists skidding, traffic abrasion, and the disintegrating effects of climate and is sometimes called the wearing course.

1.3.96. Base Course. One or more layers of specified material thickness placed on a subgrade to support

a surface course.

1.3.97. Subgrade. The top surface of a roadbed upon which the pavement structure, shoulders, and curbs are constructed.

1.3.98. Subgrade Treatment. Modifying or stabilizing material in the subgrade.

1.3.99. Payment Bond. The security executed by the Contractor and the Surety, furnished to the Owner to guarantee payment of all legal debts of the Contractor pertaining to the Contract.

1.3.100. Performance Bond. The security executed by the Contractor and the Surety, furnished to the Owner to guarantee the completion of the work in accordance with the terms of the Contract.

1.3.101. Plans. The approved drawings, including true reproductions of the drawings that show the location, character, dimensions, and details of the work and are a part of the Contract.

1.3.102. Power of Attorney for Surety Bonds. An instrument under corporate seal appointing an attorney-in-fact to act on behalf of a Surety in signing bonds.

1.3.103. Qualification. The process for determining a Contractor's eligibility to be awarded a construction contract

1.3.104. Prequalification. The process for determining a Contractor's eligibility to bid work.

1.3.105. Prequalification Statement. The forms on which required information is furnished concerning the Contractor's ability to perform and finance the work.

1.3.106. Prequalified Contractor. A contractor that is approved to bid on TxDOT contracts by satisfying their Prequalification Process.

1.3.107. Post Qualification. The owner will determine if contractors are qualified to bid on the project after bids are open. The bid documents will identify the minimum requirements that contractor must meet to be qualified for the project. Unqualified contractors' bids will be considered non-responsive and not accepted.

1.3.108. Project-Specific Location. A material source, plant, waste site, parking area, storage area, field office, staging area, haul road, or other similar location either outside the project limits or within the project limits but not specifically addressed in the Contract.

1.3.109. Proposal. The offer from the Bidder submitted on the prescribed form, including addenda issued, giving unit bid prices for performing the work described in the plans and Specifications.

1.3.110. Proposal Form. The form printed and sent to the Bidder by the Owner or printed by the Bidder from the Owner's bidding system.

1.3.111. Proposal Guaranty. The security furnished by the Bidder as a guarantee that the Bidder will enter into a Contract if awarded the work.

1.3.112. Quality Assurance. Sampling, testing, inspection, and other activities conducted by the Engineer to determine payment and make acceptance decisions.

1.3.113. Quality Control. Sampling, testing, and other process control activities conducted by the Contractor to monitor production and placement operations.

1.3.114. Ramp. A section of highway for the primary purpose of making connections with other highways.

1.3.115. Referee Tests. Tests requested to resolve differences between Contractor and Owner test results. The referee laboratory is the Owners.

1.3.116. Regular Item. A bid item contained in the bid documents and not designated as an additive alternate or replacement alternate bid item.

1.3.117. Rental Rate Blue Book for Construction Equipment. Publication containing equipment rental rates.

1.3.118. Replacement Alternate. A bid item identified on the bid documents that a Bidder may substitute for a specific regular item of work.

1.3.119. Responsive Bid. A bid that meets all requirements of the advertisement and the bid documents for acceptance.

1.3.120. Right of Way. A general term denoting land or property devoted to transportation purposes.

1.3.121. Roadbed. The graded portion of a highway prepared as foundation for the pavement structure and shoulders. On divided highways, the depressed median type and the raised median type highways are considered to have 2 roadbeds. Highways with a flush median are considered to have 1 roadbed. Frontage roads are considered separate roadbeds.

1.3.122. Road Master. A railroad maintenance official in charge of a division of railway.

1.3.123. Roadside. The areas between the outside edges of the shoulders and the right of way boundaries. Unpaved median areas between inside shoulders of divided highways and areas within interchanges are included.

1.3.124. Roadway. The portion of the highway (including shoulders) used by the traveling public.

1.3.125. Sandblasting, Dry. Spraying blasts of pressurized air combined with sand.

1.3.126. Sandblasting, Wet. Spraying blasts of pressurized water combined with sand.

1.3.127. Shoulder. That portion of the roadway contiguous with the traffic lanes for accommodation of stopped vehicles for emergency use or for lateral support of base and surface courses.

1.3.128. Shot Blasting. Spraying blasts of pressurized air combined with metal shot.

1.3.129. Sidewalk. Portion of the right of way constructed exclusively for pedestrian use.

1.3.130. Slurry Blasting. Spraying blasts of pressurized air combined with a mixture of water and abrasive media.

1.3.131. Special Provisions. Additions or revisions to these standard specifications or special specifications.

1.3.132. Special Specifications. Supplemental specifications applicable to the Contract not covered by these standard specifications.

1.3.133. Specifications. Directives or requirements issued or made pertaining to the method and manner of performing the work or to quantities and qualities of materials to be furnished under the Contract. References to DMSs, ASTM or AASHTO specifications, or TxDOT bulletins and manuals, imply the latest standard or tentative standard in effect on the date of the bid. The Owner will consider incorporation of subsequent changes to these documents in accordance with Item 4L, "Scope of Work."

1.3.134. Small Business Enterprise. A firm (including affiliates) whose annual gross receipts do not exceed the U.S. Small Business Administration's size standards for 4 consecutive years.

1.3.135. State. The State of Texas.

1.3.136. State Holiday. A holiday authorized by the State Legislature excluding optional state holidays and not listed in *Article 1L.3.85., "National Holidays."* A list of state holidays can be found on the TxDOT's website.

1.3.137. Station. A unit of measurement consisting of 100 horizontal feet.

1.3.138. Subcontract. The agreement between the Contractor and subcontractor establishing the obligations of the parties for furnishing of materials and performance of the work prescribed in the Contract documents.

1.3.139. Subcontractor. An individual, partnership, limited liability company, corporation, or any combination thereof that the Contractor sublets, or proposes to sublet, any portion of a Contract, excluding a material supplier, a hauling firm hauling only from a commercial source to the project, truck owner-operator, wholly owned subsidiary, or specialty-type businesses such as security companies and rental companies.

1.3.140. Subsidiary. Materials, labor, or other elements that because of their nature or quantity have not been identified as a separate item and are included within the items on which they necessarily depend.

1.3.141. Substructure. The part of the structure below the bridge seats, but not including bearings, drilled shafts, or piling. Parapets, back walls, wing walls of the abutments, and drainage structures are considered parts of the substructure.

1.3.142. Superintendent. The representative of the Contractor who is available at all times and able to receive instructions from the Owner or authorized Owner representatives and to act for the Contractor.

1.3.143. Superstructure. The part of the structure above the bridge seats or above the springing lines of arches and including the bearings. Flatwork construction may be considered superstructure.

1.3.144. Supplemental Agreement. Written agreement entered into between the Contractor and the Owner and approved by the Surety, covering alterations and changes in the Contract. A supplemental agreement is used by the Owner whenever the modifications include assignment of the Contract from one party to another or other cases as desired by the Owner.

1.3.145. Surety. The corporate body or bodies authorized to do business in Texas bound with and for the Contractor for the faithful performance of the work covered by the Contract and for the payment for all labor and material supplied in the prosecution of the work.

1.3.146. Surplus Materials. Any debris or material related to the Contract but not incorporated into the work.

1.3.147. Suspension. Action taken by the Owner, State, or federal government pursuant to regulation that prohibits a person or company from entering into a Contract, or from participating as a subcontractor, or supplier of materials or equipment used in a contract

1.3.148. Tex –XXX-X. TxDOT material test methods found on TxDOT's website.

1.3.149. Traffic Lane. The strip of roadway intended to accommodate the forward movement of a single line of vehicles.

1.3.150. Traveled Way. The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

1.3.151. Truck Owner-Operator. An individual who owns and operates 1 truck for hire.

1.3.152. UT-Bridge. TxDOT-owned software for steel girder erection. Software is available on TxDOT's website.

1.3.153. UT-Lift. TxDOT-owned software for steel girder erection. Software is available on TxDOT's website.

1.3.154. Utility. Privately, publicly, or cooperatively owned lines, facilities, and systems for producing, transmitting, or distributing communications, power, heat, gas, oil, water, waste, or storm water that are not connected with the highway drainage, signal systems, or other products that directly or indirectly serve the public or the utility company.

1.3.155. Verification Tests. Tests used to verify accuracy of QC and QA and mixture design testing.

1.3.156. Water-Abrasive Blasting. Spraying blasts of pressurized water combined with abrasive media.

1.3.157. Water Blasting. Spraying blasts of pressurized water of at least 3,000 psi.

1.3.158. Water-Injected Abrasive Blasting. Abrasive blasting with water injected into the abrasive/air stream at the nozzle.

1.3.159. Wholly Owned Subsidiary. A legal entity owned entirely by the Contractor or subcontractor.

1.3.160. Work. The furnishing of all labor, materials, equipment, and other incidentals necessary for the successful completion of the Contract.

1.3.161. Written Notice. Written notice is considered to have been duly given if delivered in person to the individual or member to whom it is intended or if sent by regular, registered, or certified mail and delivered to the last known business address; sent by facsimile to the last known phone number; or sent by e-mail to the last known address. The date of the letter will serve as the beginning day of notice. Unclaimed mail or failure to provide current mailing address will not be considered a failure to provide written notice.

2. ITEM 2L INSTRUCTIONS TO BIDDERS

2.1. INTRODUCTION

Instructions to the Contractor in these specifications are generally written in active voice, imperative mood. The subject of imperative sentences is understood to be "the Contractor." The Owner's responsibilities are generally written in passive voice, indicative mood. Phrases such as "as approved," "unless otherwise approved," "upon approval," "as directed," "as verified," "as ordered," and "as determined" refer to actions of the Engineer unless otherwise stated, and it is understood that the directions, orders, or instructions to which they relate are within the limitations of and authorized by the Contract.

2.2. ELIGIBILITY OF BIDDERS

Bidders on this project must be prequalified though TxDOT by meeting the requirements of the Confidential Questionnaire (CQ) or Bidder's Questionnaire (BQ). Refer to TxDOT's website for prequalification requirements. Assure prequalification documents are submitted to TxDOT at least 14 days before bid opening. Comply with all technical prequalification requirements in the bid documents.

2.3. ISSUING BID DOCUMENTS

Bid Document information may be obtained at the Camino Real Regional Mobility Authority (CRRMA) website: https://www.crrma.org/procurements

At the time Bid Documents are obtained, Bidder must provide a working e-mail address, so as to receive any addenda or clarification issued by the Owner.

The Owner will not issue bid documents if one or more of the following apply:

- the Bidder is suspended or debarred by the Department or federal agency,
- the Bidder has not fulfilled the requirements for prequalification,
- the Bidder is prohibited from rebidding a specific project due to a bid error on the original bid documents,
- the Bidder failed to enter into a Contract on the original award,
- the Bidder was defaulted or terminated on the original Contract, unless the Owner terminated for convenience, or
- the Bidder or a subsidiary or affiliate of the Bidder has received compensation from the Owner to participate in the preparation of the plans or specifications on which the bid or Contract is based.

2.4. INTERPRETING ESTIMATED QUANTITIES

The quantities listed in the bid documents are approximate and will be used for the comparison of bids. Payments will be made for actual quantities of work performed in accordance with the Contract.

2.5. EXAMINING DOCUMENTS AND WORK LOCATIONS

Examine the bid documents and specified work locations before submitting a bid for the work. Submitting a bid will be considered evidence that the Bidder has performed this examination. Borings, soil profiles, water elevations, and underground utilities shown on the plans were obtained for the use of the Owner in the preparation of plans. This information is provided for the Bidder's information only and the Owner makes no representation as to the accuracy of the data. Be aware of the difficulty of accurately classifying all material

encountered in making foundation investigations, the possible erosion of stream channels and banks after survey data have been obtained, and the unreliability of water elevations other than for the date recorded.

Oral explanations, instructions, or consideration for Contractor-proposed changes in the bid documents given during the bidding process are not binding. Only requirements included in the bid documents and Owner-issued addenda are binding. Request explanations of documents at least five (5) days prior to the bid opening.

Immediately notify the Owner of any error, omission, or ambiguity discovered in any part of the bid documents. The Owner will issue addenda when appropriate.

2.6. PREPARING THE BID

Prepare the proposal form furnished by the Owner. Informational proposal forms printed from the Owner's website will not be accepted.

Specify a unit price in dollars and cents for each regular item, additive alternate item, deductive alternate item or replacement alternate item for which an estimated quantity is given.

When "Working Days" is an item, submit the number of working days to be used to complete the Contract or phases of the Contract.

The Owner will not accept an incomplete bid. A bid that has one or more of the deficiencies listed below is considered incomplete:

- the proposal form was not signed,
- all certifications were not acknowledged,
- a regular item, additive alternate item or deductive alternate item is left blank,
- a regular item and the corresponding replacement alternate item are left blank,
- the proposal form submitted had the incorrect number of items, or
- all addenda were not acknowledged.

2.7. NONRESPONSIVE BID

The Owner will not accept a nonresponsive bid. A bid that has one or more of the deficiencies listed below is considered nonresponsive:

- The bid was not in the hands of the Letting Official at the time and location specified in the advertisement.
- A bid was submitted for the same project by a Bidder or Bidders and one or more of its partners or affiliates.
- The Bidder was not authorized to receive a proposal form under *Article 2L.3, "Issuing Bid Documents"*,
- The Bidder failed to acknowledge receipt of all addenda issued.
- The proposal form was signed by a person who was not authorized to bind the Bidder or Bidders.
- The proposal guaranty did not comply with the requirements contained in this Item.
- The bid was in a form other than the official proposal form issued by the Owner.
- The Bidder modified the bid in a manner that altered the conditions or requirements for work as stated in the bid documents.

- The Bidder bid more than the maximum or less than the minimum number of allowable working days when working days was an item.
- The Bidder did not attend a specified mandatory pre-bid conference.
- The Bidder did not meet the requirements of the technical qualification.
- The Bidder did not include a signed State of Texas Child Support Business Ownership Form.
- The bidder is not prequalified by TxDOT
- The bidder does not meet the Owner's qualification requirements.

2.8. SUBMITTAL OF BIDS

2.8.1. Electronic Bids. Electronic bidding is not available.

2.8.2. Printed Bid.

2.8.2.1. Proposal Form. Mark all entries in ink. As an alternative to handwriting the unit prices in the proposal form, submit a typed proposal form. A typed proposal form must contain the information in the format shown on the "Example of Bid Prices Submitted by Computer Printout" in the proposal form.

When regular bid items have corresponding replacement alternate items, select the bid item or group of items to be used for the bid tabulation. Acknowledge all addenda by checking the appropriate box on the addendum acknowledgement page. Provide the complete and correct name of the Bidder submitting the bid. A person authorized to bind the Bidder must sign the proposal form. In the case of a joint venture, provide the complete and correct name of all Bidders submitting the bid. In the case of a joint venture, the person signing the proposal form must be authorized to bind all joint venture participants.

If a proposal form contains both regular items for domestic steel or iron materials and replacement alternate items for foreign steel or iron materials, the Bidder must either:

- submit unit bid prices for domestic items only, or
- submit unit bid prices for both the domestic and foreign items.

2.8.2.2. Proposal Guaranty. Provide a bid guaranty in the amount indicated on the bid documents. Use either a guaranty check or a printed bid bond. An electronic bid bond may be used as the guaranty. Ensure the electronic bid bond meets the requirements of *Article 2L.8.2.2., "Proposal Guaranty,"* and submit the electronic bid bond with the printed bid.

2.8.2.3. Guaranty Check. Make the check payable to the Owner. The check must be a cashier's check, money order, or teller's check drawn by or on a state or national bank, or a state or federally chartered credit union (collectively referred to as "bank"). The check must be dated on or before the date of the bid opening. Postdated checks will not be accepted. The type of check or money order must be indicated on the face of the instrument, except in the case of a teller's check, and the instrument must be no more than 90 days old. A check must be made payable at or through the institution issuing the instrument; be drawn by a bank and on a bank; or be payable at or through a bank. The Owner will not accept personal checks, certified checks, or other types of money orders.

2.8.2.4. Bid Bond. Use the bid bond form provided by the Owner. Submit the bid bond with the powers of attorney attached and, in the amount, specified. The bond must be dated on or before the date of the bid opening, bear the impressed seal of the Surety, and be signed by the Bidder or Bidders and an authorized individual of the Surety. As an alternative for joint venture Bidders, each of the Bidders may submit a separate bid bond completed as outlined in this article 2.8.2.4. Bid bonds will only be accepted from Sureties authorized to execute a bond under and in accordance with State law.

2.8.2.5. Submittal of Bid. Place the completed proposal form and the bid guaranty in a sealed envelope marked to indicate the contents.

When submitting by mail or delivery service, place the envelope in another sealed envelope and address as indicated in the official advertisement or in the bid documents. It is the Bidder's responsibility to ensure that the sealed bid arrives at the location described on or before the time and date set for the bid opening. To be accepted, the bid must be in the hands of the Letting Official by that time of opening regardless of the method chosen for delivery.

2.8.2.6. Revising the Proposal Form. Make desired changes to the proposal form in ink and submit the bid to the Letting Official. The Owner will not make revisions to a bid on behalf of a Bidder.

2.8.2.7. Withdrawing a Bid. Submit a written request to withdraw a bid before the time and date set for the opening. The Owner will not accept oral requests. A written request must be signed and submitted to the Letting Official with proof of identification. The request must be made by a person authorized to bind the Bidder or Bidders. In the case of joint venture, the Owner will accept a request from any person authorized to bind a party to the joint venture. The Owner may require written delegation of authority to withdraw a bid when the individual sent to withdraw the bid is not authorized to bind the Bidder or Bidders.

2.9. OPENING AND READING OF BIDS

At the time, date, and location specified in the official advertisement, the Owner will publicly open and read bids.

2.10. TABULATING BIDS

2.10.1. Official Total Bid Amount. The Owner will sum the products of the quantities and the unit prices bid in the proposal form to determine the official total bid amount, except as provided in *Article 2L.11., "Consideration of Unit Prices."* The official total bid amount is the basis for determining the apparent low Bidder. The total bid amounts will be compared, and the results made public.

2.10.2. Consideration of Bid Format. When a Bidder submits both an electronic bid and a printed bid that is responsive, the unit bid prices in the printed bid will be used to determine the total bid amount. If the printed bid is incomplete or nonresponsive, the electronic bid will be used in the tabulation of the total bid amount.

If a Bidder submits 2 or more printed bids, all responsive bids will be tabulated. The bid with the lowest tabulation will be used to determine the total bid amount.

2.10.3. Rounding of Unit Prices. The Owner will round off all unit bids involving fractional parts of a cent to the nearest one-tenth cent ($0.001) in determining the amount of the bid as well as computing the amount due for payment of each item under the Contract. For rounding purposes, entries of five-hundredths of a cent ($0.0005) or more will be rounded up to the next highest tenth of a cent, while entries less than five-hundredths of a cent will be rounded down to the next lowest **tenth of a cent.**

2.10.4. Interpretation of Unit Prices. The Owner will make a documented determination of the unit bid price if a unit bid price is illegible or conflicting in the case of replacement alternate items. The Owner's determination will be final.

2.11. CONSIDERATION OF UNIT PRICES.

2.11.1. Additive Alternate Items. The Owner will sum the products of the quantities and the unit prices for the regular items in the proposal form to determine the total bid amount for the base bid.

The official total bid amount will be determined by the summation of the base bid plus a pre-determined order of additive alternate items. An estimate of the budgeted amount may be shown on the plans.

The Contract will identify the base bid work and additive alternate work to be performed. The Owner makes no guarantee that the additive alternate work will be required.

2.11.2. A + B Bidding. The official total bid amount will be determined by the summation of the Contract amount and the time element. The Owner will use the following formula to make the calculation:

A + B1 + B2 + BX + … + BT

The Contract amount, equal to A in the formula, is determined by the summation of the products of the approximate quantities shown in the bid and the unit bid prices bid. The time element, equal to B1, B2, BX (when phases are included as bid components), and BT (substantial completion of the project when included as a bid component), of the bid is determined by multiplying the number of working days bid to substantially complete the project, or phases, by the daily road-user cost (RUC) provided on the bid documents. When partial days are bid, they will be rounded up to the nearest whole day.

The formula above determines the low Bidder and establishes the Contract time.

2.11.3. "Buy America." Comply with Buy America in accordance with Article 6L.1.1. For a Bidder who proposes to use foreign steel or iron materials to be considered the apparent low Bidder, their total bid must be at least 25% lower than the next lowest bid if that bid proposes to use domestic steel or iron materials.

This requirement does not apply to minimal use of steel or iron materials provided that the total cost of all foreign source items used in the project, as delivered to the project site, is less than $2,500 or one-tenth-of-one percent (1/10 of 1%) of the Contract amount, whichever is greater

2.12. CONSIDERATION OF BID ERRORS.

The Owner will consider a claim of a bid error by the apparent low Bidder if the following requirements have been met:

- Submit written notification to the Owner within 5 business days after the date the bid is opened.
- Identify the items of work involved and include bidding documentation. The Owner may request clarification of submitted documentation.

The Owner will evaluate the claim of an error by the apparent low Bidder by considering the following:

- The bid error relates to a material item of work.
- The bid error amount is a significant portion of the total bid.
- The bid error occurred despite the exercise of ordinary care.
- The delay of the proposed work will not impact cost and safety to the public.

Acceptance of the bid error claim by the Owner will result in the rejection of the bid of the apparent low bidder .and the Owner may consider the second responsive bid. The erring Contractor will not be allowed to bid the project if it is relet. Rejection of bids due to the Contractor's bid error may result in the application of sanctions by the Owner.

2.13. Tie Bids

If the official total bid amount for 2 or more Bidders is equal and those bids are the lowest submitted, each tie Bidder will be given an opportunity to withdraw their bid. If 2 or more tie Bidders do not withdraw their bids, the low Bidder will be determined by a coin toss. If all tie Bidders request to withdraw their bids, no withdrawals will be allowed, and the low Bidder will be determined by a coin toss. The Letting Official will preside over the proceedings for the coin toss.

3. ITEM 3L AWARD AND EXECUTION OF CONTRACT

3.1. AWARD OF CONTRACT

The Owner will award, reject, or defer the Contract within 60 days after the opening of the bid. The Owner reserves the right to reject any or all bids and to waive minor technicalities in the best interest of the Owner.

3.1.1. Award. The Owner will award the Contract to the low Bidder as determined by *Article 2L.10, "Tabulating Bids."* The Owner may award a Contract to the second lowest Bidder when the following requirements have been met:

- The low Bidder withdraws its bid.
- The low Bidder fails to enter into a contract with the Owner after Award.
- The second low Bidder's unit bid prices are reasonable.

3.1.2. Rejection. The Owner will reject the Contract if:

- Collusion may have existed among the Bidders. Collusion participants will not be allowed to bid future bids for the same Contract.
- The low bid is mathematically and materially unbalanced. The Bidder will not be allowed to bid future bids for the same Contract.
- The lowest bid is higher than the Owner's estimate and re-advertising for bids may result in a lower bid.
- The low bid contains a bid error that satisfies the requirements and criteria in Article 2L.11 "Consideration of Bid Errors."
- Rejection of the Contract is in the best interest of the Owner.

3.1.3. Deferral. The Owner may defer the award or rejection of the Contract when deferral is in the best interest of the Owner.

3.2. RESCINDING OF AWARD

The Owner reserves the right to cancel the award of any Contract before Contract execution with no compensation due when the cancellation is in the best interest of the Owner. The Owner will return the proposal guaranty to the Contractor.

3.3. DISADVANTAGED BUSINESS ENTERPRISE (DBE)/HISTORICALLY UNDERUTILIZED BUSINESS/SMALL BUSINESS ENTERPRISE (SBE)

Submit all DBE/HUB/SBE information in the time frame specified when required by the bid documents.

3.4. EXECUTION OF CONTRACT

Provide the following within 15 days after written notification of award of the Contract:

3.4.1. Contract. Executed by Contractor and Surety.

3.4.2. Bonds. Executed performance bond and payment bond in the full amount of the Contract price with powers of attorney. Provide bonds in accordance with Table 1. Furnish the payment and performance bonds as a guaranty for the protection of the claimants and the Owner for labor and materials and the faithful performance of the work.

Table 1
Bonding Requirements

Contract Amount	Required Bonds
Less than $25,000	None
$25,000 to $100,000	Payment
More than $100,000	Performance and Payment

3.4.3. Insurance. Submit a Certificate of Insurance showing coverages in accordance with Contract requirements.

Insurances must cover the contracted work for the duration of the Contract and must remain in effect until final acceptance. Failure to obtain and maintain insurance for the contracted work may result in suspension of work or default of the Contract. If the insurance expires and coverage lapses for any reason, stop all work until the Owner receives an acceptable Certificate of Insurance.

Provide the Owner with a Certificate of Insurance verifying the types and amounts of coverage shown in Table 2. Provide as additional insured the Camino Real Regional Mobility Authority. The Certificate of Insurance must be in a form approved by the Owner. Any Certificate of Insurance provided must be available for public inspection.

Table 2
Insurance Requirements

Type of Insurance	Amount of Coverage
Commercial General Liability Insurance	Not Less Than: $600,000 each occurrence
Business Automobile Policy	Not Less Than: $600,000 combined single limit
Workers' Compensation	Not Less Than: Statutory
All Risk Builder's Risk Insurance (For building-facilities Contracts only)	100% of Contract Price

By signing the Contract, the Contractor certifies compliance with all applicable laws, rules, and regulations pertaining to workers' compensation insurance. This certification includes all subcontractors. Pay all deductibles stated in the policy. Subcontractors must meet the requirements of Table 2 either through their own coverage or through the Contractor's coverage.

The Workers' Compensation policy must include a waiver of subrogation endorsement in favor of the Owner.

For building-facilities Contracts, provide All Risk Builder's Risk Insurance to protect the Owner against loss by storm, fire or extended coverage perils on work and materials intended for use on the project including the adjacent structure. Name the Owner under the Lost Payable Clause.

For Contracts with railroad requirements, see project-specific details for additional insurance requirements.

Provide a substitute Surety on the Contract bonds in the original full Contract amount within 15 days of notification if the Surety is declared bankrupt or insolvent, the Surety's underwriting limitation drops below the Contract amount or the Surety's right to do business is terminated by the Owner. The

substitute Surety must be authorized by the laws of the State and acceptable to the Owner. Work will be suspended until a substitute Surety is provided. Working day charges will be suspended for 15 days or until an acceptable Surety is provided, whichever is sooner.

The work performed under this article will not be measured or paid for directly but will be subsidiary to pertinent items.

3.4.4. Business Ownership Information. Submit the names and social security numbers of all individuals owning 25% or more of the firm on the Owner's form.

3.4.5. Railroad Documents. Provide all required documents for satisfaction of railroad requirements for projects that have work which involves railroad right of way. Comply with the requirements of *Article 5L.8., "Cooperation With Railroads."*

3.5. FAILURE TO ENTER CONTRACT

If the Contractor fails to comply with all of the requirements in *Article 3.4., "Execution of Contract,"* the proposal guaranty will become the property of the Owner, not as a penalty, but as liquidated damages. The Contractor forfeiting the proposal guaranty will not be considered in future bids for the same work unless there has been a substantial change in design of the work.

3.6. APPROVAL AND EXECUTION OF CONTRACT

The Contract will be approved and signed under authority of the Owner.

3.7. RETURN OF PROPOSAL GUARANTY

The proposal guaranty check of the low Bidder will be retained until after the Contract has been rejected or awarded and executed. Bid bonds will not be returned.

3.8. BEGINNING OF WORK

Do not begin work until authorized in writing by the Owner.

Verify all quantities of materials shown on the plans before ordering.

For Contracts with callout work and work orders, the purchase of materials before a work order is issued or without prior written approval of the Engineer is at the Contractor's risk, and the Department is not obligated for the cost of the materials or work to acquire the materials.

3.9. ASSIGNMENT OF CONTRACT

Do not assign, sell, transfer, or otherwise dispose of the Contract or any portion rights, title, or interest (including claims) without the approval of the Owner or designated representative. The Owner must deem any proposed assignment justified and legally acceptable before the assignment can take place.

3.10. EXCLUDED PARTIES

The Contractor certifies by signing the Contract that the Contractor will not enter into any subcontract with a subcontractor that is debarred or suspended by the Owner or by any state or federal agency.

4. ITEM 4L SCOPE OF WORK

4.1. CONTRACT INTENT

The intent of the Contract is to describe the completed work to be performed. Furnish materials, supplies, tools, equipment, labor, and other incidentals necessary for the proper prosecution and completion of the work in accordance with Contract documents.

4.2. PRECONSTRUCTION CONFERENCE

Before starting work, schedule and attend a preconstruction conference with the Owner. Failure to schedule and attend a preconstruction conference is not grounds for delaying the beginning of working day charges. The preconstruction conference may be scheduled with the safety preconstruction meeting described in *Article 7L.1.2., "Safety Preconstruction Meeting."*

4.2.1. Issue Resolution Process. An issue is any aspect of the Contract where parties of the Contract do not agree. The individuals identified at the lowest level of the issue escalation ladder will initiate the issue resolution process by escalating any issue that remains unresolved within the time frame outlined in the issue escalation ladder.

Work with the Owner to resolve all issues during the course of the Contract. Refer to *Article 4L.7., "Dispute or Claims Procedure,"* for all unresolved issues.

4.3. PARTNERING

The intent of this Article is to promote an environment of trust, mutual respect, integrity, and fair dealing between the Owner and the Contractor.

Informal partnering does not make use of a facilitator, while formal partnering uses the services of a facilitator (internal or external).

4.3.1. Procedures for Partnering Meetings and Format. Informal partnering is required unless formal partnering is mutually agreed to instead of the informal partnering.

4.3.2. Facilitators. The facilitator is to act as a neutral party seeking to initiate cooperative working relationships. This individual must have the technical knowledge and ability to lead and guide discussions. Choose either an internal or external facilitator. The facilitator must be acceptable to the Engineer.

4.3.3. Internal Facilitators. An Owner or Contractor internal (staff) facilitator may be selected as the facilitator at no additional cost to either party.

4.3.4. External Facilitators. A private firm or individual that is independent of the Contractor and the Owner may be selected as the facilitator. Submit the facilitator's name and estimated fees for approval before contracting with the facilitator.

4.3.5. Meetings and Arrangements. Coordinate with the Engineer for meeting dates and times, locations including third party facilities, and other needs and appurtenances, including, but not limited to, audio or visual equipment. Make all meeting arrangements for formal partnering. Use Owner facilities or facilities in the vicinity of the project if available. Submit the estimated meeting costs for approval before finalizing arrangements.

Coordinate facilitator discussions before the partnering meeting to allow the facilitator time to prepare an appropriate agenda. Prepare a list of attendees with job titles and include critical Contractor,

subcontractor, and supplier staff in the list. Provide the facilitator the list of attendees and invite the attendees listed.

The Owner will invite and provide a list of attendees that includes, but is not limited to, Owner, TxDOT, other local governments, law enforcement, railroad, and utility representatives.

Participate in additional partnering meetings as mutually agreed.

4.3.6. Payment. Expenses for labor, Contractor equipment, or overhead will not be allowed. Markups as prescribed in *Article 9L.7., "Payment for Extra Work and Force Account Method,"* will not be allowed.

Informal partnering will be conducted with each party responsible for their own costs.

For formal partnering using internal facilitators, the Contractor will be responsible for arrangements and for expenses incurred by its internal facilitator, including, but not limited to, meals, travel, and lodging. Owner facilitators, if available, may be used at no additional cost.

For formal partnering using external facilitators, submit an invoice to the Engineer for reimbursement. The Owner will reimburse the Contractor for half of the eligible expenses as approved. For external facilitators not approved by the Owner but used at the Contractor's option, the Contractor will be responsible for all costs of the external facilitator.

For meeting facilities and appurtenances, submit an invoice to the Engineer for reimbursement. The Owner will reimburse the Contractor for half of the eligible expenses as approved.

4.4. CHANGES IN THE WORK

The Engineer reserves the right to make changes in the work including addition, reduction, or elimination of quantities and alterations needed to complete the Contract. Perform the work as altered. These changes will not invalidate the Contract nor release the Surety. The Contractor is responsible for notifying the sureties of any changes to the Contract.

If the changes in quantities or the alterations do not significantly change the character of the work under the Contract, the altered work will be paid for at the Contract unit price. If the changes in quantities or the alterations significantly change the character of the work, the Contract will be amended by a change order. If no unit prices exist, this will be considered extra work and the Contract will be amended by a change order. Provide cost justification as requested, in an acceptable format. Payment will not be made for anticipated profits on work that is eliminated.

Agree on the scope of work and the basis of payment for the change order before beginning the work. If there is no agreement, the Engineer may order the work to proceed under *Article 9L.7., "Payment for Extra Work and Force Account Method,"* or by making an interim adjustment to the Contract. In the case of an adjustment, the Engineer will consider modifying the compensation after the work is performed.

A significant change in the character of the work occurs when:

- the character of the work for any item as altered differs materially in kind or nature from that in the Contract or
- a major item of work varies by more or less than 25% from the original Contract quantity.

When the quantity of work to be done under any major item of the Contract is more than 125% of the original quantity stated in the Contract, then either party to the Contract may request an adjustment to the unit price on the portion of the work that is above 125%.

When the quantity of work to be done under any major item of the Contract is less than 75% of the original quantity stated in the Contract, then either party to the Contract may request an adjustment to the unit price. When mutually agreed, the unit price may be adjusted by multiplying the Contract unit price by the factor in Table 1. If an adjusted unit price cannot be agreed upon, the Engineer may determine the unit price by multiplying the Contract unit price by the factor in Table 1.

Table 1
Quantity-Based Price Adjustment Factors

% of Original Quantity	Factor
≥ 50 and < 75	1.05
≥ 25 and < 50	1.15
< 25	1.25

If the changes require additional working days to complete the Contract, Contract working days will be adjusted in accordance with Item 8L, "Prosecution and Progress."

4.5. DIFFERING SITE CONDITIONS

During the progress of the work, differing subsurface or latent physical conditions may be encountered at the site. The 2 types of differing site conditions are defined as:

- those that differ materially from those indicated in the Contract and
- unknown physical conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract.

Notify the Engineer in writing when differing site conditions are encountered. The Engineer will notify the Contractor when the Owner discovers differing site conditions. Unless directed otherwise, do not work on the affected items and leave the site undisturbed. The Engineer will investigate the conditions and determine whether differing site conditions exist. If the differing site conditions cause an increase or decrease in the cost or number of working days specified for the performance of the Contract, the Engineer will make adjustments, excluding the loss of anticipated profits, in accordance with the Contract. Additional compensation will be made only if the required written notice has been provided.

4.6. REQUESTS FOR ADDITIONAL COMPENSATION

Notify the Engineer in writing of any intent to request additional compensation once there is knowledge of the basis for the request. An assessment of damages is not required to be part of this notice but is desirable. The intent of the written notice requirement is to provide the Owner an opportunity to evaluate the request and to keep an accurate account of the actual costs that may arise. Minimize impacts and costs.

If written notice is not given, the Contractor waives the right to additional compensation unless the circumstances could have reasonably prevented the Contractor from knowing the cost impact before performing the work. Notice of the request and the documentation of the costs will not be construed as proof or substantiation of the validity of the request. Submit the request in enough detail to enable the Owner to determine the basis for entitlement, adjustment in the number of working days specified in the Contract, and compensation.

The Owner will not consider fees and interest on requests for additional compensation. Fees include, but are not limited to: preparation, attorney, printing, shipping, and various other fees.

Damages occur when impacts that are the responsibility of the Owner result in additional costs to the Contractor that could not have been reasonably anticipated at the time of letting. Costs of performing additional work are not considered damages. For Contractor damages, the intent is to reimburse the

Contractor for actual expenses arising out of a compensable impact. No profit or markups, other than labor burden, will be allowed. For damages, labor burden will be reimbursed at 35% unless the Contractor can justify higher actual cost. Justification for a higher percentage must be in accordance with the methodology provided by the Owner, submitted separately for project overhead labor and direct labor, and determined and submitted by a Certified Public Accountant (CPA). Submit CPA-prepared labor burden rates directly to the Owner.

If the Contractor requests compensation for delay damages and the delay is determined to be compensable, then standby equipment costs and project overhead compensation will be based on the duration of the compensable delay and will be limited as follows:

4.6.1. Standby Equipment Costs. Payment will be made in accordance with *Article 9L.7.1.4.3., "Standby Equipment Costs."*

4.6.2. Project Overhead. Project overhead is defined as the administrative and supervisory expenses incurred at the work locations. When delay to project completion occurs, reimbursement for project overhead for the Contractor will be made using the following options:

- reimbursed at 6% (computed as daily cost by dividing 6% of the original Contract amount by the number of original Contract work days), or
- actual documented costs for the impacted period.

Project overhead for delays impacting subcontractors will be determined from actual documented costs submitted by the Contractor.

Time extensions and suspensions alone will not be justification for reimbursement for project overhead.

4.6.3. Home Office Overhead. The Owner will not compensate the Contractor for home office overhead.

4.7. DISPUTE OR CLAIMS PROCEDURE

The dispute resolution policy promotes a cooperative attitude between the Engineer and Contractor. Emphasis is placed on resolving issues while they are still current, at the project office, and in an informal manner. Open sharing of information is encouraged by all parties involved so the information provided completely and accurately reflects the issues and facts. If information is not shared, decisions may be limited to relying on the documentation that is available for review.

The Owner's goal is to have a dispute settled by the Engineer before elevating it as a claim.

If a dispute cannot be resolved, initiate the Contract claim procedure by filing a Contract claim after the completion of the Contract or when required for orderly performance of the Contract. Submit the claim to the Owner in accordance with state law.

For a claim resulting from enforcement of a warranty period, file the claim no later than one year after expiration of the warranty period. For all other claims, file the claim no later than the date the Owner issues notice to the Contractor that they are in default, the date the Owner terminates the Contract, or one year after the date of final acceptance of the Contract. It is the Contractor's responsibility to submit requests in a timely manner.

5. ITEM 5L CONTROL OF THE WORK

5.1. AUTHORITY OF ENGINEER

The Engineer has the authority to observe, test, inspect, approve, and accept the work on behalf of the Owner. The Engineer decides all questions about the quality and acceptability of materials, work performed, work progress, Contract interpretations, and acceptable Contract fulfillment. The Engineer has the authority to enforce and make effective these decisions.

The Engineer acts as a referee in all questions arising under the terms of the Contract. The Engineer's decisions will be final and binding.

The Engineer may pursue actions against the Contractor, including but not limited to the withholding of payments and suspending the work, for noncompliance of the Contract.

The Engineer may suspend the work without suspending working day charges for noncompliance of the Contract.

5.2. PLANS AND WORKING DRAWINGS

When required, provide working drawings to supplement the plans with all necessary details not included on the Contract plans. Prepare and furnish working drawings in a timely manner and obtain approval, if required, before the beginning of the associated work. For all working drawing submittal requirements, the Engineer may allow electronic and other alternative submission procedures. Have a licensed professional engineer sign, seal, and date the working drawings as indicated in Table 1.

Prepare working drawings using United States standard measures in the English language. The routing of submittals for review and approval will be established at the preconstruction conference. The Contractor is responsible for the accuracy, coordination, and conformity of the various components and details of the working drawings. Owner approval of the Contractor's working drawings will not relieve the Contractor of any responsibility under the Contract. The work performed under this article will not be measured or paid for directly but will be subsidiary to pertinent items.

Table 1
Signature and Approval Requirements for Working Drawings

Working Drawings For		Requires Licensed Professional Engineer's Signature, Seal, and Date	Requires Owner Approval
1. Alternate or optional designs submitted by Contractor		Yes	Yes
2. Supplementary shop and fabrication drawings for structural Items		No unless required on the plans	See applicable Item
3. Contractor-proposed temporary facilities that affect the public safety, not included on the plans		Yes	Yes
4. Form and falsework details	Bridges, retaining walls, and other major structures	Yes unless otherwise shown on the plans	No[1]
	Minor structures	No unless otherwise shown on the plans	No
5. Erection drawings		Yes	No[1,2]
6. Contractor-proposed major modifications to traffic control plan		Yes	Yes

1. The Engineer may require that the Contractor have a licensed professional engineer certify that the temporary works are constructed according to the sealed drawings.
2. Approval is required for items spanning over live traffic or where safety of the traveling public is affected, in the opinion of the Engineer.

Submit shop drawings electronically for the fabrication of structural items.

5.3. CONFORMITY WITH PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS

Furnish materials and perform work in reasonably close conformity with the lines, grades, cross-sections, dimensions, details, gradations, physical and chemical characteristics of materials, and other requirements shown in the Contract (including additional plans for non-site-specific work). Reasonably close conformity limits will be as defined in the respective items of the Contract or, if not defined, as determined by the Engineer.

Obtain approval before deviating from the plans and approved working drawings. Do not perform work beyond the lines and grades shown on the plans or any extra work without the Engineer's approval. Work performed beyond the lines and grades shown on the plans or any extra work performed without approval is considered unauthorized and excluded from pay consideration. The Owner will not pay for material rejected due to improper fabrication, excess quantity, or any other reasons within the Contractor's control.

5.3.1. Acceptance of Defective or Unauthorized Work. When work fails to meet Contract requirements, but is adequate to serve the design purpose, the Engineer will decide the extent to which the work will be accepted and remain in place. The Engineer will document the basis of acceptance by a letter and may adjust the Contract price.

5.3.2. Correction of Defective or Unauthorized Work. When work fails to meet Contract requirements and is inadequate to serve the design purpose it will be considered defective. Correct, or remove and replace, the work at the Contractor's expense, as directed.

The Engineer has the authority to correct or to remove and replace defective or unauthorized work. The cost may be deducted from any money due or to become due to the Contractor.

5.4. COORDINATION OF PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS

The specifications, accompanying plans (including additional plans for non-site-specific work), special provisions, change orders, and supplemental agreements are intended to work together and be interpreted as a whole.

Numerical dimensions govern over scaled dimensions. Special provisions govern over plans (including general notes), which govern over standard specifications and special specifications. Job-specific plan sheets govern over standard plan sheets.

However, in the case of conflict between plans (including general notes) and specifications regarding responsibilities for hazardous materials and traffic control in Items 1L through 9L and Item 502, "Barricades, Signs, and Traffic Handling," special provisions govern over standard specifications and special specifications, which govern over the plans.

Notify the Engineer promptly of any omissions, errors, or discrepancies discovered so that necessary corrections and interpretations can be made. Failure to promptly notify the Engineer will constitute a waiver of all claims for misunderstandings or ambiguities that result from the errors, omissions, or discrepancies discovered.

5.5. COOPERATION OF CONTRACTOR

Cooperate with the Engineer. Respond promptly to instructions from the Engineer. Provide all information necessary to administer the Contract.

Designate in writing a competent, English-speaking Superintendent employed by the Contractor. The Superintendent must be experienced with the work being performed and capable of reading and understanding the Contract. Ensure the Superintendent is available at all times and able to receive instructions from the Engineer or authorized Owner representatives and to act for the Contractor. The Engineer may suspend work without suspending working day charges if a Superintendent is not available or does not meet the above criteria.

At the written request of the Engineer, immediately remove from the project any employee or representative of the Contractor or a subcontractor who, in the opinion of the Engineer, does not perform work in a proper and skillful manner or who is disrespectful, intemperate, disorderly, uncooperative, or otherwise objectionable. Do not reinstate these individuals without the written consent of the Engineer.

Furnish suitable machinery, equipment, and construction forces for the proper prosecution of the work. Provide adequate lighting to address quality requirements and inspection of nighttime work.

The Engineer may suspend the work without suspending working day charges until the Contractor complies with this requirement. All work associated with fulfilling this requirement is subsidiary to the various items of the Contract and no direct compensation will be made.

5.6. COOPERATING WITH UTILITIES

Use established safety practices when working near utilities. Consult with the appropriate utilities before beginning work. Notify the Engineer immediately of utility conflicts. The Engineer will decide whether to adjust utilities or adjust the work to eliminate or lessen the conflict. Unless otherwise shown on the plans, the Engineer will make necessary arrangements with the utility owner when utility adjustments are required.

Use work procedures that protect utilities or appurtenances that remain in place during construction. Cooperate with utilities to remove and rearrange utilities to avoid service interruption or duplicate work by the utilities. Allow utilities access to the right of way.

Immediately notify the appropriate utility of service interruptions resulting from damage due to construction activities. Cooperate with utilities until service is restored. Maintain access to active fire hydrants at all times unless approved by the Engineer.

5.7. COOPERATION BETWEEN CONTRACTORS

Cooperate and coordinate with other Contractors working within the limits or adjacent to the limits.

5.8. COOPERATION WITH RAILROADS

Plan and prosecute portions of the work involving a railway to avoid interference with or hindrance to the railroad company.

If the work is on railroad right of way, do not interfere with the operation of the railroad company's trains or other property.

5.8.1. Project-Specific Information. Refer to project-specific plan sheets in the Contract for specific information concerning the work to be completed by both the Contractor and the railroad within railroad right of way; railroad right of way locations impacted by construction; percentage of Contract work at each location; train movements at each location; and requirements for railroad insurance, flagging, and Right of Entry (ROE) Agreements.

5.8.2. Right of Entry Agreement (if required). The process for obtaining a fully executed ROE Agreement will be as follows:

- The Owner will send the unexecuted ROE Agreement to the Contractor with the unexecuted construction Contract.
- Partially execute the ROE Agreement and return it to the Department with the required insurance attached.
- The Owner will coordinate with the railroad company regarding the further execution of the ROE Agreement and associated fees. The Owner will pay any ROE Agreement fees directly to the railroad company.
- Once the Owner has received the fully-executed ROE Agreement from the railroad company, the Owner will forward the fully-executed ROE Agreement to the Contractor.

5.9. CONSTRUCTION SURVEYING

Use Method C unless otherwise specified in the Contract. Upon request, the Engineer will allow the Contractor to copy available earthwork cross-sections, computer printouts or data files, and other information necessary to establish and control work. Maintain the integrity of control points. Preserve all control points, stakes, marks, and right of way markers. Assume cost and responsibility of replacing disturbed control points, stakes, marks, and right of way markers damaged by the Contractor's or its subcontractor operations. If the Owner repairs disturbed control points, stakes, marks, or right of way markers, the cost of repair may be deducted from money due or to become due to the Contractor. Replace right of way markers under the direction of a RPLS. This work will be subsidiary to pertinent items.

The Engineer reserves the right to make measurements and surveys to determine the accuracy of the work and determine pay quantities. The Engineer's measurements and surveys do not relieve the Contractor's responsibility for accuracy of work. Allow the Engineer adequate time to verify the surveying.

5.9.1. Method A. The Engineer will set control points for establishing lines, slopes, grades, and centerlines and for providing both vertical and horizontal control. At a minimum, provide a controlling pair of monument points at both the beginning and end of construction project for projects less than 2 miles in length. For projects greater than 2 miles in length, monuments will be set in pairs of 2 at a minimum of 2 miles based on the overall length of the project. Use these control points as reference to perform the work.

Furnish materials, equipment, and qualified workforce necessary for the construction survey work. Place construction points, stakes, and marks at intervals sufficient to control work to established tolerances. Place construction stakes at intervals of no more than 100 ft., or as directed. Place stakes and marks so as not to interfere with normal maintenance operations.

5.9.2. Method B. The Engineer will set adequate control points, stakes, and marks to establish lines, slopes, grades, and centerlines. Furnish additional work, stakes, materials, and templates necessary for marking and maintaining points and lines.

5.9.3. Method C. Set adequate control points, stakes, and marks to establish lines, slopes, grades, and centerlines.

5.10. INSPECTION

Inspectors are authorized representatives of the Engineer. Inspectors are authorized to examine all work performed and materials furnished, including preparation, fabrication, and material manufacture. Inspectors inform the Contractor of failures to meet Contract requirements. Inspectors may reject work or materials and may suspend work until any issues can be referred to and decided by the Engineer. Inspectors cannot alter, add, or waive Contract provisions, issue instructions contrary to the Contract, act as foremen for the Contractor, or interfere with the management of the work. Inspection, or lack of inspection, will not relieve the Contractor from obligation to provide materials or perform the work in accordance with the Contract.

Provide safe access to all parts of the work and provide information and assistance to the Engineer to allow a complete and detailed inspection. Give the Engineer sufficient notice to inspect the work. Work performed without suitable inspection, as determined by the Engineer, may be ordered removed and replaced at Contractor's expense. Remove or uncover portions of finished work as directed. Once inspected, restore work to Contract requirements. If the uncovered work is acceptable, the costs to uncover, remove, and replace or make good the parts removed will be paid for in accordance with *Article 4L.4., "Changes in the Work."* If the work is unacceptable, assume all costs associated with repair or replacement, including the costs to uncover, remove, and replace or make good the parts removed.

When a government entity, utility, railroad company, or other entity accepts or pays a portion of the Contract, that organization's representatives may inspect the work but cannot direct the Contractor. The right of inspection does not make that entity a party to the Contract and does not interfere with the rights of the parties to the Contract.

5.11. FINAL CLEANUP

Upon completion of the work, remove litter, debris, objectionable material, temporary structures, excess materials, and equipment from the work locations. Clean and restore property damaged by the Contractor's operations during the prosecution of the work. Leave the work locations in a neat and presentable condition.

Remove from the right of way cofferdams, construction buildings, material and fabrication plants, temporary structures, excess materials, and debris resulting from construction. Where work is in a stream, remove debris to the ground line of the bed of the stream. Leave stream channels and rights of way in a neat and

presentable condition. Clean structures to the flow line or the elevation of the outfall channel, whichever is higher. Dispose of all excess material in accordance with federal, state, and local regulations.

The work performed under this Article will not be paid for directly but will be considered subsidiary to Items of the Contract.

5.12. FINAL ACCEPTANCE

Final acceptance is made when all work is complete and the Engineer, in writing, accepts all work for the work locations in the Contract. Final acceptance relieves the Contractor from further Contract responsibilities.

5.12.1. Work Completed. Work completed must include work for vegetative establishment and maintenance, test, and performance periods and work to meet the requirements of *Article 5L.11., "FINAL CLEANUP."*

5.12.2. Final Inspection. After all work is complete, the Contractor will request a final inspection by the Engineer authorized to accept the work.

The final inspection will be made as soon as possible, and not later than 10 calendar days after the request. No working day charges will be made between the date of request and final inspection.

After the final inspection, if the work is satisfactory, the Engineer will notify the Contractor in writing of the final acceptance of the work. If the final inspection finds any work to be unsatisfactory, the Engineer will identify in writing all deficiencies in the work requiring correction. Correct the deficiencies identified. Working day charges will resume if these deficiencies are not corrected within 7 calendar days, unless otherwise authorized by the Engineer. Upon correction, the Engineer will make an inspection to verify that all deficiencies were corrected satisfactorily. The Engineer will provide written notice of the final acceptance.

5.12.3. Final Measurement. Final measurements and pay quantity adjustments may be made after final acceptance.

5.12.4. Removal of Traffic Control Devices. Remove construction traffic control devices and advance warning signs upon final acceptance or as directed.

6. ITEM 6L CONTROL OF MATERIALS

6.1. SOURCE CONTROL

Use only materials that meet Contract requirements. Unless otherwise specified or approved, use new materials for the work. Secure the Engineer's approval of the proposed source of materials to be used before their delivery. Materials can be approved at a supply source or staging area but may be reinspected in accordance with *Article 6L.4., "Sampling, Testing, and Inspection."*

6.1.1. Buy America. Comply with the latest provisions of Buy America as listed at 23 CFR 635.410. Use steel or iron materials manufactured in the United States except when:

- the cost of materials, including delivery, does not exceed 0.1% of the total Contract cost or $2,500, whichever is greater;
- the Contract contains a replacement alternate item for a foreign source steel or iron product and the Contract is awarded based on the replacement alternate item; or
- the materials are temporarily installed.

Provide a notarized original of the TxDOT FORM D-9-USA-1 (Department Form 1818 or equivalent) with the proper attachments for verification of compliance.

Manufacturing is any process that modifies the chemical content, physical shape or size, or final finish of a product. Manufacturing begins with initial melting and mixing and continues through fabrication (cutting, drilling, welding, bending, etc.) and coating (paint, galvanizing, epoxy, etc.).

6.1.2. Convict Produced Materials. Materials produced by convict labor may only be incorporated in the work if such materials have been:

- produced by convicts who are on parole, supervised release, or probation from prison; or
- produced in a qualified prison facility.

A "qualified prison facility" means any prison facility in which convicts, during the 12-month period ending July 1, 1987, produced materials for use in federal-aid highway construction projects.

6.2. MATERIAL QUALITY

Correct or remove materials that fail to meet Contract requirements or that do not produce satisfactory results. Reimburse the Owner for cost incurred if additional sampling and testing is required by a change of source.

Materials not meeting Contract requirements will be rejected unless the Engineer approves corrective actions. Upon rejection, immediately remove and replace rejected materials.

If the Contractor does not comply with this article, the Owner may have defective material removed and replaced. The cost of testing, removal, and replacement will be deducted from the payments due to the Contractor.

6.3. MANUFACTURER WARRANTIES

Transfer to the Owner warranties and guarantees required by the Contract or received as part of normal trade practice.

6.4. SAMPLING, TESTING, AND INSPECTION

Incorporate into the work only material that has been inspected, tested, and accepted by the Engineer. Remove, at the Contractor's expense, materials from the work locations that are used without prior testing and approval or written permission.

Unless otherwise mutually agreed, the material requirements and standard test methods in effect at the time the proposed Contract is advertised govern. Unless otherwise noted, the Engineer will perform testing at Owner's expense. In addition to facilities and equipment required by the Contract, furnish facilities and calibrated equipment required for tests to control the manufacture of construction items. If requested, provide a complete written statement of the origin, composition, and manufacture of materials.

All materials used are subject to inspection or testing at any time during preparation or use. Material which has been tested and approved at a supply source or staging area may be reinspected or tested before or during incorporation into the work and rejected if it does not meet Contract requirements. Copies of test results are to be made available upon request. Do not use material that, after approval, becomes unfit for use.

Unless otherwise noted in the Contract, all testing must be performed within the United States and witnessed by the Engineer. If materials or processes require testing outside the contiguous 48 United States, reimburse the Owner for inspection expenses.

6.5. PLANT INSPECTION AND TESTING

The Engineer may, but is not obligated to, inspect materials at the acquisition or manufacturing source. Material samples will be obtained and tested for compliance with quality requirements.

If inspection is at the plant, meet the following conditions unless otherwise specified:

- Cooperate fully and assist the Engineer during the inspection.
- Ensure the Engineer has full access to all parts of the plant used to manufacture or produce materials.
- In accordance with pertinent items and the Contract, provide a facility at the plant for use by the Engineer as an office or laboratory.
- Provide and maintain adequate safety measures and restroom facilities.
- Furnish and calibrate scales, measuring devices, and other necessary equipment.

The Engineer may provide inspection for periods other than daylight hours if:

- continuous production of materials for Owner use is necessary due to the production volume being handled at the plant, and
- the lighting is adequate to allow satisfactory inspection.

6.6. STORAGE OF MATERIALS

Store and handle materials to preserve their quality and fitness for the work. Store materials so that they can be easily inspected and retested. Place materials under cover, on wooden platforms, or on other hard, clean surfaces as necessary or when directed.

Obtain approval to store materials on the right of way. Storage space off the right of way is at the Contractor's expense.

6.7. OWNER-FURNISHED MATERIAL

The Owner will supply materials as shown in the Contract documents. The cost of handling and placing materials supplied by the Owner will not be paid for directly but is subsidiary to the item in which they are used. Assume responsibility for materials upon receipt.

6.8. USE OF MATERIALS FOUND ON THE RIGHT OF WAY

Material found in the excavation areas and meeting the Owner's specifications may be used in the work. This material will be paid for at the Contract bid price for excavation and under the item for which the material is used.

Do not excavate or remove any material from within the right of way that is not within the limits of the excavation without written permission. If excavation is allowed within a right of way project-specific location (PSL), replace the removed material with suitable material at no cost to the Owner as directed.

6.9. RECYCLED MATERIALS

The Owner will not allow hazardous wastes, as defined in 30 TAC 335, proposed for recycling to be used on the project. Use nonhazardous recyclable materials (NRMs) only if the specification for the item does not disallow or restrict use. Determine if NRMs are regulated under 30 TAC 312, 330, 332, 334, or 335, and comply with all general prohibitions and requirements. Use NRMs in accordance with DMS-11000, "Evaluating and Using Nonhazardous Recyclable Materials Guidelines," and furnish all documentation required by that specification.

6.10. HAZARDOUS MATERIALS

Comply with the requirements of *Article 7L.11., "Responsibility for Hazardous Materials."*

Use materials that are free of hazardous materials as defined in Item 1L, "Abbreviations and Definitions."

Notify the Engineer immediately when a visual observation or odor indicates that materials in required material sources or on sites owned or controlled by the owner may contain hazardous materials. Except when the contract includes bid items for the contractor to remove hazardous materials, the Engineer is responsible for testing and removing or disposing of hazardous materials not introduced by the Contractor on sites owned or controlled by the Owner as indicated below.

The plans will indicate locations where paint on steel is suspected to contain hazardous materials and where regulated asbestos containing materials have been found. The Engineer may suspend work wholly or in part during the testing, removal, or disposition of hazardous materials on sites owned or controlled by the Owner, except in the case of when the contract includes removing and disposing of hazardous materials.

When a visual observation or odor indicates that materials delivered to the work locations by the Contractor may contain hazardous materials, have an approved commercial laboratory test the materials for contamination. Remove, remediate, and dispose of any of these materials found to be contaminated. Testing, removal, and disposition of hazardous materials introduced onto the work locations by the Contractor will be at the Contractor's expense. Working day charges will not be suspended and extensions of working days will not be granted for activities related to handling hazardous material delivered by the Contractor.

6.10.1. Painted Steel Requirements. Paint containing hazardous materials will be removed as shown on the plans.

6.10.2. Paint Removed by Third Party. The Owner may provide a third party to remove paint containing hazardous materials where paint must be removed to perform work or to allow dismantling of the steel.

6.10.3. Paint Removed by the Contractor. This work may only be performed by a firm or company with one of the following certifications:

- SSPC-QP2 certification for lead painting operations, or
- Certified Lead Firm by the Texas Department of State Health Services.

Maintain certification for the duration of the work. Provide copies of audits or certification if requested.

Comply with worker and public safety regulations, including, but not limited to, OSHA 29 CFR Parts 1910.1025, 1926.62, and 1926.63. Monitor permissible exposure limits in accordance with OSHA requirements.

Remove paint containing hazardous materials from designated areas shown on the plans or as directed. Comply with access limitations shown on the plans.

Provide power hand tools, equipped with high-efficiency particulate air filter vacuums to mechanically remove paint.

Contain, collect, store, transport, and dispose of all waste generated by cleaning operation in accordance with local, state, and federal requirements including 40 CFR 302. Properly characterize and dispose of all wastes. Manage any hazardous wastes in accordance with regulatory requirements and dispose in a facility authorized to accept such wastes. Provide copies of disposal manifests.

The work performed, materials furnished, equipment, labor, tools, and incidentals will be paid for in accordance with Item 446, "Field Cleaning and Painting Steel."

6.10.4. Removal and Disposal of Painted Steel. Painted steel will be disposed of at a steel recycling or smelting facility unless otherwise shown on the plans. If the paint contains hazardous materials, maintain, and make available to the Engineer invoices and other records obtained from the facility showing the received weight of the steel and the facility name.

For steel that is dismantled by unbolting, no paint stripping will be required. Use care to not damage existing paint. When dismantling is performed using flame or saw-cutting methods to remove steel elements coated with paint containing hazardous materials, the plans will show stripping locations.

The work provided, materials furnished, equipment, labor, tools, and incidentals will be paid for in accordance with Item 496, "Removing Structures," and Item 497, "Sale of Salvageable Material."

6.10.5. Asbestos Requirements. The plans will indicate locations or elements where asbestos containing materials (ACM) have been found. For work at these locations, notify the Engineer of proposed dates of demolition or removal of structural elements with ACM at least 60 days before work is to begin to allow the Owner enough time to abate the asbestos.

The Department of State Health Services (DSHS), Asbestos Programs Branch, is responsible for administering the requirements of the National Emissions Standards for Hazardous Air Pollutants, 40 CFR Part 61, Subpart M (NESHAP) and the Texas Asbestos Health Protection Rules (TAHPR). Based on EPA guidance and regulatory background information, bridges are considered to be a regulated "facility" under NESHAP. Therefore, federal standards for demolition and renovation apply.

DSHS requires that notifications be postmarked at least 10 working days before initiating demolition or renovation of each structure or load bearing member shown on the plans. If the actual demolition, renovation, or removal date is changed or delayed, notify the Engineer in writing of these revised dates in sufficient time to allow for the Owner's notification to DSHS to be postmarked at least 10 days in advance of the work.

Failure to provide the above information may require the temporary suspension of work under *Article 8L.4., "Temporary Suspension of Work or Working Day Charges,"* due to reasons under the control of the Contractor. The Owner retains the right to determine the actual advance notice needed for the change in date to address post office business days and staff availability.

6.10.6. Asbestos Removed by Third Party. At locations where unknown ACM is discovered, the Owner will arrange for abatement by a third party.

6.10.7. Asbestos Removed by the Contractor. Maintain certification as Asbestos Abatement Contractor by the Texas Department of State Health Services for the duration of the Contract. Provide copies of audits and certification to the Engineer.

6.10.8. Work Performed by a Third Party. When the work for removal of paint or asbestos abatement is to be provided by a third party, coordinate and cooperate with the third party and the Owner. Continue other work detailed on the plans not directly involved in the paint removal or asbestos abatement work. Provide notice to the Owner regarding the progress of the work to allow the Owner enough time to schedule the third-party work.

6.11. SURPLUS MATERIALS

Take ownership of surplus materials unless otherwise shown on the plans or as directed by the Engineer. Remove and dispose of materials in accordance with federal, state, and local regulations. If requested, provide an appropriate level of documentation to verify proper disposal. When materials are disposed of on private property, provide written authorization from the property owner for the use of the property for this purpose upon request.

7. ITEM 7L LEGAL RELATIONS AND RESPONSIBILITIES

7.1. SAFETY

7.1.1. Point of Contact. Designate a Contractor Safety Point of Contact (CSPOC). The Owner will assign an Owner employee for their point of contact designated as Owner's Safety Point of Contact OSPOC. The CSPOC will ensure that the Contractor's and Subcontractor's employees' use the appropriate personal protection equipment (hard hats, safety vests, protective toe footwear, etc.).

The CSPOC will ensure that crew leaders and foremen (including subcontractors) have attended the required training.

7.1.2. Safety Preconstruction Meeting. In cooperation with the Engineer, schedule and attend a safety preconstruction meeting (may be a part of the preconstruction conference in *Article 4L.2., "Preconstruction Conference."* Attendees for this safety preconstruction meeting will be:

- the Contractor,
- ssubcontractor's,
- Owner,
- local law enforcement, and
- other personnel that play an active role on the project.

7.1.3. Public Safety and Convenience. Ensure the safety and convenience of the public and property as provided in the Contract and as directed by the Engineer. Keep existing roadways open to traffic or construct and maintain detours and temporary structures for safe public travel. Manage construction to minimize disruption to traffic. Maintain the roadway in a good and passable condition, including proper drainage and provide for ingress and egress to adjacent property.

Store all equipment not in use in a manner and at locations that will not interfere with the safe passage of traffic.

Provide qualified flaggers in accordance with Item 502.2.2., "Flaggers," for the safety and convenience of the traveling public and workers, as directed.

If the Engineer determines that any of the requirements of this article have not been met, the Engineer may take any necessary corrective action. This will not change the legal responsibilities set forth in the Contract. The cost to the Owner for this work will be deducted from any money due or to become due to the Contractor.

7.1.4. Use of Blue Warning Lights. Texas Transportation Code 547.105 authorizes the use of warning lights to promote safety and provides an effective means of gaining the travelling public's attention as they drive in areas where construction crews are present. In order to influence the public to move over when high risk construction activities are taking place, minimize the utilization of blue warning lights. These lights must be used only while performing work on or near the travel lanes or shoulder where the travelling public encounters construction crews that are not protected by a standard work zone set up such as a lane closure, shoulder closure, or one-way traffic control. Refrain from leaving the warning lights engaged while travelling from one work location to another or while parked on the right of way away from the pavement or a work zone.

7.1.5. Barricades, Warning and Detour Signs, and Traffic Handling. Provide, install, move, replace, maintain, clean, and remove all traffic control devices in accordance with the traffic control devices specifications and as shown on the plans and as directed. If details are not shown on the plans, provide devices and work in accordance with the TMUTCD and as directed by the Engineer. When

authorized or directed by the Engineer, provide additional signs or traffic control devices not required by the plans.

If an unexpected situation arises that causes the Contractor to believe that the traffic control should be changed, make all reasonable efforts to promptly contact the Engineer. Take prudent actions until the Engineer can be contacted.

The Engineer will make an inspection of the traffic control devices. Comply with the results of the inspection in the prescribed time frame.

7.1.6. Contractor Responsible Person and Alternate. Designate in writing, a Contractor's Responsible Person (CRP) and an alternate to be the representative of the Contractor who is responsible for taking or directing corrective measures regarding the traffic control. The CRP or alternate must be accessible by phone 24 hr. per day and able to respond when notified. The CRP and alternate must comply with the requirements of *Article 7L.1.5.5., "Training."*

7.1.7. Flaggers. Designate in writing, a flagger instructor who will serve as a flagging supervisor and is responsible for training and assuring that all flaggers are qualified to perform flagging duties. Before beginning work, provide a list of flaggers certified to perform flagging duties.

Provide flaggers as directed. Flaggers must be courteous and able to effectively communicate with the public. When directing traffic, flaggers must dress appropriately, wear high-visibility safety apparel, use flags, signs, stop-slow paddles, and other hand-signaling devices, and follow the flagging procedures in the TMUTCD. Comply with the requirements of *Article 7L.1.5.5., "Training."*

7.1.8. Law Enforcement Personnel. Provide uniformed law enforcement personnel with patrol vehicles as directed. Document the work zone traffic services provided in the manner prescribed by the Department. Law enforcement personnel providing work zone traffic services must be trained for the service they perform. Comply with *Article 7L.1.5.5., "Training."*

7.1.9. Other Work Zone Personnel. Workers involved with traffic control, including the maintenance of the traffic control, must comply with the requirements of Section 7L.1.5.5., "Training."

7.1.10. Training Workers involved with the traffic control must be trained using Department-approved training, except in the case of *Article 7L.1.5.4, "Other Work Zone Personnel"* who may be trained using Contractor-developed Training in lieu of Department-approved Training.

Provide a copy of the certification of completion to the Engineer, except in the case of Contractor-developed Training. Ensure the certification of completion includes the following:

- name of provider and course title,
- name of participant,
- date of completion, and
- date of expiration.

For Contractor developed Training, maintain a log of attendees. Make the log available upon request. Ensure the log is legible and includes the following:

- print name and signature of participant,
- name and title of trainer, and
- date of training.

7.2. LAWS TO BE OBSERVED

Comply with all federal, state, and local laws, ordinances, and regulations that affect the performance of the work. Indemnify and save harmless the Owner and its representatives against any claim arising from violation by the Contractor of any law, ordinance, or regulation.

This Contract is between the Owner and the Contractor only. No person or entity may claim third-party beneficiary status under this Contract or any of its provisions, nor may any non-party sue for personal injuries or property damage under this Contract.

7.3. PERMITS, LICENSES, AND TAXES

Procure all permits and licenses; pay all charges, fees, and taxes; and give all notices necessary and incidental to the due and lawful prosecution of work, except for permits provided by the Owner and as specified in *Article 7L.6., "Preservation of Cultural and Natural Resources and the Environment."*

7.4. PATENTED DEVICES, MATERIAL, AND PROCESSES

Indemnify and save harmless the Owner from any claims for infringement from the Contractor's use of any patented design, device, material, process, trademark, or copyright selected by the Contractor and used in connection with the work. Indemnify and save harmless the Owner against any costs, expenses, or damages that it may be obliged to pay, by reason of this infringement, at any time during the prosecution or after the completion of the work.

7.5. PERSONAL LIABILITY OF PUBLIC OFFICIALS

Owner employees are agents and representatives of the Owner and will incur no liability, personal or otherwise, in carrying out the provisions of the Contract or in exercising any power or authority granted under the Contract.

7.6. PRESERVATION OF CULTURAL AND NATURAL RESOURCES AND THE ENVIRONMENT

If the Contractor initiates changes to the Contract and the Owner approves the changes, the Contractor is responsible for obtaining clearances and coordinating with the appropriate regulatory agencies.

7.6.1. Cultural Resources. Cease all work immediately if a site, building, or location of historical, archeological, educational, or scientific interest is discovered within the right of way. The site, building, or location will be investigated and evaluated by the Owner.

7.6.2. Texas Pollutant Discharge Elimination System (TPDES) Permits and Storm Water Pollution Prevention Plans (SWP3). The Contractor will file the Notice of Intent (NOI) and the Notice of Termination (NOT) for work shown on the plans in the right of way. Adhere to all requirements of the SWP3.

7.6.3. Work in Waters of the United States. For work in the right of way, the Owner will obtain any required Section 404 permits from the U.S. Army Corps of Engineers before work begins. Adhere to all agreements, mitigation plans, and standard best management practices required by the permit. When Contractor-initiated changes in the construction method changes the impacts to waters of the U.S., obtain new or revised Section 404 permits.

7.6.4. Work in Navigable Waters of the United States. For work in the right of way, the Owner will obtain any required Section 9 permits from the U.S. Coast Guard before work begins. Adhere to the stipulations of the permits and associated best management practices. When Contractor-initiated changes in the construction method changes the impacts to navigable waters of the U.S., obtain new or revised Section 9 permits.

7.6.5. Work Over the Recharge or Contributing Zone of Protected Aquifers. Make every reasonable

effort to minimize the degradation of water quality resulting from impacts relating to work over the recharge or contributing zones of protected aquifers, as defined and delineated by the TCEQ. Use best management practices and perform work in accordance with Contract requirements.

7.6.6. Project-Specific Locations. For all project-specific locations (PSLs) on or off the right of way (material sources, waste sites, parking areas, storage areas, field offices, staging areas, haul roads, etc.), signing the Contract certifies compliance with all applicable laws, rules, and regulations pertaining to the preservation of cultural resources, natural resources, and the environment as issued by the following or other agencies:

- Occupational Safety and Health Administration,
- Texas Commission on Environmental Quality,
- Texas Department of Transportation,
- Texas Historical Commission,
- Texas Parks and Wildlife Department,
- Texas Railroad Commission,
- U.S. Army Corps of Engineers,
- U.S. Department of Energy,
- U.S. Department of Transportation,
- U.S. Environmental Protection Agency,
- U.S. Federal Emergency Management Agency, and
- U.S. Fish and Wildlife Service.

All subcontractors must also comply with applicable environmental laws, rules, regulations, and requirements in the Contract. Maintain documentation of certification activities including environmental consultant reports, Contractor documentation on certification decisions and contacts, and correspondence with the resource agencies. Provide documentation upon request.

Obtain written approval from the Engineer for all PSLs in the right of way not specifically addressed on the plans. Prepare an SWP3 for all Contractor facilities, such as asphalt or concrete plants located within public right of way. Comply with all TCEQ permit requirements for portable facilities, such as concrete batch plants, rock crushers, asphalt plants, etc. Address all environmental issues, such as Section 404 permits, wetland delineation, endangered species consultation requirements, or archeological and historic site impacts. Obtain all permits and clearances in advance.

7.6.7. Contractor Responsibility. If the Contractor initiates changes to the Contract and the Owner approves the changes, the Contractor is responsible for obtaining clearances and coordinating with appropriate regulatory agencies.

7.7. AGRICULTURAL IRRIGATION

Regulate the sequence of work and make provisions as necessary to provide for agricultural irrigation or drainage during the work. Meet with the Irrigation District or landowner to determine the proper time and sequence when irrigation demands will permit shutting-off water flows to perform work.

Unless otherwise provided on the plans, the work performed under this article will not be measured or paid for directly but will be subsidiary to pertinent items.

7.8. SANITARY PROVISIONS

Provide and maintain adequate, neat, and sanitary toilet accommodations for employees, including Owner employees, in compliance with the requirements and regulations of the Texas Department of Health or other authorities with jurisdiction.

7.9. ABATEMENT AND MITIGATION OF EXCESSIVE OR UNNECESSARY NOISE

Minimize noise throughout all phases of the Contract. Exercise particular and special efforts to avoid the creation of unnecessary noise impact on adjacent noise sensitive receptors in the placement of non-mobile equipment such as air compressors, generators, pumps, etc. Place mobile and stationary equipment to cause the least disruption of normal adjacent activities.

All equipment associated with the work must be equipped with components to suppress excessive noise and these components must be maintained in their original operating condition considering normal depreciation. Noise-attenuation devices installed by the manufacturer such as mufflers, engine covers, insulation, etc. must not be removed nor rendered ineffectual nor be permitted to remain off the equipment while the equipment is in use.

7.10. USING EXPLOSIVES

Do not endanger life or property. The contractor is required to submit a written Blasting Plan if required by the plans or requested by the Engineer. The Owner retains the right to reject the blasting plan. Store all explosives securely and clearly mark all storage places with "DANGER – EXPLOSIVES." Store, handle, and use explosives and highly flammable material in compliance with federal, state, and local laws, ordinances, and regulations. Assume liability for property damage, injury, or death resulting from the use of explosives.

Give at least a 48-hr. advance notice to the appropriate Road Master before doing any blasting work involving the use of electric blasting caps within 200 ft. of any railroad track.

7.11. RESPONSIBILITY FOR HAZARDOUS MATERIALS

Comply with the requirements of *Article 6L.10., "Hazardous Materials."* Indemnify and save 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 arising from the generation or disposition of hazardous materials introduced by the Contractor on any work done by the Contractor on Owner-owned or controlled sites. Indemnify and save harmless the Owner and its representatives from any liability or responsibility arising out of the Contractor's generation or disposition of any hazardous materials obtained, processed, stored, shipped, etc., on sites not owned or controlled by the Owner. Reimburse the Owner for all payments, fees, or restitution the Owner is required to make as a result of the Contractor's actions.

7.12. RESTORING SURFACES OPENED BY PERMISSION

Do not authorize anyone to make an opening in the highway for utilities, drainage, or any other reason without written permission by the Engineer. Repair all openings as directed by the Engineer. Payment for repair of surfaces opened by permission will be made in accordance with pertinent items or *Article 4L.4., "Changes in the Work."* Costs associated with openings made with Contractor authorization but without Owner approval will not be paid.

7.13. PROTECTING ADJACENT PROPERTY

Protect adjacent property from damage. If any damage results from an act or omission on the part of or on behalf of the Contractor, take corrective action to restore the damaged property to a condition similar or equal to that existing before the damage was done.

7.14. RESPONSIBILITY FOR DAMAGE CLAIMS

Indemnify and save 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. Indemnify and save 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 properly 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. Indemnify and save harmless the Owner from any suits or claims resulting from damage by the Contractor's operations to any pipeline or underground installation. Make available the scheduled sequence of work to the respective utility owners so that they may coordinate and schedule adjustments of their utilities that conflict with the proposed work.

7.15. HAULING AND LOADS ON ROADWAYS AND STRUCTURES

Comply with federal and state laws concerning legal gross and axle weights. Except for the designated Interstate system, vehicles with a valid yearly overweight tolerance permit may haul materials to the work locations at the permitted load. Provide copies of the yearly overweight tolerance permits to the Engineer upon request. Construction equipment is not exempt from oversize or overweight permitting requirements on roadways open to the traveling public.

Protect existing bridges and other structures that will remain in use by the traveling public during and after the completion of the Contract. Construction traffic on roadways, bridges, and culverts within the limits of the work, including any structures under construction that will remain in service during and after completion of the Contract is subject to legal size and weight limitations.

Additional temporary fill may be required by the Engineer for hauling purposes for the protection of certain structures. This additional fill will not be paid directly but will be subsidiary.

Replace or restore to original condition any structure damaged by the Contractor's operations.

The Engineer may allow equipment with oversize or non-divisible overweight loads to operate without a permit within the work locations on pavement structures not open to the traveling public. Submit Contractor-proposed changes to traffic control plans for approval, in accordance with Item 502, "Barricades, Signs, and Traffic Handling." The following sections further address overweight allowances. The Owner will make available to the Contractor any available plans and material reports for existing structures.

7.15.1. Overweight Construction Traffic Crossing Structures. The Engineer may allow crossing of a structure not open to the public within the work locations, when divisible or non-divisible loads exceed legal weight limitations, including limits for load-posted bridges. Obtain written permission to make these crossings. Submit for approval a structural analysis by a licensed professional engineer indicating that the excessive loads should be allowed. Provide a manufacturer's certificate of equipment weight that includes the weight distribution on the various axles and any additional parts such as counterweights, the configuration of the axles, or other information necessary for the analysis. Submit the structural analysis and supporting documentation sufficiently in advance of the move to allow for review. Permission may be granted if the Engineer finds that no damage or overstresses in excess of those normally allowed for occasional overweight loads will result to structures that will remain in use after Contract completion. Provide temporary matting or other protective measures as directed.

Schedule loads so that only one vehicle is on any span or continuous unit at any time. Use barricades, fences, or other positive methods to prevent other vehicular access to structures at any time the overweight load is on any span or continuous unit.

7.15.2. Construction Equipment Operating on Structures. Cranes and other construction equipment used to perform construction operations that exceed legal weight limits may be allowed on structures. Before any operation that may require placement of equipment on a structure, submit for approval a detailed structural analysis prepared by a licensed professional engineer.

Submit the structural analysis and supporting documentation sufficiently in advance of the use to allow for review and approval. Include all axle loads and configurations, spacing of tracks or wheels, tire loads, outrigger placements, center of gravity, equipment weight, and predicted loads on tires and outriggers for all planned movements, swings, or boom reaches. The analysis must demonstrate that no overstresses will occur in excess of those normally allowed for occasional overweight loads.

7.15.3. Loads on Structures. Do not store or stockpile material on bridge structures without written permission. If required, submit a structural analysis and supporting documentation by a licensed professional engineer for review. Permission may be granted if the Engineer finds that no damage or overstresses in excess of those normally allowed for occasional overweight loads will result to structures that will remain in use after Contract completion. Provide temporary matting or other protective measures as directed.

7.15.4. Hauling Divisible Overweight Loads on Pavement Within the Work Locations. The Engineer may allow divisible overweight loads on pavement structures within the work locations not open to the traveling public. Obtain written approval before hauling the overweight loads. Include calculations to demonstrate that there will be no damage or overstress to the pavement structure.

7.16. CONTRACTOR'S RESPONSIBILITY FOR WORK

Until final acceptance of the Contract, take every precaution against injury or damage to any part of the work by the action of the elements or by any other cause, whether arising from the execution or from the nonexecution of the work. Protect all materials to be used in the work at all times, **INCLUDING** periods of suspension.

When any roadway or portion of the roadway is in suitable condition for travel, it may be opened to traffic as directed. Opening of the roadway to traffic does not constitute final acceptance.

Repair damage to all work until final acceptance. Repair damage to existing facilities in accordance with the Contract or as directed. Repair damage to existing facilities or work caused by Contractor operations at the Contractor's expense. Repair work for damage that was not due to the Contractor's operations will not be paid for except as provided below.

7.16.1. Reimbursable Repair. Except for damage to appurtenances listed in *Article 7L.16.2.1., "Unreimbursed Repair,"* the Contractor will be reimbursed for repair of damage caused by:

- motor vehicle, watercraft, aircraft, or railroad-train incident;
- vandalism; or
- Acts of God, such as earthquake, tidal wave, tornado, hurricane, or other cataclysmic phenomena of nature.

7.16.2. Appurtenances.

7.16.2.1. Unreimbursed Repair. Except for destruction (not reusable) due to hurricanes, reimbursement will not be made for repair of damage to the following temporary appurtenances, regardless of cause:

- signs,
- barricades,
- changeable message signs, and
- other work zone traffic control devices.

Crash cushion attenuators and guardrail end treatments are the exception to the above listing and are to be reimbursed in accordance with *Article 7L.16.2.2., "Reimbursed Repair."*
For the devices listed in this section, reimbursement may be made for damage due to hurricanes. Where the Contractor retains replaced appurtenances after completion of the project, the Owner will limit the reimbursement to the cost that is above the salvage value at the end of the project.

7.16.2.2. Reimbursed Repair. Reimbursement will be made for repair of damage due to the causes listed in *Article 7L.16.1., "Reimbursable Repair,"* to appurtenances (including temporary and permanent crash cushion attenuators and guardrail end treatments).

7.16.3. Roadways and Structures. Until final acceptance, the Contractor is responsible for all work constructed under the Contract. The Owner will not reimburse the Contractor for repair work to new construction, unless the failure or damage is due to one of the causes listed in *Article 7L.16.1., "Reimbursable Repair."*

The Owner will be responsible for the cost for repair of damage to existing roadways and structures not caused by the Contractor's operations.

7.16.4. Detours. The Contractor will be responsible for the cost of maintenance of detours constructed under the Contract, unless the failure or damage is due to one of the causes listed in *Article 7L.16.1., "Reimbursable Repair."* The Engineer may consider failures beyond the Contractor's control when determining reimbursement for repairs to detours constructed. The Owner will be responsible for the cost of maintenance of existing streets and roadways used for detours or handling traffic.

7.16.5. Relief from Maintenance. The Engineer may relieve the Contractor from responsibility of maintenance as outlined in this section. This relief does not release the Contractor from responsibility for defective materials or work or constitute final acceptance.

7.16.5.1. Isolated Work Locations. For isolated work locations, when all work is completed, including work for Article 5L.11., "Final Cleanup," the Engineer may relieve the Contractor from responsibility for maintenance.

7.16.5.2. Work Except for Vegetative Establishment and Test Periods. When all work for all or isolated work locations has been completed, including work for *Article 5L.11., "Final Cleanup,"* with the exception of vegetative establishment and maintenance periods and test and performance periods, the Engineer may relieve the Contractor from responsibility for maintenance of completed portions of work.

7.16.5.3. Work Suspension. When all work is suspended for an extended period of time, the Engineer may relieve the Contractor from responsibility for maintenance of completed portions of work during the period of suspension.

7.16.5.4. When Directed by the Engineer. The Engineer may relieve the Contractor from the responsibility for maintenance when directed.

7.16.6. Basis of Payment. When reimbursement for repair work is allowed and performed, payment will be made in accordance with pertinent items or *Article 4L.4., "Changes in the Work."*

7.17. ELECTRICAL REQUIREMENTS

7.17.1. Definitions.

7.17.1.1. Electrical Work. Electrical work is work performed for:

- Item 610, "Roadway Illumination Assemblies,"
- Item 614, "High Mast Illumination Assemblies,"
- Item 616, "Performance Testing of Lighting Systems,"
- Item 617, "Temporary Roadway Illumination,"
- Item 618, "Conduit,"
- Item 620, "Electrical Conductors,"
- Item 621, "Tray Cable,"
- Item 622, "Duct Cable,"
- Item 628, "Electrical Services,"
- Item 680, "Highway Traffic Signals,"
- Item 681, "Temporary Traffic Signals,"
- Item 684, "Traffic Signal Cables,"
- Item 685, "Roadside Flashing Beacon Assemblies,"
- other items that involve either the distribution of electrical power greater than 50 volts or the installation of conduit and duct banks,
- the installation of conduit and wiring associated with Item 624, "Ground Boxes," and Item 656, "Foundations for Traffic Control Devices," and
- the installation of the conduit system for communication and fiber optic cable.

Electrical work does not include the installation of communications or fiber optic cable, or the connections for low voltage and inherently power limited circuits such as electronic or communications equipment. Assembly and placement of poles, structures, cabinets, enclosures, manholes, or other hardware will not be considered electrical work as long as no wiring, wiring connections, or conduit work is done at the time of assembly and placement.

7.17.1.2. Specialized Electrical Work. Specialized electrical work is work that includes the electrical service and feeders, sub-feeders, branch circuits, controls, raceways, and enclosures for the following:

- pump stations,
- moveable bridges,
- ferry slips,
- motor control centers,
- facilities required under Item 504, "Field Office and Laboratory,"
- rest area or other public buildings,
- weigh-in-motion stations,
- electrical services larger than 200 amps,
- electrical services with main or branch circuit breaker sizes not shown in the Contract, and
- any 3-phase electrical power.

7.17.1.3. Certified Person. A certified person is a person who has passed the test from the TxDOT course TRF450, "TxDOT Roadway Illumination and Electrical Installations," or other courses as approved by the Owner. Submit a current and valid certification upon request.

7.17.1.4. Licensed Electrician. A licensed electrician is a person with a current and valid unrestricted master electrical license, or unrestricted journeyman electrical license that is supervised or directed by an unrestricted master electrician. An unrestricted master electrician need not be on the work locations at all times electrical work is being done, but the unrestricted master electrician must approve work performed by the unrestricted journeyman. Licensed electrician requirements by city ordinances do not apply to on state system work.

The unrestricted journeyman and unrestricted master electrical licenses must be issued by the Texas Department of Licensing and Regulation or by a city in Texas with a population of 50,000 or greater that issues licenses based on passing a written test and demonstrating experience.

The Engineer may accept other states' electrical licenses. Submit documentation of the requirements for obtaining that license. Acceptance of the license will be based on sufficient evidence that the license was issued based on:

- passing a test based on the NEC similar to that used by Texas licensing officials, and
- sufficient electrical experience commensurate with general standards for an unrestricted master and unrestricted journeyman electrician in the State of Texas.

7.17.2. Work Requirements. The qualifications required to perform electrical work and specialized electrical work are listed in Table 2.

Table 2
Work Requirements

Type of Work	Qualifications to Perform Work
Electrical work with plans	Licensed electrician, certified person, or workers directly supervised by a licensed electrician or certified person
Electrical work without plans	Licensed electrician or workers directly supervised by a licensed electrician
Specialized electrical work	Licensed electrician or workers directly supervised by a licensed electrician
Replace lamps, starting aids, and changing fixtures	Licensed electrician, certified person, or workers directly supervised by a licensed electrician or certified person
Conduit in precast section with approved working drawings	Inspection by licensed electrician or certified person
Conduit in cast-in-place section	Inspection by licensed electrician or certified person
All other electrical work (troubleshooting, repairs, component replacement, etc.)	Licensed electrician or workers directly supervised by a licensed electrician

"Directly supervised by a licensed electrician" means that a licensed electrician is physically present during all electrical work. "Directly supervised by a licensed electrician or certified person" means that a licensed electrician or certified person is physically present during all electrical work.

A non-certified person may install conduit in cast-in-place concrete sections if the work is verified by a certified person before concrete placement.

When the plans specify IMSA certification, the requirements of Table 2 will still apply to the installation of the conduit, ground boxes, electrical services, pole grounding, and electrical conductors installed under Item 620, "Electrical Conductors."

7.18. PAYROLLS

Ensure that employees, contract labor, and any subcontractor's employees are paid at least the predetermined wage rates shown on the Contract.

Payroll records must contain the information required by law. As an option, form WH-347, "Payroll" is provided by the U.S. Department of Labor.

Maintain payroll and related records during the course of the Contract and preserve these records for a period of 3 years following the completion of the Contract or as required by law.

7.18.1. Minimum Wage Requirements for Federally Funded Contracts. Comply with the requirements of FHWA-1723, "Required Contract Provisions Federal-Aid Construction Contract."

Submit payroll records to the Engineer in the manner prescribed by the Owner.

7.18.2. Minimum Wage Requirements for State Funded Contracts. Comply with the requirements of 29 USC 206 unless otherwise shown in the Contract.

Upon request, submit payroll records to the Engineer in the manner prescribed by the Owner.

8. ITEM 8L PROSECUTION AND PROGRESS

8.1. PROSECUTION OF WORK

Unless otherwise shown in the Contract, begin work within 30 calendar days after the authorization date to begin work as shown on the Notice to Proceed. Prosecute the work continuously to completion within the working days specified. Unless otherwise shown in the Contract documents, work may be prosecuted in concurrent phases if no changes are required in the traffic control plan or if a revised traffic control plan is approved. Notify the Engineer at least 24 hr. before beginning work or before beginning any new operation. Do not start new operations to the detriment of work already begun. Minimize interference to traffic.

8.2. SUBCONTRACTING

Do not sublet any portion of a construction Contract without the Engineer's written approval. A subcontract does not relieve any responsibility under the Contract and bonds. Ensure that all subcontracted work complies with all governing labor provisions.

The Contractor certifies by signing the Contract that the Contractor will not enter into any subcontract with a subcontractor that is debarred or suspended by the Owner, or any state or federal agency.

For federally funded Contracts, ensure the required federal documents are physically attached to each subcontract agreement including all tiered subcontract agreements.

For all DBE/HUB/SBE subcontracts including all tiered DBE/HUB/SBE subcontracts, submit a copy of the executed subcontract agreement.

Submit a copy of the executed non-DBE subcontracts including all tiered non-DBE subcontracts when requested.

8.2.1. Construction Contracts. Perform work with own organization on at least 30% of the total original Contract cost (25% if the Contractor is an SBE on a wholly State or local funded Contract) excluding any items determined by the Engineer to be specialty items. Specialty items are those that require highly specialized knowledge, abilities, or equipment not usually available in the contracting firm expected to bid on the proposed Contract as a whole.

Specialty items will be shown on the plans or as determined by the Engineer. Bid cost of specialty items performed by subcontractors will be deducted from the total original Contract cost before computing the required amount of work to be performed by the Contractor's own organization.

The term "perform work with own organization" includes only:

- workers employed and paid directly by the Contractor or wholly owned subsidiary;
- equipment owned by the Contractor or wholly owned subsidiary;
- rented or leased equipment operated by the Contractor's employees or wholly owned subsidiary's employees;
- materials incorporated into the work if the majority of the value of the work involved in incorporating the material is performed by the Contractor's own organization, including a wholly owned subsidiary's organization; and
- labor provided by staff leasing firms licensed under Chapter 91 of the Texas Labor Code for nonsupervisory personnel if the Contractor or wholly owned subsidiary maintains direct control over the activities of the leased employees and includes them in the weekly payrolls.

When staff leasing firms provide materials or equipment, they are considered subcontractors. In these instances, submit staff leasing firms for approval as a subcontractor.

Copies of cancelled checks and certified statements may be required to verify compliance with the requirements of this section.

8.2.2. Payments to Subcontractors. Report payments for DBE/HUB/SBE subcontracts including tiered DBE/HUB/SBE subcontracts in the manner as prescribed by the Owner.

8.2.3. Payment Records. Make payment records, including but not limited to copies of cancelled checks, available for inspection by the Owner. Submit payment records upon request. Retain payment records for a period of 3 years following completion of the Contract work or as specified by the Owner.

Failure to submit this information to the Engineer by the 20th day of each month will result in the Owner taking actions, including, but not limited to, withholding payments and suspending the work. This work will not be measured or paid for directly but will be subsidiary to pertinent items.

8.2.4. Payrolls. Comply with *Article 7L.19., "Payrolls."*

8.3. COMPUTATION OF CONTRACT TIME FOR COMPLETION

The number of working days is established by the Contract. Working day charges will begin as prescribed in *Article 8L.1., "Prosecution of Work."* Working day charges will continue in accordance with the Contract.

Upon request, the Engineer will provide the conceptual time determination schedule to the Contractor for informational purposes only. The schedules assume generic resources, production rates, sequences of construction and average weather conditions based on historic data. The Owner will not adjust the number of working days and milestones, if any, due to differences in opinion regarding any assumptions made in the preparation of the schedule or for errors, omissions, or discrepancies found in the Owner's conceptual time schedule.

8.3.1. Working Day Charges. Working days will be charged in accordance with *Article 8L.3.1.4., "Standard Workweek,"* unless otherwise shown in the Contract documents. Working days will be computed and charged in accordance with one of the following:

8.3.1.1. Five-Day Workweek Working days will be charged Monday through Friday, excluding national holidays, regardless of weather conditions or material availability. The Contractor has the option of working on Saturdays. Provide sufficient advance notice when scheduling work on Saturdays. Work on Sundays and national holidays will not be permitted without written permission. If work requiring an Inspector to be present is performed on a Saturday, Sunday, or national holiday, and weather and other conditions permit the performance of work for 7 hr. between 7 A.M. and 6 P.M., a working day will be charged.

8.3.1.2. Six-Day Workweek. Working days will be charged Monday through Saturday, excluding national holidays, regardless of weather conditions or material availability. Work on Sundays and national holidays will not be permitted without written permission. If work requiring an Inspector to be present is performed on a Sunday or a national holiday, and weather or other conditions permit the performance of work for 7 hr. between 7 A.M. and 6 P.M., a working day will be charged.

8.3.1.3. Seven-Day Workweek Working days will be charged Monday through Sunday, excluding national holidays, regardless of weather conditions or material availability. Work on national holidays will not be permitted without written permission. If work is performed on any of these holidays requiring an Inspector to be present, and weather or other conditions permit the performance of work for 7 hr. between 7 A.M. and 6 P.M., a working day will be charged.

8.3.1.4. Standard Workweek. Working days will be charged Monday through Friday, excluding national or state holidays, if weather or other conditions permit the performance of the principal unit of work underway, as determined by the Engineer, for a continuous period of at least 7 hr. between 7 A.M. and 6 P.M., unless otherwise shown in the Contract. The Contractor has the option of working on Saturdays or state holidays. Provide sufficient advance notice to the Engineer when scheduling work on Saturdays. Work on Sundays and national holidays will not be permitted without written permission. If work requiring an Inspector to be present is performed on a Saturday, Sunday, or holiday, and weather or other conditions permit the performance of work for 7 hr. between 7 A.M. and 6 P.M., a working day will be charged.

8.3.1.5. Calendar Day. Working days will be charged Sunday through Saturday, including all holidays, regardless of weather conditions, material availability, or other conditions not under the control of the Contractor.

8.3.1.6. Other. Working days will be charged as shown in the Contract documents.

8.3.2. Restricted Work Hours. Restrictions on Contractor work hours and the related definition for working day charges are as prescribed in this article unless otherwise shown in the Contract documents.

8.3.3. Nighttime Work. Nighttime work is allowed only when shown in the Contract documents or as directed. Nighttime work is defined as work performed from 30 minutes. after sunset to 30 minutes before sunrise.

8.3.3.1. Five-, Six-, and Seven-Day Workweeks. Nighttime work that extends past midnight will be assigned to the following day for the purposes of approval for allowing work on Sundays or national holidays.

8.3.3.2. Standard Workweek.

8.3.3.2.1. Nighttime Work Only. When nighttime work is allowed or required and daytime work is not allowed, working day charges will be made when weather and other conditions permit the performance of the principal unit of work underway, as determined by the Engineer, for a continuous period of at least 7 hr. for the nighttime period, as defined in *Article 8L.3.3., "Nighttime Work,"* unless otherwise shown in the Contract documents.

8.3.3.2.2. Nighttime Work and Daytime Work Requiring Inspector. When nighttime work is performed or required and daytime work is allowed, working day charges will be made when weather and other conditions permit the performance of the principal unit of work underway, as determined by the Engineer, for a continuous period of at least 7 hr. for the nighttime period, as defined in *Article 8L.3.3., "Nighttime Work,"* or for a continuous period of at least 7 hr. for the alternative daytime period unless otherwise shown in the Contract documents. Only one day will be charged for each 24-hr. time period. When the Engineer agrees to restrict work hours to the nighttime period only, working day charges will be in accordance with *Article 8L.3.3.2.1., "Nighttime Work Only."*

8.3.4. Time Statements. The Engineer will furnish the Contractor a monthly time statement. Review the monthly time statement for correctness. Report protests in writing, no later than 30 calendar days after receipt of the time statement, providing a detailed explanation for each day protested. Not filing a protest within 30 calendar days will indicate acceptance of the working day charges and future consideration of that statement will not be permitted.

8.4. TEMPORARY SUSPENSION OF WORK OR WORKING DAY CHARGES

The Engineer may suspend the work, wholly or in part, and will provide notice and reasons for the suspension in writing. Suspend and resume work only as directed in writing.

When part of the work is suspended, the Engineer may suspend working day charges only when conditions not under the control of the Contractor prohibit the performance of critical activities. When all of the work is suspended for reasons not under the control of the Contractor, the Engineer will suspend working day charges.

8.5. PROJECT SCHEDULES

Prepare, maintain, and submit project schedules. Project schedules are used to convey the Contractor's intended work plan to the Owner. Prepare project schedules with a level of effort sufficient for the work being performed. Project schedules will not be used as a basis to establish the amount of work performed or for the preparation of the progress payments.

8.5.1. Project Scheduler. Designate an individual who will develop and maintain the progress schedule. The Project Scheduler will be prepared to discuss, in detail, the proposed sequence of work and methods of operation, and how that information will be communicated through the Progress Schedule at the Preconstruction Meeting. This individual will also attend the project meetings and make site visits to prepare, develop, and maintain the progress schedules.

8.5.2. Progress Schedule. Before starting work, prepare and submit a progress schedule based on the sequence of work and traffic control plan shown in the Contract documents. At a minimum, prepare the progress schedule as a Bar Chart or Critical Path Method (CPM), as shown on the plans. Include all planned work activities and sequences and show Contract completion within the number of working days specified. Incorporate major material procurements, known utility relocations, and other activities that may affect the completion of the Contract in the progress schedule. Show a beginning date, ending date, and duration in whole working days for each activity. Do not use activities exceeding 20 working days, except for agreed upon activities. Show an estimated production rate per working day for each work activity.

8.5.3. Schedule Format. Format all project schedules according to the following:

- Begin the project schedule on the date of the start of Contract time or start of activities affecting work on the project;
- Show the sequence and interdependence of activities required for complete performance of the work. If using a CPM schedule, show a predecessor and a successor for each activity; and
- Ensure all work sequences are logical and show a coordinated plan of the work.

CPM schedules must also include:

- Clearly and accurately identify the critical path as the longest continuous path;
- Provide a legend for all abbreviations, run date, data date, project start date, and project completion date in the title block of each schedule submittal; and
- Through the use of calendars, incorporate seasonal weather conditions into the schedule for work (e.g., earthwork, concrete paving, structures, asphalt, drainage, etc.) that may be influenced by temperature or precipitation. Also, incorporate non-work periods such as holidays, weekends, or other non-work days as identified in the Contract.

8.5.4. Activity Format. For each activity on the project schedule provide:

- A concise description of the work represented by the activity;
- An activity duration in whole working days;
- Code activities so that organized plots of the schedule may be produced.

CPM schedules must also include the quantity of work and estimated production rate for major items of work. Provide enough information for review of the work being performed.

8.5.5. Schedule Types.

8.5.5.1. Bar Chart. Seven calendar days before the preconstruction meeting, prepare and submit a hard copy of the schedule using the bar chart method.

8.5.5.1.1. Progress Schedule Reviews. Update the project schedule and submit a hard copy when changes to the schedule occur or when requested.

8.5.5.2. Critical Path Method. Prepare and submit the schedule using the CPM.

8.5.5.2.1. Preliminary Schedule. Seven calendar days before the preconstruction meeting, submit both the plotted and electronic copies of the project schedule showing work to be performed within the first 90 calendar days of the project.

8.5.5.2.2. Baseline Schedule. The baseline schedule will be considered the Contractor's plan to successfully construct the project within the time frame and construction sequencing indicated in the Contract. Submit both plotted and electronic copies of the baseline schedule. Submit 2 plots of the schedule: one organized with the activities logically grouped using the activity coding; and the other plot showing only the critical path determined by the longest path, not based on critical float.

Develop and submit the baseline schedule for review within the first 45 calendar days of the project unless the time for submission is extended.

8.5.5.2.2.1. Review. Within 15 calendar days of receipt of the schedule, the Engineer will evaluate, and inform the Contractor if the schedule has been accepted. If the schedule is not accepted, the Engineer will provide comments to the Contractor for incorporation. Provide a revised schedule based on the Engineer's comments, or reasons for not doing so within 10 calendar days.

The Engineer's review and acceptance of the project schedule is for conformance to the requirements of the Contract documents only and does not relieve the Contractor of any responsibility for meeting the interim milestone dates (if specified) or the Contract completion date. Review and acceptance does not expressly or by implication warrant, acknowledge, or admit the reasonableness of the logic or durations of the project schedule. If the Contractor fails to define any element of work, activity, or logic and the Engineer's review does not detect this omission or error, the Contractor is responsible for correcting the error or omission.

Submit an acceptable baseline schedule before the 90th calendar day of the project unless the time for submission is extended.

8.5.5.2.3. Progress Schedule. Maintain the project schedule for use by both the Contractor and the Engineer. Submit both the plotted and electronic copy as it will become an as-built record of the daily progress achieved on the project. If continuous progress of an activity is interrupted for any reason except non-work periods (such as holidays, weekend, or interference from temperature or precipitation), then the activity will show the actual finish date as that date of the start of the interruption and the activity will be broken into a subsequent activity (or activities, based on the number of interruptions) similarly numbered with successive alpha character as necessary.

The original duration of the subsequent activity will be that of the remaining duration of the original activity. Relationships of the subsequent activity will match those of the original activity so that the integrity of the project schedule logic is maintained. Once established, the original durations and actual dates of all activities must remain unchanged. Revisions to the schedule may be made as necessary.

The project schedule must be revised when changes in construction phasing and sequencing occur

or other changes that cause deviation from the original project schedule occur. Any revisions to the schedule must be listed in the monthly update narrative with the purpose of the revision and description of the impact on the project schedule's critical path and project completion date. Create the schedule revision using the latest update before the start of the revision.

Monthly updating of the project schedule will include updating of:

- The actual start dates for activities started;
- The actual finish dates for activities completed;
- The percentage of work completed and remaining duration for each activity started but not yet completed; and
- The calendars to show days actual work was performed on the various work activities.

The cut-off day for recording monthly progress will be the last day of each month. Submit the updated project schedule no later than the 20th calendar day of the following month. The Engineer will evaluate the updated schedule within 5 calendar days of receipt and inform the Contractor if it has or has not been accepted. If the schedule is not accepted, the Engineer will provide comments to the Contractor for incorporation. Provide a revised schedule based on the Engineer's comments, or reasons for not doing so within 5 calendar days.

Provide a brief narrative in a bulleted statement format for major items that have impacted the schedule. Notify the Engineer if resource-leveling is being used.

8.5.5.2.3.1. Project Schedule Summary Report (PSSR). When shown on the plans, provide the PSSR instead of the narrative required in *Article 8L.5.5.2.3., "Progress Schedule."* The PSSR includes a listing of major items that have impacted the schedule as well as a summary of progress in days ahead or behind schedule. Include an explanation of the project progress for the period represented on the form provided by the Owner.

8.5.5.3. Notice of Potential Time Impact. Submit a "Notice of Potential Time Impact" when a Contract time extension or adjustment of milestone dates may be justified or when directed.

Failure to provide this notice in the time frames outlined above will compromise the Owner's ability to mitigate the impacts and the Contractor forfeits the right to request a time extension or adjustment of milestone dates unless the circumstances are such that the Contractor could not reasonably have had knowledge of the impact at the time.

8.5.5.4. Time Impact Analysis. When directed, provide a time impact analysis. A time impact analysis is an evaluation of the effects of impacts on the project. A time impact analysis consists of the following steps:

- **Step 1**. Establish the status of the project immediately before the impact.
- **Step 2**. Predict the effect of the impact on the schedule update used in Step 1.
- **Step 3**. Track the effects of the impact on the schedule during its occurrence.
- **Step 4**. Establish the status of the project after the impact's effect has ended and provide details identifying any mitigating actions or circumstances used to keep the project ongoing during the impact period.

Determine the time impact by comparing the status of the work before the impact (Step 1) to the prediction of the effect of the impact (Step 2), if requested, and to actual effects of the impact once it is complete (Step 4). Unless otherwise approved, Steps 1, 3, and 4, must be completed before consideration of a Contract time extension or adjustment of a milestone date will be provided. Time extensions will only be considered when delays that affect milestone dates or the Contract

completion date are beyond the Contractor's control. Submit Step 4 no later than 15 calendar days after the impact's effects have ended or when all the information on the effect has been realized.

Submit one electronic backup copy of the complete time impact analysis and a copy of the full project schedule incorporating the time impact analysis. If the project schedule is revised after the submittal of a time impact analysis, but before its approval, indicate in writing the need for any modification to the time impact analysis.

The Engineer will review the time impact analysis upon completion of step 4. If this review detects revisions or changes to the schedule that had not been performed and identified in a narrative, the Engineer may reject the time impact analysis. If the Engineer is in agreement with the time impact analysis, a change order may be issued to grant additional working days, or to adjust interim milestones. Once a change order has been executed, incorporate the time impact analysis into the project schedule. The time impact analysis may also be used to support the settlement of disputes and claims. Compensation related to the time impact analysis may be provided at the completion of the analysis or the completion of the project to determine the true role the impact played on the final completion.

The work performed under this article will not be measured or paid for directly but will be subsidiary to pertinent items.

8.6. FAILURE TO COMPLETE WORK ON TIME

The time established for the completion of the work is an essential element of the Contract. If the Contractor fails to complete the work within the number of working days specified, working days will continue to be charged. Failure to complete the Contract, a separate work order, or callout work within the number of working days specified, including any approved additional working days, will result in liquidated damages for each working day charged over the number of working days specified in the Contract. The dollar amount specified in the Contract will be deducted from any money due or to become due the Contractor for each working day the Contract remains incomplete. This amount will be assessed not as a penalty but as liquidated damages.

8.7. DEFAULT OF THE CONTRACT

8.7.1. Declaration of Default. The Engineer may declare the Contractor to be in default of the Contract if the Contractor:

- fails to begin the work within the number of days specified,
- fails to prosecute the work to assure completion within the number of days specified,
- is uncooperative, disruptive or threatening,
- fails to perform the work in accordance with the Contract requirements,
- neglects or refuses to remove and replace rejected materials or unacceptable work,
- discontinues the prosecution of the work without the Engineer's approval,
- makes an unauthorized assignment,
- fails to resume work that has been discontinued within a reasonable number of days after notice to do so,
- fails to conduct the work in an acceptable manner, or
- commits fraud or other unfixable conduct as determined by the Owner.

If any of these conditions occur, the Engineer will give notice in writing to the Contractor and the

Surety of the intent to declare the Contractor in default. If the Contractor does not proceed as directed within 10 days after the notice, the Owner will provide written notice to the Contractor and the Surety to declare the Contractor to be in default of the Contract. The Owner will also provide written notice of default to the Surety. If the Contractor provides the Owner written notice of voluntary default of the Contract, the Owner may waive the 10-day notice of intent to declare the Contractor in default and immediately provide written notice of default to the Contractor and the Surety. Working day charges will continue until completion of the Contract. The Owner may suspend work in accordance with *Article 8L.4., "Temporary Suspension of Work or Working Day Charges,"* to investigate apparent fraud or other unfixable conduct before defaulting the Contractor. The Contractor may be subject to sanctions under the state and/or federal laws and regulations.

The Owner will determine the method used for the completion of the remaining work as follows:

- Contracts without Performance Bonds. The Owner will determine the most expeditious and efficient way to complete the work, and recover damages from the Contractor.
- Contracts with Performance Bonds. The Owner will, without violating the Contract, demand that the Contractor's Surety complete the remaining work in accordance with the terms of the original Contract. A completing Contractor will be considered a subcontractor of the Surety. The Owner reserves the right to approve or reject proposed subcontractors. Work may resume after the Owner receives and approves Certificates of Insurance as required in *Article 3.4.3., "Insurance."* Certificates of Insurance may be issued in the name of the completing Contractor. The Surety is responsible for making every effort to expedite the resumption of work and completion of the Contract. The Owner may complete the work using any or all materials at the work locations that it deems suitable and acceptable. Any costs incurred by the Owner for the completion of the work under the Contract will be the responsibility of the Surety.

From the time of notification of the default until work resumes (either by the Surety or the Owner), the Owner will maintain traffic control devices and will do any other work it deems necessary, unless otherwise agreed upon by the Owner and the Surety. All costs associated with this work will be deducted from money due to the Surety.

The Owner will hold all money earned but not disbursed by the date of default. Upon resumption of the work after the default, all payments will be made to the Surety. All costs and charges incurred by the Owner as a result of the default, including the cost of completing the work under the Contract, costs of maintaining traffic control devices, costs for other work deemed necessary, and any applicable liquidated damages or disincentives will be deducted from money due the Contractor for completed work.

If these costs exceed the sum that would have been payable under the Contract, the Surety will be liable and pay the Owner the balance of these costs in excess of the Contract price. In case the costs incurred by the Owner are less than the amount that would have been payable under the Contract if the work had been completed by the Contractor, the Owner will be entitled to retain the difference.

Comply with *Article 8L.2., "Subcontracting,"* and abide by the DBE/HUB/SBE commitments previously approved by the Owner.

No markups as defined in *Article 9L.7., "Payment for Extra Work and Force Account Method,"* will be allowed for the Surety.

8.7.2. Wrongful Default. Submit a written request to the Owner within 14 calendar days of receipt of the notice of default for consideration of wrongful default.

The Owner will determine if the Contractor has been wrongfully defaulted, and will proceed with the following:

- If the Owner determines the default is proper, the default will remain. If the Contractor is in disagreement, the Contractor may file a claim in accordance with *Article 4L.7., "Dispute or Claims Procedure."*
- If the Owner determines it was a wrongful default, the Owner will terminate the Contract for convenience, in accordance with *Article 8L.8., "Termination of the Contract."*

8.8. TERMINATION OF THE CONTRACT

The Owner may terminate the Contract in whole or in part whenever:

- the Contractor is prevented from proceeding with the work as a direct result of an executive order of the President of the United States or the Governor of the State;
- the Contractor is prevented from proceeding with the work due to a national emergency, or when the work to be performed under the Contract is stopped, directly or indirectly, because of the freezing or diversion of materials, equipment or labor as the result of an order or a proclamation of the President of the United States;
- the Contractor is prevented from proceeding with the work due to an order of any federal authority;
- the Contractor is prevented from proceeding with the work by reason of a preliminary, special, or permanent restraining court order where the issuance of the restraining order is primarily caused by acts or omissions of persons or agencies other than the Contractor; or
- the Owner determines that termination of the Contract is in the best interest of the Owner or the public. This includes, but is not limited to, the discovery of significant hazardous material problems, right of way acquisition problems, or utility conflicts that would cause substantial delays or expense to the Contract.

8.8.1. Procedures and Submittals. The Engineer will provide written notice to the Contractor of termination specifying the extent of the termination and the effective date. Upon notice, immediately proceed in accordance with the following:

- stop work as specified in the notice;
- place no further subcontracts or orders for materials, services, or facilities, except as necessary to complete a critical portion of the Contract, as approved;
- terminate all subcontracts to the extent they relate to the work terminated;
- complete performance of the work not terminated;
- settle all outstanding liabilities and termination settlement proposals resulting from the termination for public convenience of the Contract;
- create an inventory report, including all acceptable materials and products obtained for the Contract that have not been incorporated in the work that was terminated (include in the inventory report a description, quantity, location, source, cost, and payment status for each of the acceptable materials and products); and
- take any action necessary, or that the Engineer may direct, for the protection and preservation of the materials and products related to the Contract that are in the possession of the Contractor and in which the Owner has or may acquire an interest.

8.8.2. Settlement Provisions. Within 60 calendar days of the date of the notice of termination, submit a final termination settlement proposal, unless otherwise approved. The Engineer will prepare a change order that reduces the affected quantities of work and adds acceptable costs for termination.

No claim for loss of anticipated profits will be considered. The Owner will pay reasonable and verifiable termination costs including:

- all work completed at the unit bid price and partial payment for incomplete work;
- the percentage of Item 500, “Mobilization,” equivalent to the percentage of work complete or actual cost that can be supported by cost records, whichever is greater;
- expenses necessary for the preparation of termination settlement proposals and support data;
- the termination and settlement of subcontracts;
- storage, transportation, restocking, and other costs incurred necessary for the preservation, protection, or disposition of the termination inventory; and
- other expenses acceptable to the Owner.

9. ITEM 9L MEASUREMENT AND PAYMENT

9.1. MEASUREMENT OF QUANTITIES

The Engineer will measure all completed work using United States standard measures, unless otherwise specified.

9.1.1. Linear Measurement. Unless otherwise specified, all longitudinal measurements for surface areas will be made along the actual surface of the roadway and not horizontally. No deduction will be made for structures in the roadway with an area of 9 sq. ft. or less. For all transverse measurements for areas of base courses, surface courses, and pavements, the dimensions to be used in calculating the pay areas will be the neat dimensions and will not exceed those shown on the plans, unless otherwise directed.

9.1.2. Volume Measurement Transport materials measured for payment by volume in approved hauling vehicles. Display a unique identification mark on each vehicle. Furnish information necessary to calculate the volume capacity of each vehicle. The Engineer may require verification of volume through weight measurement. Use body shapes that allow the capacity to be verified. Load and level the load to the equipment's approved capacity. Loads not hauled in approved vehicles may be rejected.

9.1.3. Weight Measurement. Transport materials measured for payment by weight or truck measure in approved hauling vehicles. Furnish certified measurements, tare weights, and legal gross weight calculations for all haul units. Affix a permanent, legible number on the truck and on the trailer to correspond with the certified information. Furnish certified weights of loaded haul units transporting material if requested.

The material will be measured at the point of delivery. The cost of supplying these volume and weight capacities is subsidiary to the pertinent item. For measurement by the ton, in the field, provide measurements in accordance with Item 520, "Weighing and Measuring Equipment," except for items where ton measurements are measured by standard tables.

The Engineer may reject loads and suspend hauling operations for overloading.

9.1.3.1. Hauling on Routes Accessible to the Traveling Public. For payment purposes on haul routes accessible to the traveling public, the net weight of the load will be calculated as follows:

- If the gross vehicle weight is less than the maximum allowed by state law, including applicable yearly weight tolerance permit, the net weight of the load will be determined by deducting the tare weight of the vehicle from the gross weight.
- If the gross vehicle weight is more than the maximum allowed by state law, including applicable yearly weight tolerance permit, the net weight of the load will be determined by deducting the tare weight of the vehicle from the maximum gross weight allowed.

9.1.3.2. Hauling on Routes Not Accessible to the Traveling Public. For payment purposes on haul routes that are not accessible to the traveling public where advance permission is obtained in writing from the Engineer:

- If the gross vehicle weight is less than the maximum allowed, including applicable yearly weight tolerance permit, the net weight of the load will be determined by deducting the tare weight of the vehicle from the gross weight.
- If the gross vehicle weight is more than the maximum allowed, the net weight of the load will be determined by deducting the tare weight of the vehicle from the maximum gross weight allowed.

9.2. PLANS QUANTITY MEASUREMENT

Plans quantities may or may not represent the exact quantity of work performed or material moved, handled, or placed during the execution of the Contract. The estimated bid quantities are designated as final payment quantities, unless revised by the governing specifications or this article.

If the quantity measured as outlined under "Measurement" varies by more than 5% (or as stipulated under "Measurement" for specific Items) from the total estimated quantity for an individual item originally shown in the Contract, an adjustment may be made to the quantity of authorized work done for payment purposes.

When quantities are revised by a change in design approved by the Owner, by change order, or to correct an error on the plans, the plans quantity will be increased or decreased by the amount involved in the change, and the 5% variance will apply to the new plans quantity.

If the total Contract quantity multiplied by the unit bid price for an individual item is less than $250 and the item is not originally a plans quantity item, then the item may be paid as a plans quantity item if the Engineer and Contractor agree in writing to fix the final quantity as a plans quantity.

For Contracts with callout work and work orders, plans quantity measurement requirements are not applicable.

9.3. ADJUSTMENT OF QUANTITIES

The party to the Contract requesting the adjustment will provide field measurements and calculations showing the revised quantity. When approved, this revised quantity will constitute the final quantity for which payment will be made. Payment for revised quantity will be made at the unit price bid for that item, except as provided for in *Article 4L.4., "Changes in the Work."*

9.4. SCOPE OF PAYMENT

Payment of the Contract unit price is full compensation for all materials, equipment, labor, tools, and supplies necessary to complete the item of work under the Contract. Until final acceptance in accordance with ***Article 5L.12., "Final Acceptance,"*** assume liability for completing the work according to the Contract documents and any loss or damage arising from the performance of the work or from the action of the elements, infringement of patent, trademark, or copyright, except as provided elsewhere in the Contract.

The Owner will only pay for material incorporated into the work in accordance with the Contract. Payment of progress estimates will in no way affect the Contractor's obligation under the Contract to repair or replace any defective parts in the construction or to replace any defective materials used in the construction and to be responsible for all damages due to defects if the defects and damages are discovered on or before final inspection and acceptance of the work.

9.5. PROGRESS PAYMENTS

The Engineer will prepare a monthly estimate of the amount of work performed, including materials in place. Incomplete items of work may be paid at an agreed upon percentage as approved. Payment of the monthly estimate is determined at the Contract item prices less any withholdings or deductions in accordance with the Contract. Progress payments may be withheld for failure to comply with the Contract.

9.6. PAYMENT FOR MATERIAL ON HAND (MOH)

If payment for MOH is desired, request compensation for the invoice cost of acceptable nonperishable materials that have not been used in the work before the request, and that have been delivered to the work location or are in acceptable storage places. Nonperishable materials are those that do not have a shelf life or whose characteristics do not materially change when exposed to the elements. Include only materials that have been sampled, tested, approved, or certified, and are ready for incorporation into the work. Only materials which are completely constructed or fabricated on the Contractor's order for a specific Contract and are so marked and on which an approved test report has been issued are eligible. Payment for MOH may include the following types of items: concrete traffic barrier, precast concrete box culverts, concrete piling,

reinforced concrete pipe, and illumination poles. Any repairs required after fabricated materials have been approved for storage will require approval of the Engineer before being made and will be made at the Contractor's expense. Include only those materials that have an invoice cost of at least $1,000 in the request for MOH payment.

If the request is acceptable, the Engineer will include payment for MOH in a progress payment. Payment for MOH does not constitute acceptance of the materials. Payment will not exceed the actual cost of the material as established by invoice, or the total cost for the associated item less reasonable placement costs, whichever is less. Materials for which the Contractor does not have a paid invoice within 60 days will not be eligible for payment and will be removed from the estimate. Payment may be limited to a portion of the invoice cost or unit price if shown elsewhere in the Contract. Payment for precast products fabricated or constructed by the Contractor for which invoices or freight bills are not available may be made based on statements of actual cost.

Submit the request on forms provided by the Owner. These forms may be electronically reproduced, provided they are in the same format and contain all the required information and certifications. Continue to submit monthly MOH forms until the total value of MOH is $0.

By submitting a request for MOH payment, the Contractor expressly authorizes the Owner to audit MOH records, and to perform process reviews of the record-keeping system. If the Owner determines noncompliance with any of the requirements of this provision, the Owner may exclude payment for any or all MOH for the duration of the Contract.

Maintain all records relating to MOH payment until final acceptance. Provide these records to the Engineer upon request.

9.7. PAYMENT FOR EXTRA WORK AND FORCE ACCOUNT METHOD

Payment for extra work directed, performed, and accepted will be made in accordance with *Article 4L.4., "Changes in the Work."* Payment for extra work may be established by agreed unit prices or by Force Account Method.

Agreed unit prices are unit prices that include markups and are comparable to recent bid prices for the same character of work. These unit prices may be established without additional breakdown justification.

When using Force Account Method, determine an estimated cost for the proposed work and establish labor and equipment rates and material costs. Maintain daily records of extra work and provide copies of these records daily, signed by the Contractor's representative, for verification by the Engineer. Request payment for the extra work no later than the 10th day of the month following the month in which the work was performed. Include copies of all applicable invoices. If the extra work to be performed has an estimated cost of less than $10,000, submit for approval and payment an invoice of actual cost for materials, equipment, labor, tools, and incidentals necessary to complete the extra work.

9.7.1. Markups. Payment for extra work may include markups as compensation for the use of small tools, overhead expense, and profit.

9.7.1.1. Labor. Compensation will be made for payroll rates for each hour that the labor, foremen, or other approved workers are actually engaged in the work. In no case will the rate of wages be less than the minimum shown in the Contract for a particular category. An additional 25% of this sum will be paid as compensation for overhead, superintendence, profit, and small tools.

9.7.1.2. Insurance and Taxes. An additional 55% of the labor cost, excluding the 25% compensation provided in *Article 9L.7.1.1., "Labor,"* will be paid as compensation for labor insurance and labor taxes including the cost of premiums on non-project-specific liability (excluding vehicular) insurance, workers compensation insurance, Social Security, unemployment insurance taxes, and fringe benefits.

9.7.1.3. Materials. Compensation will be made for materials associated with the work based on actual delivered invoice costs, less any discount. An additional 25% of this sum will be paid as compensation for overhead and profit.

9.7.1.4. Equipment. Payment will be made for the established equipment hourly rates for each hour that the equipment is involved in the work. An additional 15% of this sum will be paid as compensation for overhead and profit not included in the rates.

Transportation cost for mobilizing equipment will be included if the equipment is mobilized from an off-site location.

9.7.1.4.1. Contractor-Owned Equipment. For Contractor-owned machinery, trucks, power tools, or other equipment, use the FHWA rental rates found in the *Rental Rate Blue Book* multiplied by the regional adjustment factor and the rate adjustment factor to establish hourly rates. Use the rates in effect for each section of the *Rental Rate Blue Book* at the time of use.

If a rate has not been established for a particular piece of equipment in the *Rental Rate Blue Book*, the Engineer will allow a reasonable hourly rate. This price will include operating costs.

Payment for equipment will be made for the actual hours used in the work. The Owner reserves the right to withhold payment for low production or lack of progress. Payment will not be made for time lost for equipment breakdowns, time spent to repair equipment, or time after equipment is no longer needed.

If equipment is used intermittently while dedicated solely to the work, payment will be made for the duration the equipment is assigned to the work but no more than 8 hours will be paid during a 24-hour day, nor more than 40 hours per week, nor more than 176 hours per month, except when time is computed using a six-day or seven-day workweek. When using a six-day workweek, no more than 8 hours will be paid during a 24-hour day, nor more than 48 hours per week, nor more than 211 hours per month. When using a seven-day workweek, no more than 8 hours will be paid during a 24-hour day, nor more than 56 hours per week, nor more than 246 hours per month.

9.7.1.4.2. Equipment Not Owned by the Contractor. For equipment rented from a third party not owned by the Contractor, payment will be made at the invoice daily rental rate for each day the equipment is needed for the work. The Owner reserves the right to limit the daily rate to comparable *Rental Rate Blue Book* rates. When the invoice specifies that the rental rate does not include fuel, lubricants, repairs, and servicing, the *Rental Rate Blue Book* hourly operating cost for each hour the equipment is operated will be added.

When the invoice specifies equipment operators as a component of the equipment rental, payment will be made at the invoice rate for each operator for each day the equipment is needed for the work.

9.7.1.4.3. Standby Equipment Costs. Payment for standby equipment will be made in accordance with *Article 9L.7.1.4., "Equipment,"* except that:

9.7.1.4.3.1. Contractor-Owned Equipment. For Contractor-owned machinery, trucks, power tools, or other equipment:

- Standby will be paid at 50% (to remove operating cost) of the FHWA rental rates found in the *Rental Rate Blue Book* multiplied by the regional adjustment factor and the rate adjustment factor.
- Standby costs will not be allowed during periods when the equipment would have otherwise been idle.

9.7.1.4.3.2. Equipment Not Owned by the Contractor. For equipment rented from a third party not owned by the Contractor:

- Standby will be paid at the invoice daily rental rate, excluding operating cost, which includes fuel, lubricants, repairs, and servicing. The Owner reserves the right to limit the daily standby rate to comparable FHWA rental rates found in the Rental Rate Blue Book multiplied by the regional adjustment factor and the rate adjustment factor.
- Standby will be paid for equipment operators when included on the invoice and equipment operators are actually on standby.
- Standby costs will not be allowed during periods when the equipment would have otherwise been idle.

9.7.1.5. Subcontracting. An additional 5% of the actual invoice cost will be paid to the Contractor as compensation for administrative cost, superintendence, and profit.

9.7.1.6. Law Enforcement. An additional 5% of the actual invoice cost will be paid as compensation for administrative costs, superintendence, and profit.

9.7.1.7. Railroad Flaggers. An additional 5% of the actual invoice cost will be paid as compensation for administrative cost, superintendence, and profit.

9.7.1.8. Bond Cost. An additional 1% of the total compensation provided in *Article 9L.7., "Payment for Extra Work and Force Account Method,"* will be paid for the increase in bond.

9.8. RETAINAGE

The Owner will not withhold retainage on the Contractor. The Contractor may withhold retainage on subcontractors in accordance with state and federal regulations.

9.9. PAYMENT PROVISIONS FOR SUBCONTRACTORS

For the purposes of this article only, the term subcontractor includes suppliers, and the term work includes materials provided by suppliers at a location approved by the Engineer.

These requirements apply to all tiers of subcontractors. Incorporate the provisions of this article into all subcontract or material purchase agreements.

Pay subcontractors for work performed within 10 days after receiving payment for the work performed by the subcontractor. Also, pay any retainage on a subcontractor's work within 10 days after satisfactory completion of all of the subcontractor's work. Completed subcontractor work includes vegetative establishment, test, maintenance, performance, and other similar periods that are the responsibility of the subcontractor.

For the purpose of this section, satisfactory completion is accomplished when:

- the subcontractor has fulfilled the Contract requirements of both the Owner and the subcontract for the subcontracted work, including the submittal of all information required by the specifications and the Owner; and
- the work done by the subcontractor has been inspected, approved, and paid by the Owner.

Provide a certification of prompt payment in accordance with the Owner's prompt payment procedure to certify that all subcontractors and suppliers were paid from the previous months payments and retainage was released for those whose work is complete. Submit the completed form each month and the month following the month when final acceptance occurred at the end of the project.

The inspection and approval of a subcontractor's work does not eliminate the Contractor's responsibilities for all the work as defined in *Article 7L.16., "Contractor's Responsibility for Work*."

The Owner may pursue actions against the Contractor, including withholding of estimates and suspending the work, for noncompliance with the subcontract requirements of this section upon receipt of written notice with sufficient details showing the subcontractor has complied with contractual obligations.

9.10. FINAL PAYMENT

When the Contract has been completed, all work has been approved, final acceptance has been made in accordance with *Article 5L.12., "Final Acceptance,"* and Contractor submittals have been received, the Engineer will prepare a final estimate for payment showing the total quantity of work completed and the money owed the Contractor. The final payment will reflect the entire sum due, less any sums previously paid.

T. SPECIAL PROVISIONS

U. TEXAS DEPARTMENT OF TRANSPORTATION – WAGE RATES 2022

Texas Department of Transportation

The wage rates listed herein are those predetermined by the Secretary of Labor and State Statue and listed in the United States Department of Labor's (USDOL) General Decisions dated **02-25-2022** and are the minimum wages to be paid accordingly for each specified classification. To determine the applicable wage rate zone, a list entitled "TEXAS COUNTIES IDENTIFIED BY WAGE RATE ZONES" is provided in the contract. Any wage rate that is not listed herein and not in the USDOL's general decision, must be submitted to the Engineer for approval. IMPORTANT NOTICE FOR STATE PROJECTS: only the controlling wage rate zone applies to the contract. Effective 02-25-2022.

CLASS. #	CLASSIFICATION DESCRIPTION	ZONE TX02 *(TX20220002)	ZONE TX03 *(TX20220003)	ZONE TX04 *(TX20220004)	ZONE TX05 *(TX20220005)	ZONE TX06 *(TX20220006)	ZONE TX07 *(TX20220007)	ZONE TX08 *(TX20220008)	ZONE TX24 *(TX20220024)	ZONE TX25 *(TX20220025)	ZONE TX27 *(TX20220027)	ZONE TX28 *(TX20220028)	ZONE TX29 *(TX20220029)	ZONE TX30 *(TX20220030)	ZONE TX37 *(TX20220037)	ZONE TX38 *(TX20220038)	ZONE TX42 *(TX20220042)
1428	Agricultural Tractor Operator						$12.69					$12.35			$11.75		
1300	Asphalt Distributor Operator	$14.87	$13.48	$13.88	$15.72	$15.58	$15.55	$15.72	$13.28	$15.32	$15.62	$14.36	$14.25	$14.03	$13.75	$14.06	$14.40
1303	Asphalt Paving Machine Operator	$13.40	$12.25	$12.35	$13.87	$14.05	$14.36	$14.20	$13.26	$13.99	$14.68	$12.92	$13.44	$12.53	$14.00	$14.32	$12.99
1106	Asphalt Raker	$12.28	$10.61	$12.02	$14.21	$11.65	$12.12	$11.64	$11.44	$12.69	$12.05	$11.34	$11.67	$11.40	$12.59	$12.36	$11.78
1112	Batching Plant Operator, Asphalt																
1115	Batching Plant Operator, Concrete																
1214	Blaster																
1615	Boom Truck Operator						$18.36										
1444	Boring Machine Operator																
1305	Broom or Sweeper Operator	$11.21	$10.33	$10.08	$11.99		$11.04	$11.62		$11.74	$11.41	$10.30		$10.23	$10.60	$12.68	$11.05
1144	Communications Cable Installer																
1124	Concrete Finisher, Paving and Structures	$13.55	$12.46	$13.16	$12.85	$12.64	$12.56	$12.77	$12.44	$14.12	$13.04	$13.38	$12.64	$12.80	$12.79	$12.98	$13.32
1318	Concrete Pavement Finishing Machine Operator				$16.05		$15.48			$16.05		$19.31				$13.07	
1315	Concrete Paving, Curing, Float, Texturing Machine Operator											$16.34				$11.71	
1333	Concrete Saw Operator				$14.67					$14.48	$17.33					$13.99	
1399	Concrete/Gunite Pump Operator																
1344	Crane Operator, Hydraulic 80 tons or less				$18.22		$18.36			$18.12	$18.04	$20.21			$18.63	$13.86	
1345	Crane Operator, Hydraulic Over 80 Tons																
1342	Crane Operator, Lattice Boom 80 Tons or Less	$16.82	$14.39	$13.85	$17.27		$15.87			$17.27		$14.67			$16.42	$14.97	$13.87
1343	Crane Operator, Lattice Boom Over 80 Tons				$20.52		$19.38			$20.52		$17.49			$25.13	$15.80	
1306	Crawler Tractor Operator	$13.96	$16.63	$13.62	$14.26		$15.67			$14.07	$13.15	$13.38			$14.60	$13.68	$13.50
1351	Crusher or Screen Plant Operator																
1446	Directional Drilling Locator						$11.67										
1445	Directional Drilling Operator				$20.32		$17.24										
1139	Electrician	$20.96		$19.87	$19.80		$26.35		$20.27	$19.80		$20.92				$27.11	$19.87
1347	Excavator Operator, 50,000 pounds or less	$13.46	$12.56	$13.67	$17.19		$12.88	$14.38	$13.49	$17.19		$13.88			$14.09	$12.71	$14.42
1348	Excavator Operator, Over 50,000 pounds		$15.23	$13.52	$17.04		$17.71			$16.99	$18.80	$16.22				$14.53	$13.52
1150	Flagger	$9.30	$9.10	$8.50	$10.28	$8.81	$9.45	$8.70		$10.06	$9.71	$9.03	$8.81	$9.08	$9.90	$10.33	$8.10
1151	Form Builder/Setter, Structures	$13.52	$12.30	$13.38	$12.91	$12.71	$12.87	$12.38	$12.26	$13.84	$12.98	$13.07	$13.61	$12.82	$14.73	$12.23	$12.25
1160	Form Setter, Paving & Curb	$12.36	$12.16	$13.93	$11.83	$10.71	$12.94			$13.16	$12.54	$11.33	$10.69		$13.33	$12.34	$13.93
1360	Foundation Drill Operator, Crawler Mounted				$17.99					$17.99						$17.43	
1363	Foundation Drill Operator, Truck Mounted		$16.86	$22.05	$21.51		$16.93			$21.07	$20.20	$20.76		$17.54	$21.39	$15.89	$22.05
1369	Front End Loader Operator, 3 CY or Less	$12.28	$13.49	$13.40	$13.85		$13.04	$13.15	$13.29	$13.69	$12.64	$12.89			$13.51	$13.32	$12.17
1372	Front End Loader Operator, Over 3 CY	$12.77	$13.69	$12.33	$14.96		$13.21	$12.86	$13.57	$14.72	$13.75	$12.32			$13.19	$13.17	$13.02
1329	Joint Sealer																
1172	Laborer, Common	$10.30	$9.86	$10.08	$10.51	$10.71	$10.50	$10.24	$10.58	$10.72	$10.45	$10.30	$10.25	$10.03	$10.54	$11.02	$10.15
1175	Laborer, Utility	$11.80	$11.53	$12.70	$12.17	$11.81	$12.27	$12.11	$11.33	$12.32	$11.80	$11.53	$11.23	$11.50	$11.95	$11.73	$12.37

CLASS. #	CLASSIFICATION DESCRIPTION	ZONE TX02 *(TX20220002)	ZONE TX03 *(TX20220003)	ZONE TX04 *(TX20220004)	ZONE TX05 *(TX20220005)	ZONE TX06 *(TX20220006)	ZONE TX07 *(TX20220007)	ZONE TX08 *(TX20220008)	ZONE TX24 *(TX20220024)	ZONE TX25 *(TX20220025)	ZONE TX27 *(TX20220027)	ZONE TX28 *(TX20220028)	ZONE TX29 *(TX20220029)	ZONE TX30 *(TX20220030)	ZONE TX37 *(TX20220037)	ZONE TX38 *(TX20220038)	ZONE TX42 *(TX20220042)
1346	Loader/Backhoe Operator	$14.18	$12.77	$12.97	$15.68		$14.12			$15.18	$13.58	$12.87		$13.21	$14.13	$14.29	$12.90
1187	Mechanic	$20.14	$15.47	$17.47	$17.74	$17.00	$17.10			$17.68	$18.94	$18.58	$17.00	$16.61	$18.46	$16.96	$17.47
1380	Milling Machine Operator	$15.54	$14.64	$12.22	$14.29		$14.18			$14.32	$14.35	$12.86			$14.75	$13.53	$12.80
1390	Motor Grader Operator, Fine Grade	$17.49	$16.52	$16.88	$17.12	$18.37	$18.51	$16.69	$16.13	$17.19	$18.35	$17.07	$17.74	$17.47	$17.08	$15.69	$20.01
1393	Motor Grader Operator, Rough	$16.15	$14.62	$15.83	$16.20	$17.07	$14.63	$18.50		$16.02	$16.44	$15.12	$16.85	$14.47	$17.39	$14.23	$15.53
1413	Off Road Hauler			$10.08	$12.26		$11.88			$12.25		$12.23			$13.00	$14.60	
1196	Painter, Structures					$21.29	$18.34						$21.29			$18.62	
1396	Pavement Marking Machine Operator	$16.42		$13.10	$13.55		$19.17	$12.01		$13.63	$14.60	$13.17		$16.65	$10.54	$11.18	$13.10
1443	Percussion or Rotary Drill Operator																
1202	Piledriver															$14.95	
1205	Pipelayer		$11.87	$14.64	$13.17	$11.17	$12.79		$11.37	$13.24	$12.66	$13.24	$11.17	$11.67		$12.12	$14.64
1384	Reclaimer/Pulverizer Operator	$12.85			$11.90		$12.88			$11.01		$10.46					
1500	Reinforcing Steel Worker	$13.50	$14.07	$17.53	$16.17		$14.00			$16.18	$12.74	$15.83		$17.10		$15.15	$17.72
1402	Roller Operator, Asphalt	$10.95		$11.96	$13.29		$12.78	$11.61		$13.08	$12.36	$11.68			$11.71	$11.95	$11.50
1405	Roller Operator, Other	$10.36		$10.44	$11.82		$10.50	$11.64		$11.51	$10.59	$10.30		$12.04	$12.85	$11.57	$10.66
1411	Scraper Operator	$10.61	$11.07	$10.85	$12.88		$12.27		$11.12	$12.96	$11.88	$12.43		$11.22	$13.95	$13.47	$10.89
1417	Self-Propelled Hammer Operator																
1194	Servicer	$13.98	$12.34	$14.11	$14.74		$14.51	$15.56	$13.44	$14.58	$14.31	$13.83		$12.43	$13.72	$13.97	$14.11
1513	Sign Erector																
1708	Slurry Seal or Micro-Surfacing Machine Operator																
1341	Small Slipform Machine Operator									$15.96							
1515	Spreader Box Operator	$12.60		$13.12	$14.71		$14.04			$14.73	$13.84	$13.68		$13.45	$11.83	$13.58	$14.05
1705	Structural Steel Welder															$12.85	
1509	Structural Steel Worker						$19.29									$14.39	
1339	Subgrade Trimmer																
1143	Telecommunication Technician																
1145	Traffic Signal/Light Pole Worker						$16.00										
1440	Trenching Machine Operator, Heavy						$18.48										
1437	Trenching Machine Operator, Light																
1609	Truck Driver Lowboy-Float	$14.46	$13.63	$13.41	$15.00	$15.93	$15.66			$16.24	$16.39	$14.30	$16.62	$15.63	$14.28	$16.03	$13.41
1612	Truck Driver Transit-Mix				$14.14					$14.14							
1600	Truck Driver, Single Axle	$12.74	$10.82	$10.75	$13.04	$11.61	$11.79	$13.53	$13.16	$12.31	$13.40	$10.30	$11.61		$11.97	$11.46	$10.75
1606	Truck Driver, Single or Tandem Axle Dump Truck	$11.33	$14.53	$11.95	$12.95		$11.68		$14.06	$12.62	$11.45	$12.28		$13.08	$11.68	$11.48	$11.10
1607	Truck Driver, Tandem Axle Tractor with Semi Trailer	$12.49	$12.12	$12.50	$13.42		$12.81	$13.16		$12.86	$16.22	$12.50			$13.80	$12.27	$12.50
1441	Tunneling Machine Operator, Heavy																
1442	Tunneling Machine Operator, Light																
1706	Welder		$14.02		$14.86		$15.97		$13.74	$14.84					$13.78		
1520	Work Zone Barricade Servicer	$10.30	$12.88	$11.46	$11.70	$11.57	$11.85	$10.77		$11.68	$12.20	$11.22	$11.51	$12.96	$10.54	$11.67	$11.76

Notes:

*Represents the USDOL wage decision.

Any worker employed on this project shall be paid at the rate of one and one half (1-1/2) times the regular rate for every hour worked in excess of forty (40) hours per week.

For reference, the titles and descriptions for the classifications listed here are detailed further in the AGC of Texas' *Standard Job Classifications and Descriptions for Highway, Heavy, Utilities, and Industrial Construction in Texas* posted on the AGC's Web site for any contractor.

TEXAS COUNTIES IDENTIFIED BY
WAGE RATE ZONES: 2, 3, 4, 5, 6, 7, 8, 24, 25, 27, 28, 29, 30, 37, 38, 42

County Name	Zone	County Name	Zone	County Name	Zone	County Name	Zone
Anderson	28	Donley	37	Karnes	27	Reagan	37
Andrews	37	Duval	30	Kaufman	25	Real	37
Angelina	28	Eastland	37	Kendall	7	Red River	28
Aransas	29	Ector	2	Kenedy	30	Reeves	8
Archer	25	Edwards	8	Kent	37	Refugio	27
Armstrong	2	El Paso	24	Kerr	27	Roberts	37
Atascosa	7	Ellis	25	Kimble	37	Robertson	7
Austin	38	Erath	28	King	37	Rockwall	25
Bailey	37	Falls	28	Kinney	8	Runnels	37
Bandera	7	Fannin	28	Kleberg	27	Rusk	4
Bastrop	7	Fayette	27	Knox	37	Sabine	28
Baylor	37	Fisher	37	Lamar	28	San Augustine	28
Bee	27	Floyd	37	Lamb	37	San Jacinto	38
Bell	7	Foard	37	Lampasas	7	San Patricio	29
Bexar	7	Fort Bend	38	LaSalle	30	San Saba	37
Blanco	27	Franklin	28	Lavaca	27	Schleicher	37
Borden	37	Freestone	28	Lee	27	Scurry	37
Bosque	28	Frio	27	Leon	28	Shackelford	37
Bowie	4	Gaines	37	Liberty	38	Shelby	28
Brazoria	38	Galveston	38	Limestone	28	Sherman	37
Brazos	7	Garza	37	Lipscomb	37	Smith	4
Brewster	8	Gillespie	27	Live Oak	27	Somervell	28
Briscoe	37	Glasscock	37	Llano	27	Starr	30
Brooks	30	Goliad	29	Loving	37	Stephens	37
Brown	37	Gonzales	27	Lubbock	2	Sterling	37
Burleson	7	Gray	37	Lynn	37	Stonewall	37
Burnet	27	Grayson	25	Madison	28	Sutton	8
Caldwell	7	Gregg	4	Marion	28	Swisher	37
Calhoun	29	Grimes	28	Martin	37	Tarrant	25
Callahan	25	Guadalupe	7	Mason	27	Taylor	2
Cameron	3	Hale	37	Matagorda	27	Terrell	8
Camp	28	Hall	37	Maverick	30	Terry	37
Carson	2	Hamilton	28	McCulloch	37	Throckmorton	37
Cass	28	Hansford	37	McLennan	7	Titus	28
Castro	37	Hardeman	37	McMullen	30	Tom Green	2
Chambers	38	Hardin	38	Medina	7	Travis	7
Cherokee	28	Harris	38	Menard	37	Trinity	28
Childress	37	Harrison	42	Midland	2	Tyler	28
Clay	25	Hartley	37	Milam	28	Upshur	4
Cochran	37	Haskell	37	Mills	37	Upton	37
Coke	37	Hays	7	Mitchell	37	Uvalde	30
Coleman	37	Hemphill	37	Montague	37	Val Verde	8
Collin	25	Henderson	28	Montgomery	38	Van Zandt	28
Collingsworth	37	Hidalgo	3	Moore	37	Victoria	6
Colorado	27	Hill	28	Morris	28	Walker	28
Comal	7	Hockley	37	Motley	37	Waller	38
Comanche	37	Hood	28	Nacogdoches	28	Ward	37
Concho	37	Hopkins	28	Navarro	28	Washington	28
Cooke	37	Houston	28	Newton	28	Webb	3
Coryell	7	Howard	37	Nolan	37	Wharton	27
Cottle	37	Hudspeth	8	Nueces	29	Wheeler	37
Crane	37	Hunt	25	Ochiltree	37	Wichita	5
Crockett	8	Hutchinson	37	Oldham	37	Wilbarger	37
Crosby	2	Irion	2	Orange	38	Willacy	30
Culberson	8	Jack	28	Palo Pinto	28	Williamson	7
Dallam	37	Jackson	27	Panola	28	Wilson	7
Dallas	25	Jasper	28	Parker	25	Winkler	37
Dawson	37	Jeff Davis	8	Parmer	37	Wise	25
Deaf Smith	37	Jefferson	38	Pecos	8	Wood	28
Delta	25	Jim Hogg	30	Polk	28	Yoakum	37
Denton	25	Jim Wells	27	Potter	2	Young	37
DeWitt	27	Johnson	25	Presidio	8	Zapata	30
Dickens	37	Jones	25	Rains	28	Zavala	30
Dimmit	30			Randall	2		

02/25/2022

V. BASE BID PACKAGES

Package #1 – MSF Swing Bridge Adjustment

Package Scope

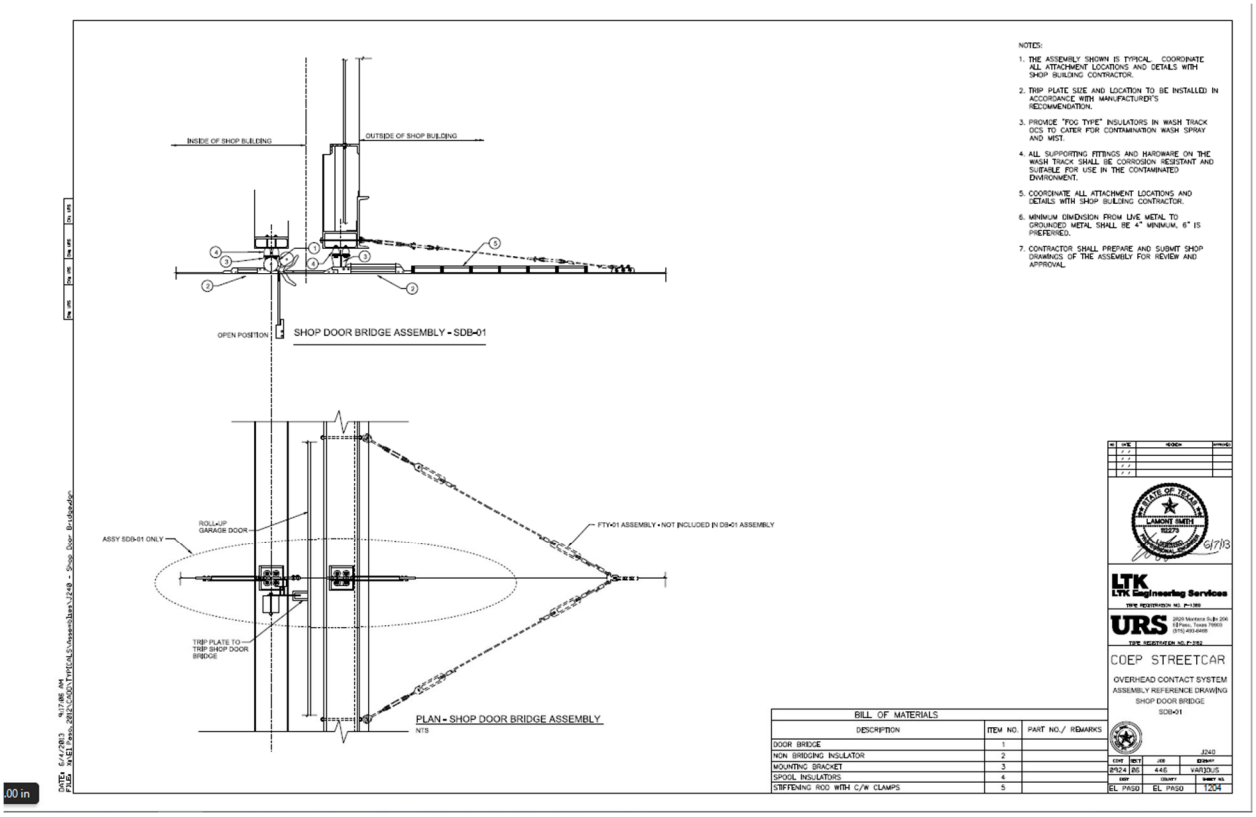
Contractor to remove and replace bolts and adjust swing bridges to allow for smooth operation.

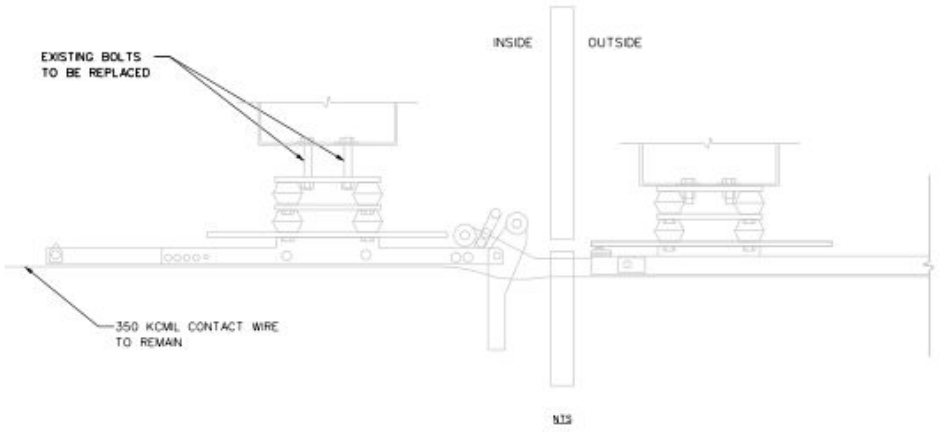
Bill of Materials

DESCRIPTION		
M16-2X300 DIN 931 B7 HDG		
M16-2H NUT HDG		
M16 F436 1/16 HDG WASHER		
M16 SPLIT LOCK WASHER		
REMOVAL OF EXISTING BOLTS		

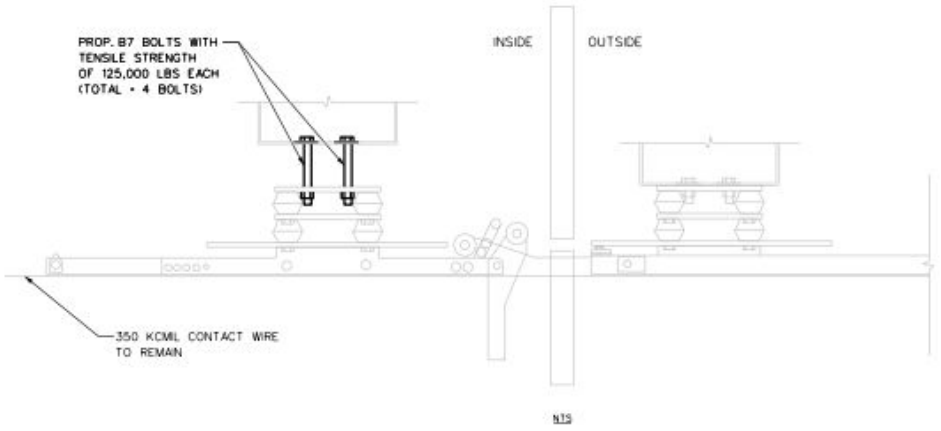
Method of Payment

Lump Sum upon satisfactory completion of work. Progress payments may be made in accordance with an approved schedule of values in accordance with the Special Provisions. Payment for materials on hand (MOH) shall be in accordance with Item 9L.6 – PAYMENT FOR MATERIALS ON HAND (MOH).





NTS



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CITY OF EL PASO STREETCAR
OCS BOLT REPLACEMENT DETAIL

Package #2 – Entrance and Exit Gate Motorization & Warning Signal

Package #2A – Warning Signal

Package Scope
Furnish and install alarms for the existing roll-up doors for bays 1 and 2 including loop detectors.

Bill of Materials

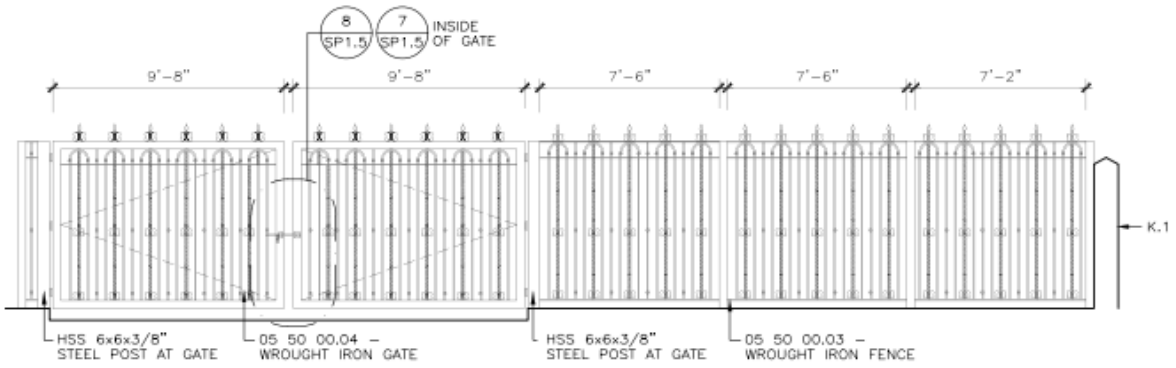
DESCRIPTION		
Security Sirens for existing roll up doors at maintenance building	2	
Safety Edge for Rolling Steel Doors	2	
Loop Detectors	2	

Package Scope
Furnish and install motorized swing gate openers for both the entrance and exit at the maintenance and storage facility. Swing gates shall be capable of remote-control operation. Work to include all necessary electrical and mechanical work required to supply power. Work shall include cleanup and repair of building access, pavement, and sidewalk as necessary.

Bill of Materials

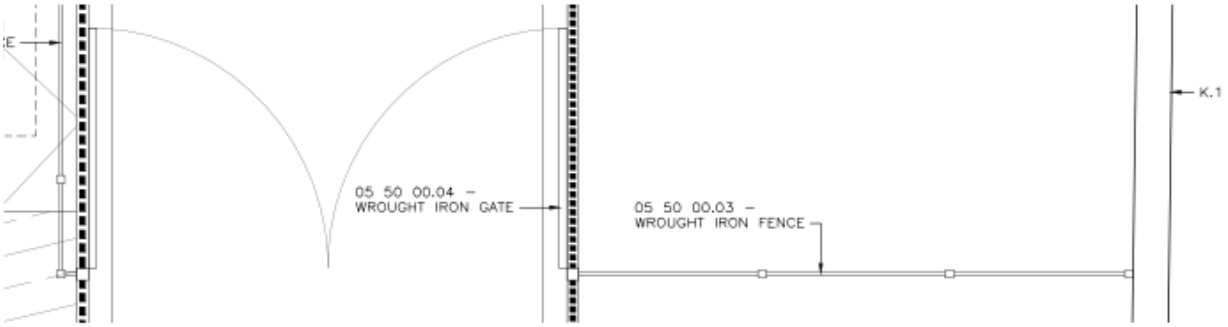
DESCRIPTION		
Motors and swing gate appurtenances for swing gates approximately 10 feet x 8 feet complete in place including electrical and electronics for remote control. Shall be ½ Hp Lift Master swing gate system or approved equal.	4	

Method of Payment
Lump Sum upon satisfactory completion of work. Progress payments may be made in accordance with an approved schedule of values in accordance with the special provisions. Payment for materials on hand (MOH) shall be in accordance with Item 9L.6 – PAYMENT FOR MATERIALS ON HAND (MOH).



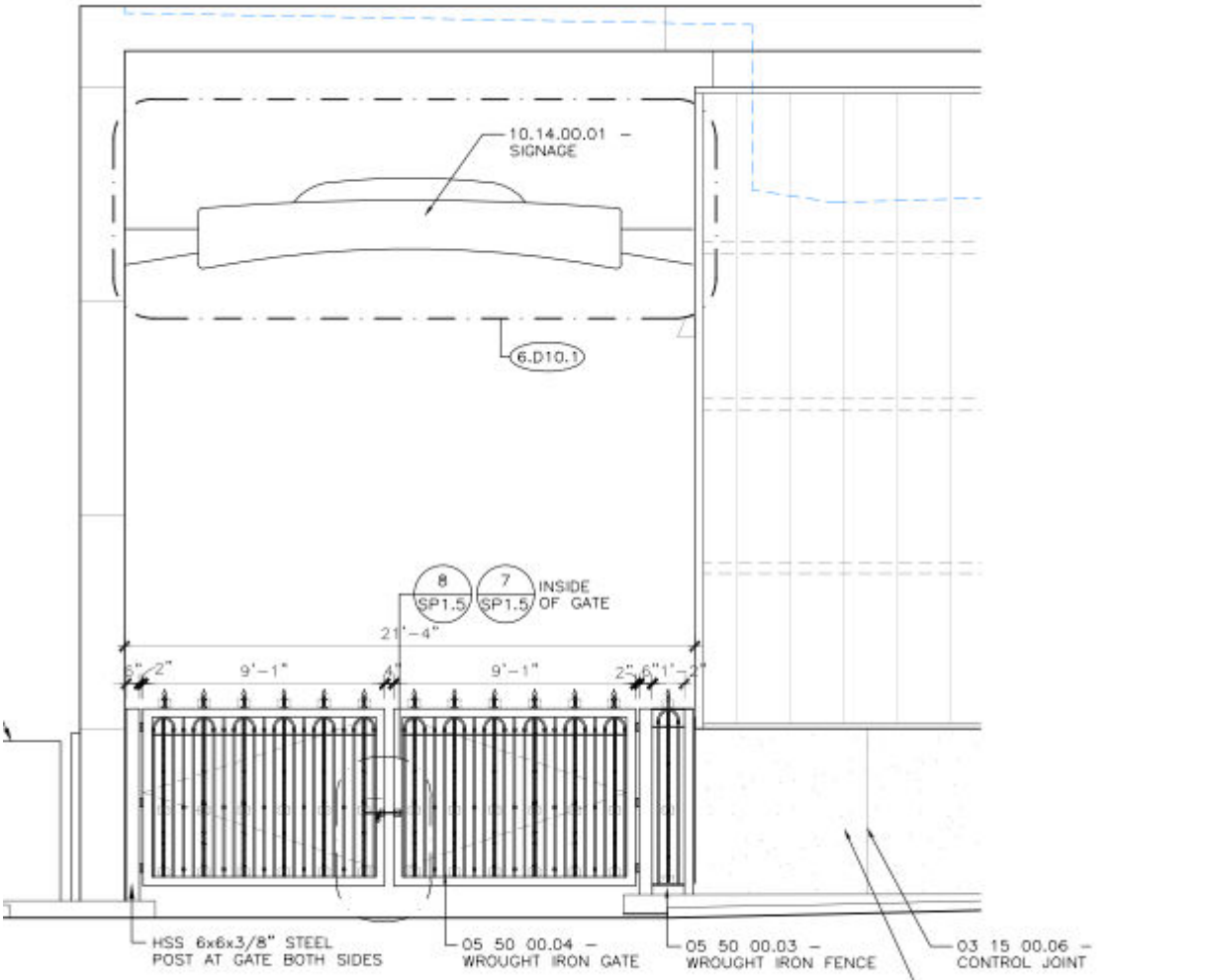
7.SP1.8 PARTIAL EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"



6.SP1.8 PARTIAL SITE PLAN

7.SP1.8



4.SP1.9 PARTIAL EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"

Package #3 – Fencing and Landscaping

Package 3A – Barrier Rail Stanton Street Median.

Package Scope

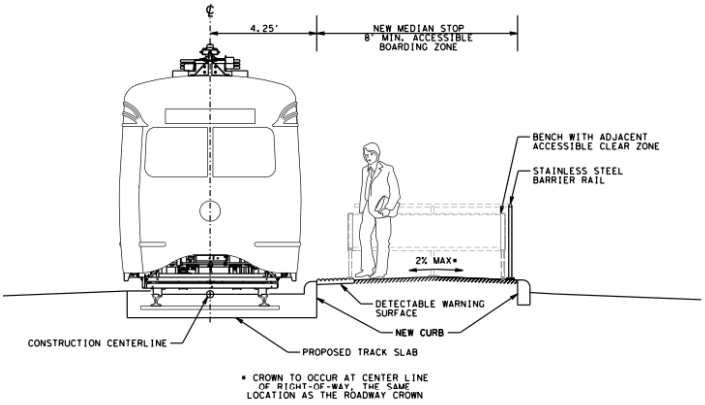
Furnish and install Barriers and fencing in accordance with the plans shown in Package 3. Work shall include cleanup and repair of building access, pavement, and sidewalk as necessary. Furnish and install landscaping gravel as required for TPSS #2.

Bill of Materials

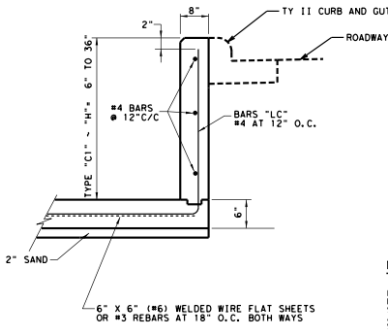
	DESCRIPTION		
3A	Barrier Rail Stanton Street Median Manufacture and deliver to Storage 2 Railings	LS	
3B	MSF Mezzanine Guard Rail – Relocate Access Gates		
3C	MSF Ornamental Protective Fence – NW Corner 4th & Santa Fe		
3D	MSF Ornamental Sidewalk Guardrail – Yard Entrance to Pedestrian Crosswalk | Pedestrian Crosswalk to DTC Entrance (Sidewalk path to connect to yard entrance gate)		
3E	TPSS A-2 Security Fence & Landscaping gravel		
3F	TPSS A-1 Steps		
	Total Sump Sum Cost for Package #3		$_____

Method of Payment

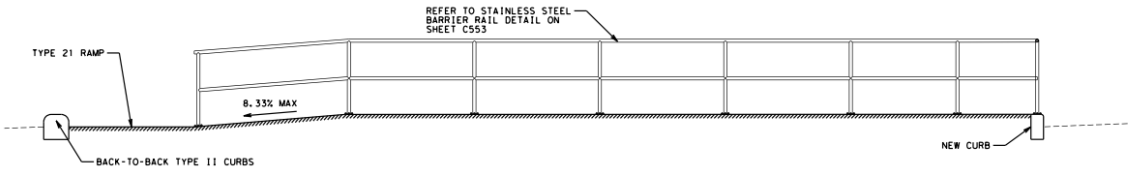
Lump Sum upon satisfactory completion of work. Progress payments may be made in accordance with an approved schedule of values.



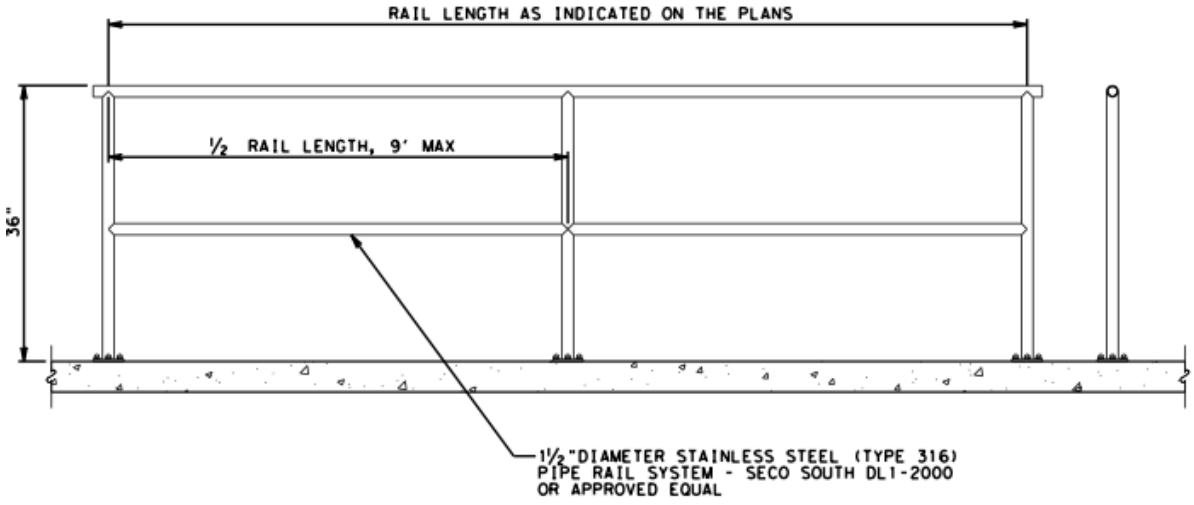
TYPICAL SECTION VIEW - MEDIAN STOP
SCALE: N.T.S.



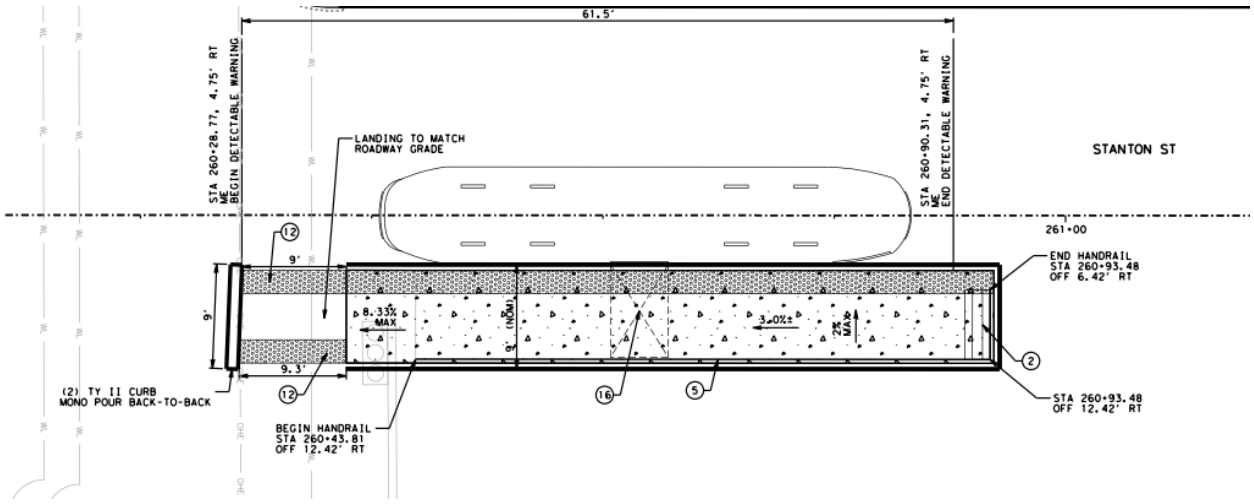
TYPE C1 CURB
SCALE: N.T.S.



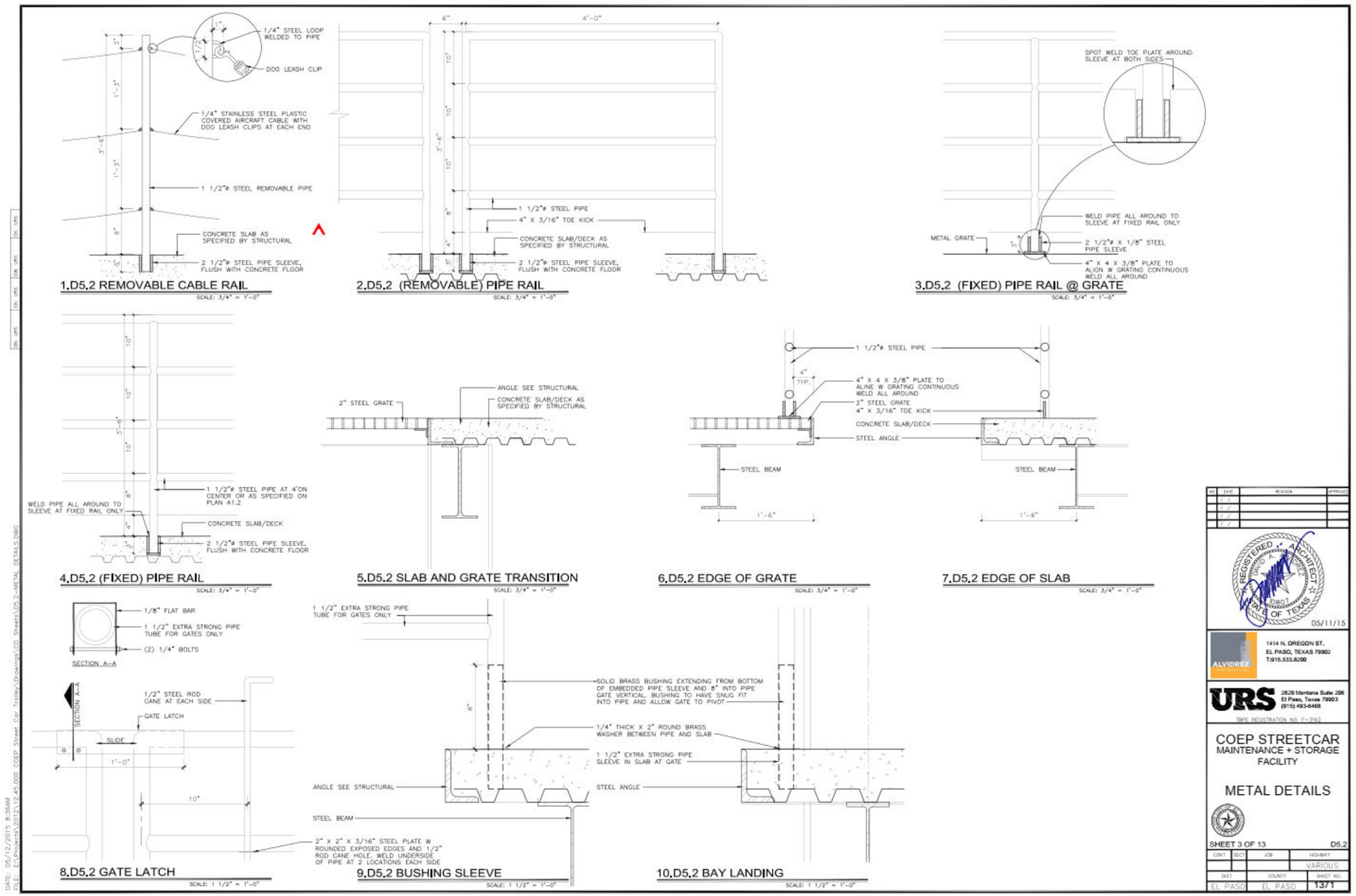
TRANSVERSE SECTION VIEW - MEDIAN STOP
SCALE: N.T.S.

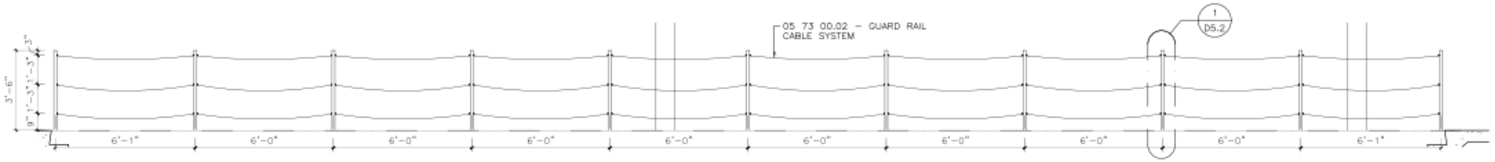


STAINLESS STEEL BARRIER RAIL
SCALE: 1" = 1'-0"


61.5'
STA 260+28.77, 4.75' RT
BEGIN DETECTABLE WARNING
LANDING TO MATCH
ROADWAY GRADE
STA 260+90.31, 4.75' RT
END DETECTABLE WARNING
STANTON ST
261+00
END HANDRAIL
STA 260+93.48
OFF 6.42' RT
9'
9'
8.33%
MAX
(NOM)
3.0%±
2%
MAX
9.3'
(2) TY II CURB
MONO POUR BACK-TO-BACK
BEGIN HANDRAIL
STA 260+43.81
OFF 12.42' RT
STA 260+93.48
OFF 12.42' RT
12
12
16
5
2

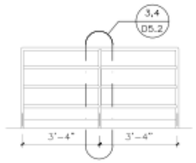
Note: Contractor to meet with Maintenance Superintendent to determine actual location of relocated access gates.





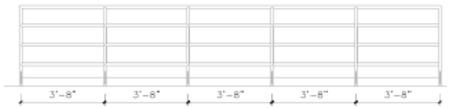
1.D5.3 REMOVABLE CABLE RAIL

SCALE: 3/16" = 1'-0"



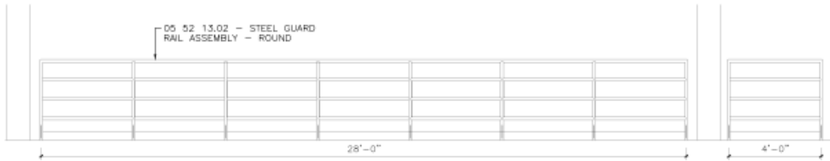
2.D5.3 FIXED GAURD RAIL

SCALE: 3/16" = 1'-0"



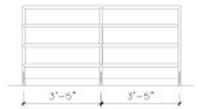
3.D5.3 FIXED GAURD RAIL

SCALE: 3/16" = 1'-0"



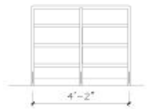
4.D5.3 FIXED GAURD RAIL

SCALE: 3/16" = 1'-0"



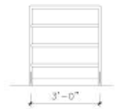
5.D5.3 FIXED GAURD RAIL

SCALE: 3/16" = 1'-0"



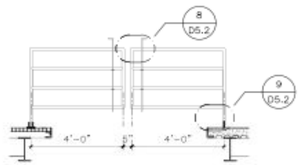
6.D5.3 FIXED GAURD RAIL

SCALE: 3/16" = 1'-0"



7.D5.3 FIXED GAURD RAIL

SCALE: 3/16" = 1'-0"



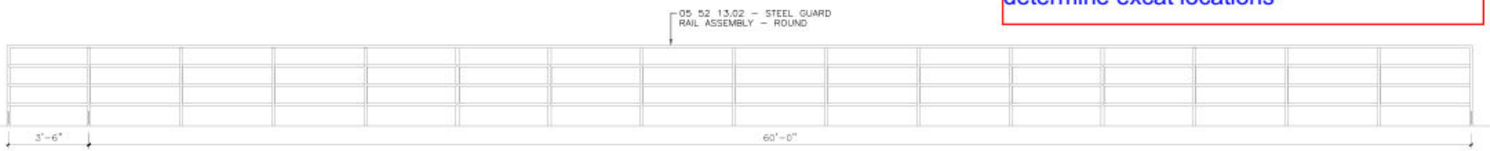
8.D5.3 GATE @ OPEN POSITION

SCALE: 3/16" = 1'-0"

9.D5.3 FIXED AND REMOVABLE

SCALE: 3/16" = 1'-0"

Relocate gates to meet functional requirements. Meet with Maintenance staff to determine excat locations



10.D5.3 FIXED GAURD RAIL

SCALE: 3/16" = 1'-0"

NO	DATE	REVISION	APPROVED
	/ /		
	/ /		
	/ /		
	/ /		

REGISTERED ARCHITECT 10807 STATE OF TEXAS

05/11/15

ALVIDREZ
1414 N. OREGON ST.
EL PASO, TEXAS 79902
T:915.533.8200

URS
2929 Montana Suite 206
El Paso, Texas 79903
(915) 493-6468
TBPE REGISTRATION NO. F-3162

COEP STREETCAR
MAINTENANCE + STORAGE FACILITY

GUARD RAIL ELEVATIONS

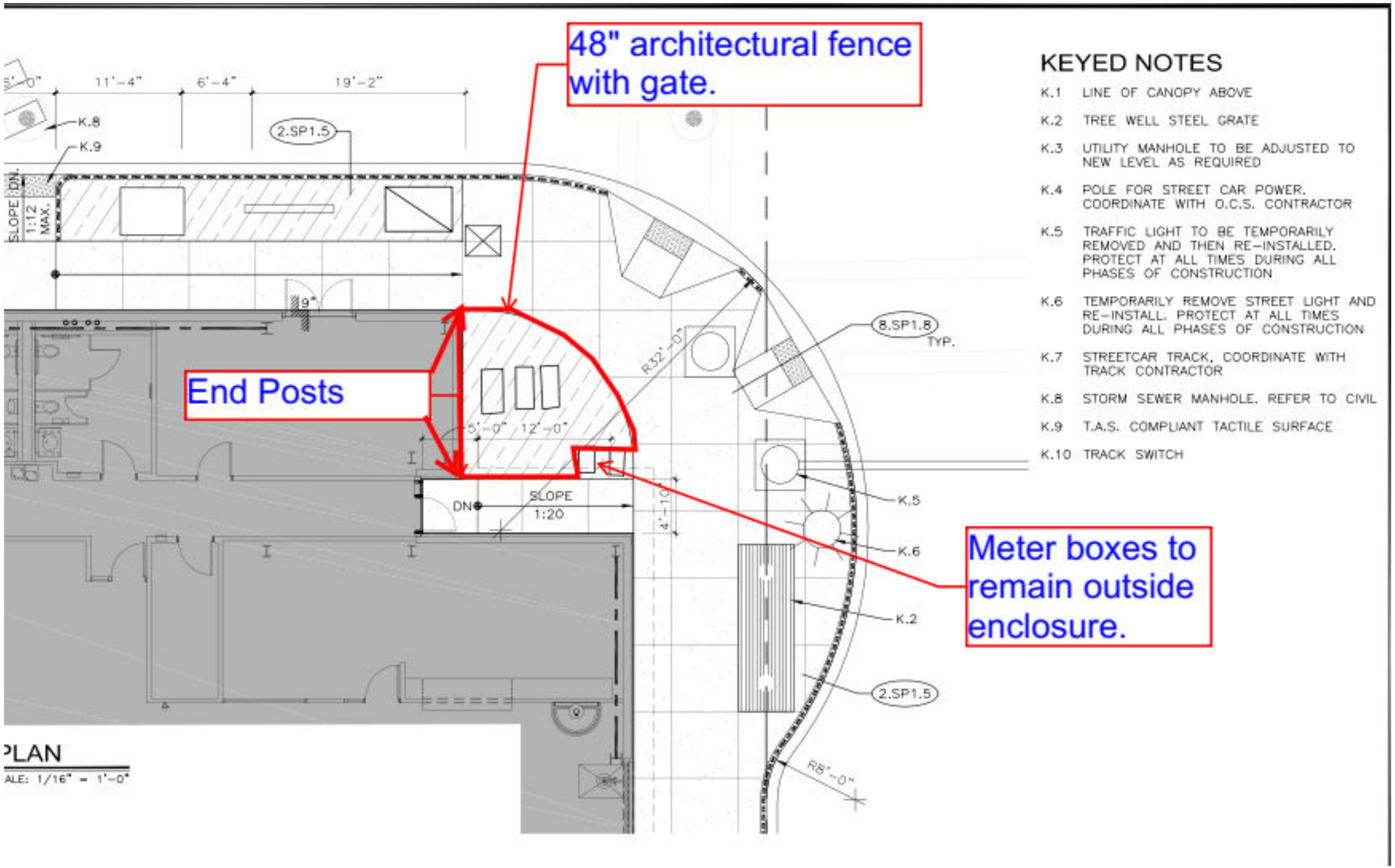
SHEET 4 OF 13 D5.3

CONT.	SECT.	JOB	HIGHWAY
			VARIOUS
DIST.		COUNTY	SHEET NO.
EL PASO		EL PASO	1372

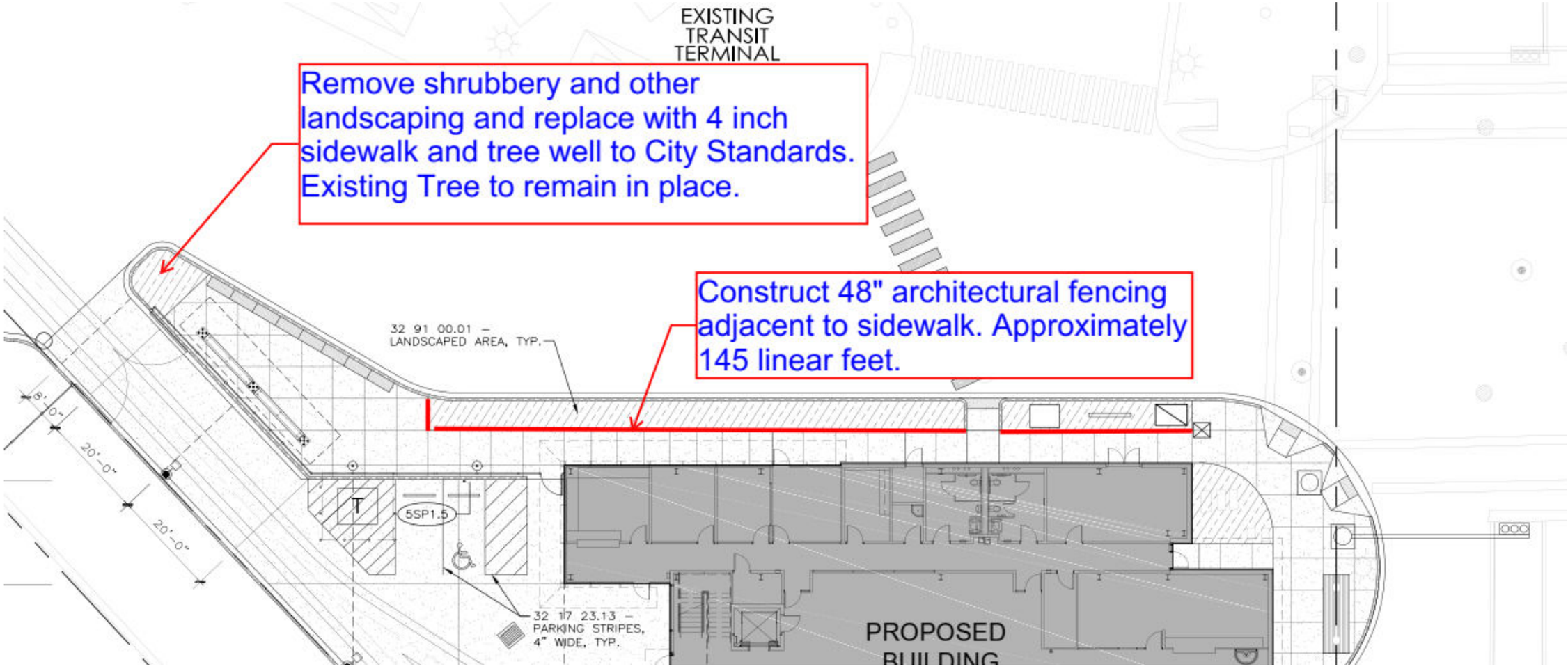
DATE: 05/12/2015 8:36AM
FILE: E:\Projects\2012\12.45.000 COEP Street Car Trolley\Drawings\CD Sheets\D5.3-GUARD RAIL ELEVATIONS.DWG

DES: URS
DRN: URS
CK: URS
DN: URS

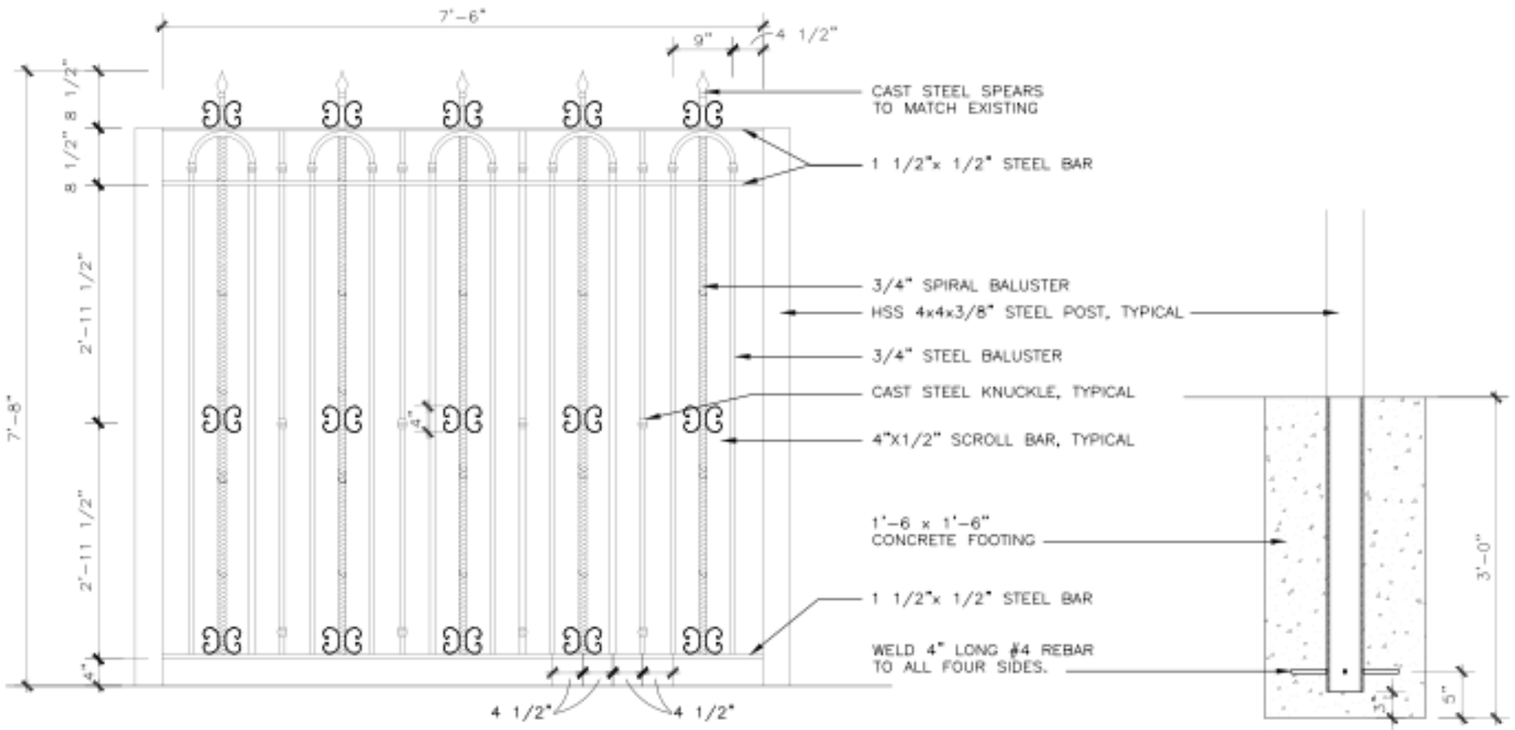
Note: Contractor to meet with Maintenance Superintendent to determine actual measurements and location of access gate(s).



Note: Contractor to meet with Maintenance Superintendent to determine actual measurements.



Typical Fence Section to be used for selecting 4’ and 7’ Fencing.



2.SP1.9 TYPICAL W.I. FENCE SECTION

SCALE: 3/8" = 1'-0"

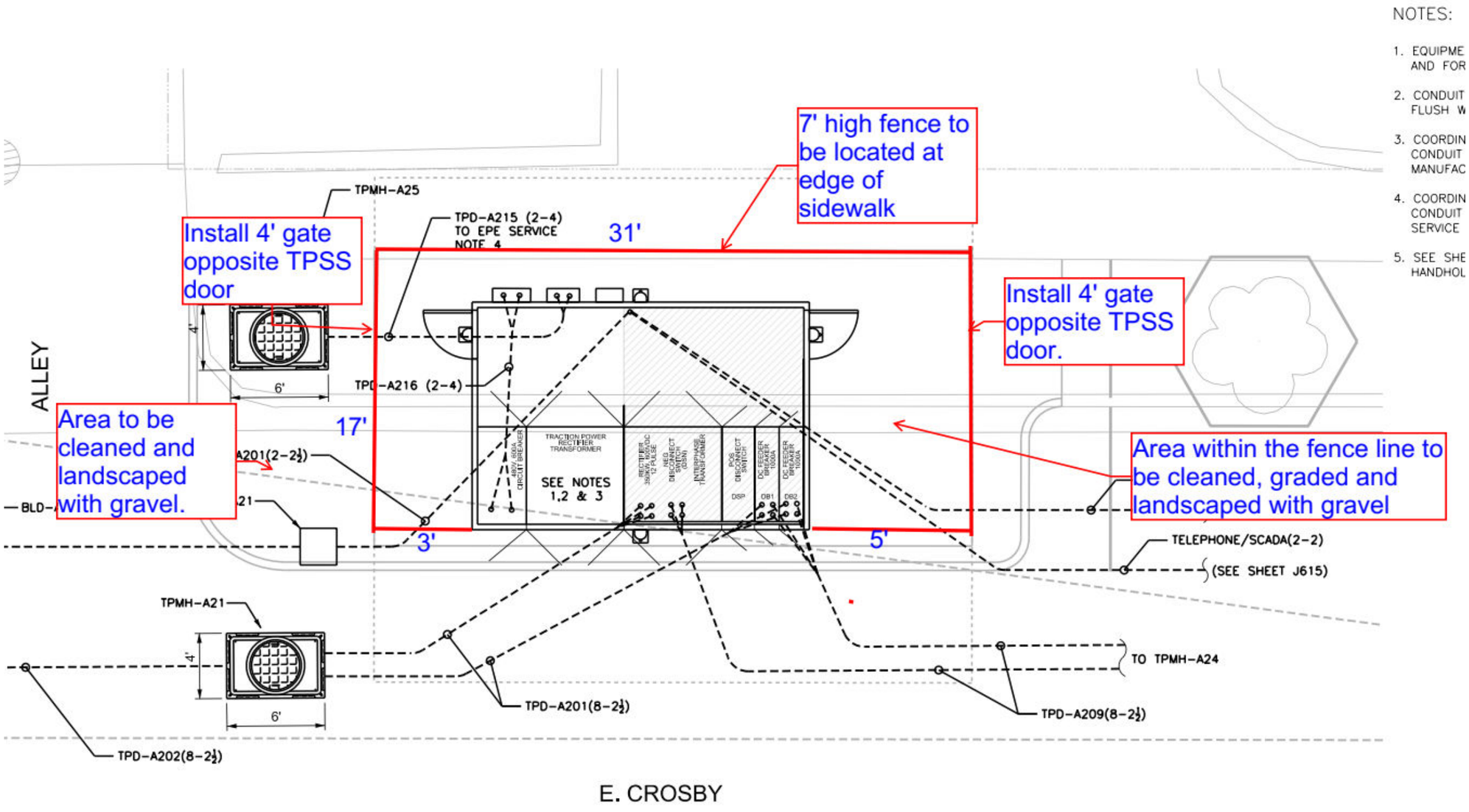
POST FOOTING DETAIL, TYPICAL

NOTE:

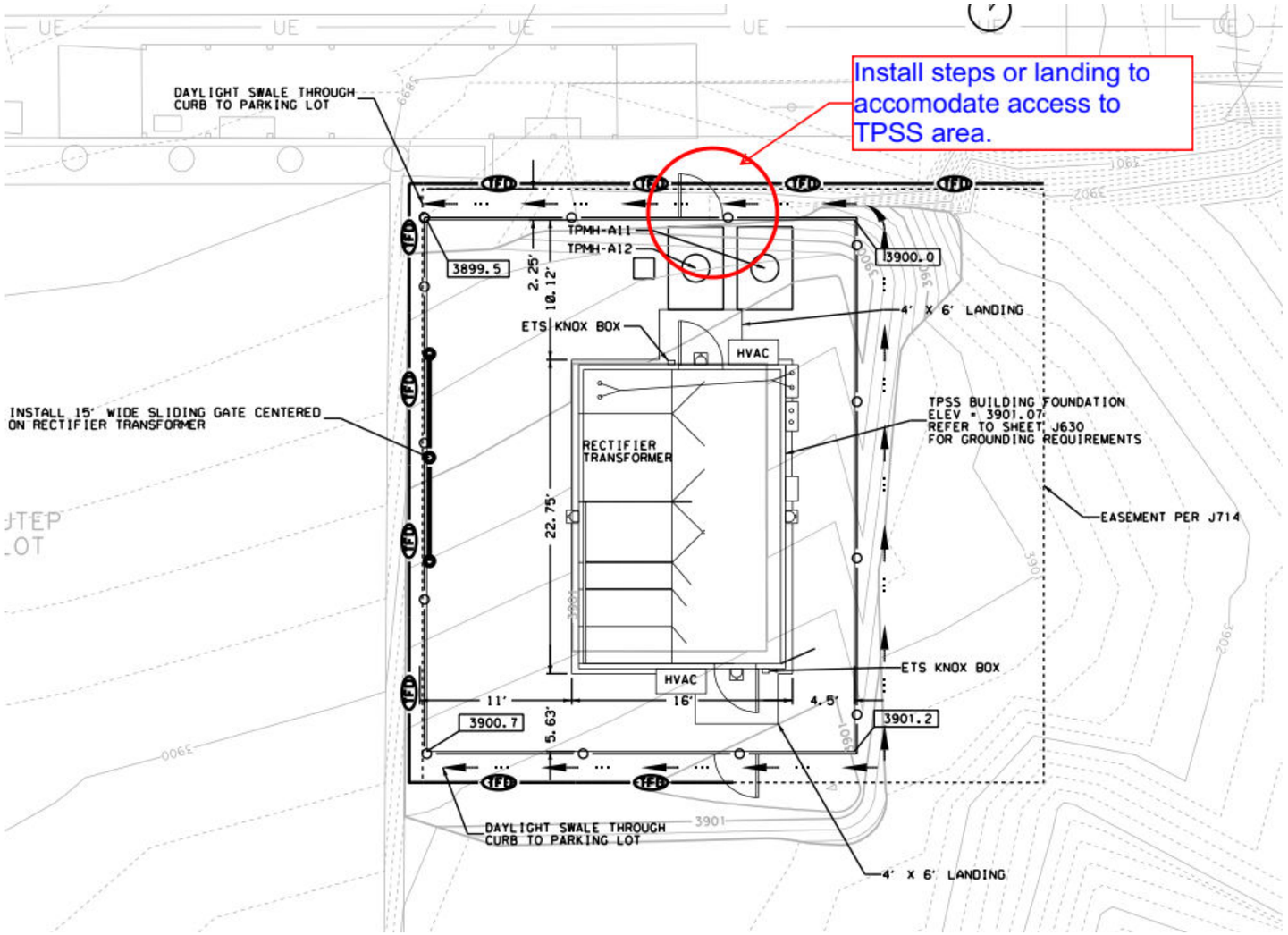
1. ALL DECORATIVE IRON ELEMENT BY "KING ARCHITECTURAL METAL" OR APPROVED EQUAL TO MATCH EXISTING.

2. TYPICAL POST FOOTING DETAIL FOR 4X4 AND 6X6 TUBE

Note: Contractor to meet with Maintenance Superintendent to determine actual measurements and location of access gate(s). Landscaping shall consist of minus ½ in landscape rock placed in accordance with City of El Paso Ordinance Chapter 18.46 and associated standards.



Note: Contractor to meet with Maintenance Superintendent to determine actual measurements and location of landing steps.



Package #4 – MSF UV Blocking Shades – East Building Façade

Package Scope

Base Bid Package 4A

Furnish and install UV blocking shades on windows along east building façade as shown on page 2 – Package #4. Supplier to arrange with MSF staff to take measurements and verify number of shades required prior to submitting a proposal.

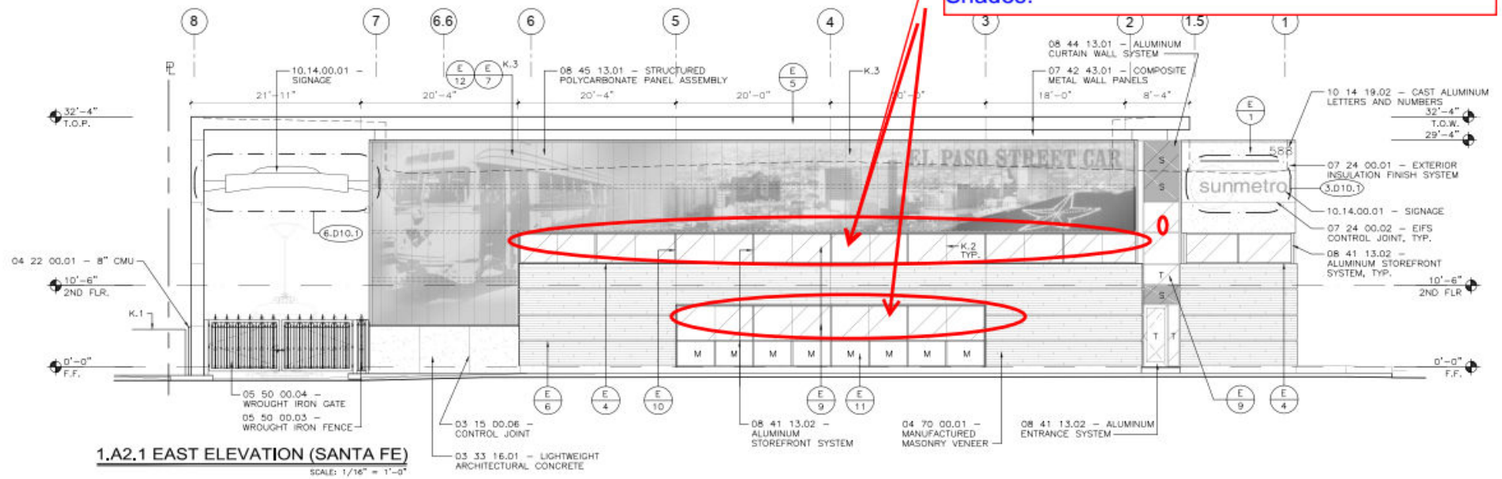
Bill of Materials

	DESCRIPTION	
24	Manually operated sunscreen roller shades – 12 24 13 – Window Width approximately equal 80 feet. Approximate height equal 4.67 Feet.	LS

Method of Payment
Lump Sum upon satisfactory completion of work. Progress payments may be made in accordance with an approved schedule of values or Materials on Hand.

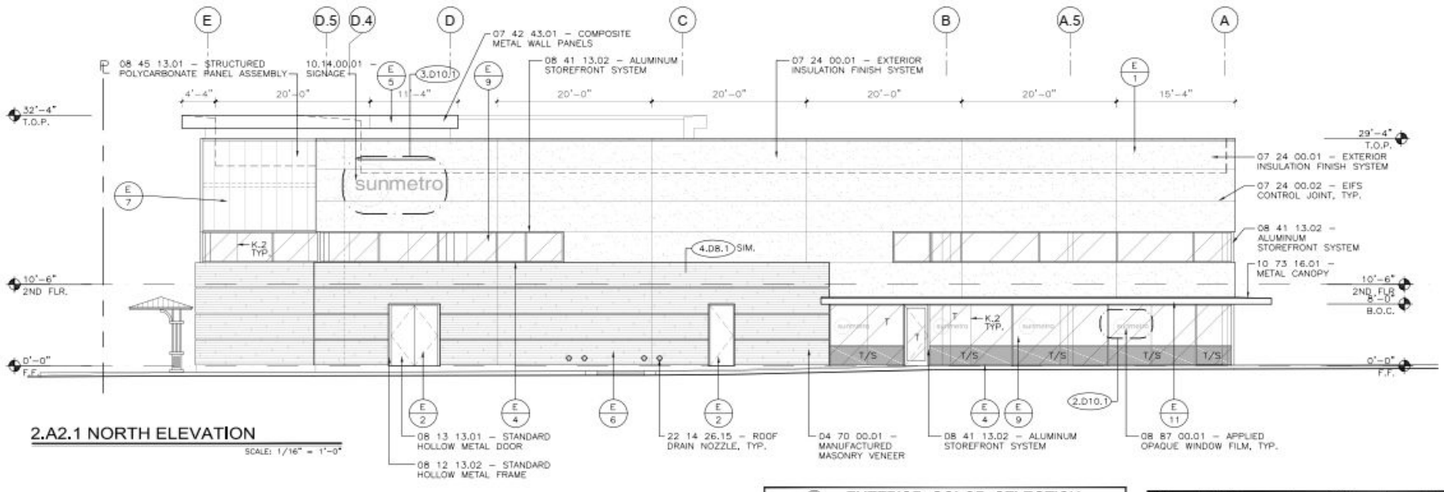
Method of Payment
Lump Sum upon satisfactory completion of work. Progress payments may be made in accordance with an approved schedule of values or Materials on Hand.

Furnish and install Manually Operated Roller Shades.



1.A2.1 EAST ELEVATION (SANTA FE)

SCALE: 1/16" = 1'-0"



2.A2.1 NORTH ELEVATION

SCALE: 1/16" = 1'-0"

EXTERIOR COLOR SELECTION

NO.	MATERIAL	COLOR	REMARKS
1	EXTERIOR INSULATED FINISH SYSTEM	SW6341	.
2	PAINTED HOLLOW METAL DOOR + FRAME	SW7037	.
3	OVERHEAD COILING DOOR	RAL7044	.
4	ALUMINUM FRAMING	CLEAR ANODIZED	SELECT FROM MANUF. STANDARD FINISHES
5	COMPOSITE METAL PANELS	SATIN ALUMINUM	WET SEAL/RAIN SCREEN
6	STONE VENEER	SEQUOIA	.
7	TRANSLUCENT INSULATED PANELS	BONE WHITE #21B	CPI DAYLIGHTING
8	PAINTED CMU WALL	SW7037	.
9	1" INSULATED TINTED GLASS	AZURIA	.
10	1" INSULATED SPANDREL TINTED GLASS	TO MATCH TINTED GLASS	.
11	METAL PANEL	HEMLOCK GREEN	BERRIDGE
12	VINYL FILM MURAL	CLEAR FILM WITH PRINTED GRAPHICS	OBTAIN MURAL GRAPHIC FROM OWNER/ARCHITECT

NOTES:
1. VERIFY COLORS WITH ARCHITECT. PAINT FIELD SAMPLES OF EACH COLOR FOR ARCHITECT SELECTION/APPROVAL.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

KEYED NOTES

K.1 EXISTING ROCK WALL

K.2 1/4" GLASS BUTT JOINT – FILL W/STRUCTURAL SILICONE FRAME, TYP.

K.3 MURAL PRINTED ON 3M CLEAR FILM UB518 USING OUTDOOR SOLVENT INKS. LAMINATE WITH 3M GLOSS LAMINATE 8518. INSTALLATION SURFACE TO BE PREPARED USING RAPID TAC "RAPID PREP" AND/OR 70% ISOPROPYL ALCOHOL TO REMOVE ANY EXISTING WAX, OIL, GREASE OR OTHER SURFACE BUILD-UP TO ASSURE BEST VINYL ADHESION.
PRINTED AND INSTALLED IN 40"-52" VERTICAL PANELS WITH 1/2" OVERLAP BETWEEN PANELS. ALL EDGES AND OVERLAPS TO BE SEALED USING 3M 3950 EDGE SEALER TO PREVENT ANY EDGES FROM LIFTING.
INSTALLER TO HAVE 5 YEAR MIN. EXPERIENCE WITH VINYL APPLICATION TECHNIQUES, 3 INDUSTRY REFERENCES AND SAMPLES OF SIMILAR JOBS.
COORDINATE MURAL GRAPHIC WITH ARCHITECT/OWNER.

LEGEND

T TEMPERED GLASS

S SPANDREL GLASS – MEDIUM DARK GREY

M METAL PANEL: 1" COMPOSITE PANEL: .032 ALUM. 1/8" TEMPERED HARDBOARD, 3/4" EPS, 1/8" TEMPERED HARDBOARD AND .032 ALUM. COLOR ARCADIA GREEN. COLUMBIA ARCHITECTURAL PRODUCTS OR APPROVED EQUAL.

NO.	DATE	REVISION	APPROVED
	/ /		
	/ /		
	/ /		
	/ /		

REGISTERED ARCHITECT – STATE OF TEXAS – 05/11/15

ALVIDREZ
1414 N. OREGON ST.
EL PASO, TEXAS 79902
T:915.533.8200

URS
2929 Montana Suite 206
El Paso, Texas 79903
(915) 493-6468
TBPE REGISTRATION NO. F-3162

COEP STREETCAR MAINTENANCE + STORAGE FACILITY

EXTERIOR ELEVATIONS

SHEET 11 OF 25 A2.1

CONT	SECT	JOB	HIGHWAY
			VARIOUS
DIST	COUNTY		SHEET NO.
EL PASO	EL PASO		1354

DATE: 05/27/2015 2:21PM
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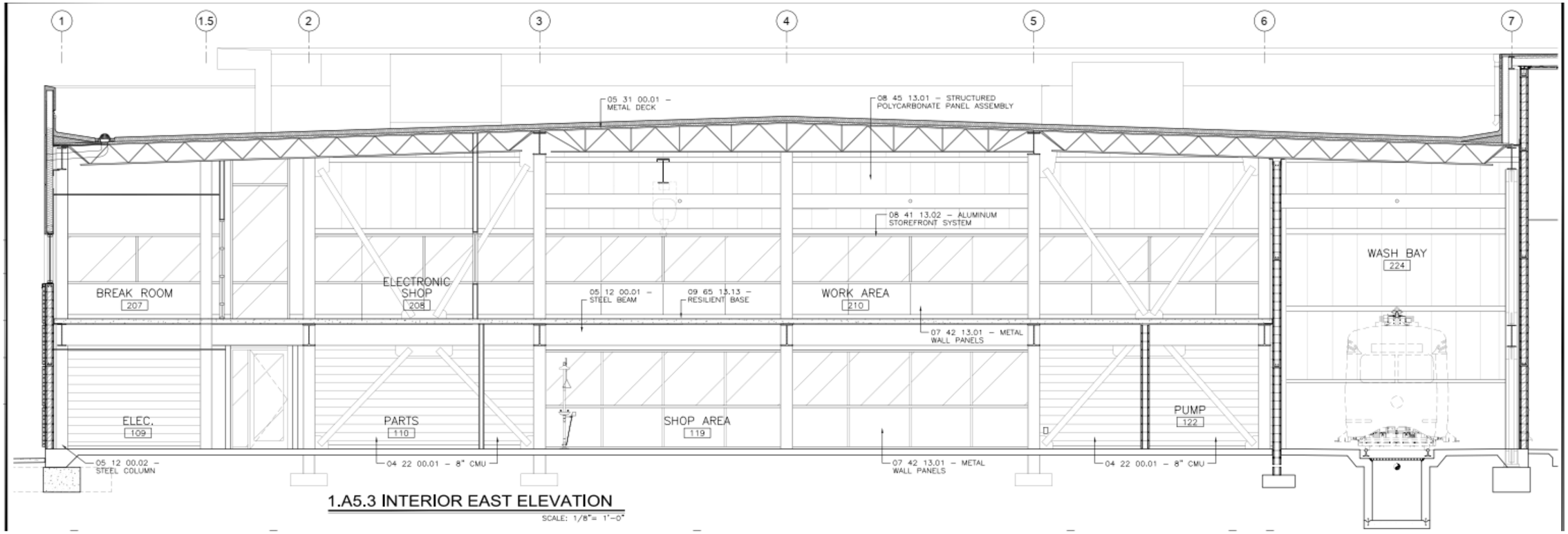
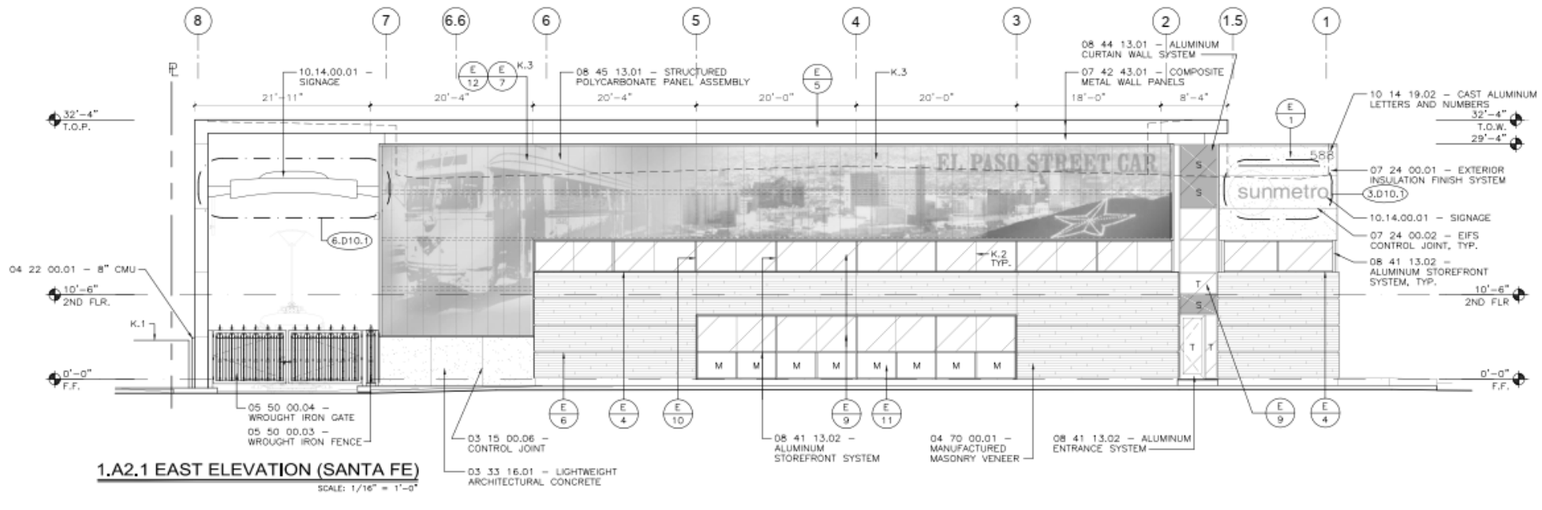


1.A5.3 INTERIOR EAST ELEVATION

SCALE: 1/8"= 1'-0"



1.A2.1 EAST ELEVATION (SANTA FE)

SCALE: 1/16" = 1'-0"

SECTION 12 24 13 - ROLLER SHADES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Manually operated sunscreen roller shades.

B. Electrically operated sunscreen roller shades.
C. Local group and master control system for shade operation.

1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Wood blocking and grounds for mounting roller shades and accessories.

B. Section 09260 - Gypsum Board Assemblies: Coordination with gypsum board assemblies for installation of shade pockets, closures and related accessories.

C. Section 09510 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shade pockets, closures and related accessories.

D. Division 16 - Electrical: Electric service for motor controls.

1.3 REFERENCES

A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. NFPA 70 - National Electrical Code.

C. NFPA 701-99 - Fire Tests for Flame-Resistant Textiles and Films.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Submit Environmental Certification and Third Party Evaluation per Section 1.5 Qualifications.

C. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
3. Storage and handling requirements and recommendations.
4. Mounting details and installation methods.
5. Typical wiring diagrams including integration of motor controllers with building management system, audiovisual and lighting control systems as applicable.

D. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams and relationship to adjacent work.
1. Prepare shop drawings on Autocad or Microstation format using base sheets provided electronically by the Architect.

E. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.

F. Selection Samples: For each finish product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.

G. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shadecloth sample and aluminum finish sample as selected. Mark face of material to indicate interior faces.

H. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

I. LEED Submittals: Materials and Resources (MR), Credit 4, Recycled Content.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.

B. Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years in the window covering business in the State of Texas with a minimum of ten years experience in installing products comparable to those specified in this section. Installer must have completed a minimum of five comparable projects.

C. Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.

D. Electrical Components: NFPA Article 100 listed and labeled by either UL or ETL or other testing agency acceptable to authorities having jurisdiction, marked for intended use, and tested as a system. Individual testing of components will not be acceptable in lieu of system testing.

E. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

F. GreenGuard Certification: Provide Certificate for Indoor Air Quality; for Schools and Hospitals also provide Certificate for Children and Schools.

H. Mock-Up: Provide a mock-up (manual shades only) of one roller shade assembly for evaluation of mounting, appearance and accessories.

1. Locate mock-up in window designated by Architect.
2. Do not proceed with remaining work until, mock-up is accepted by Architect.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the Window Treatment Schedule.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 WARRANTY

A. Roller Shade Hardware (except the chain) and Shadecloth (except EcoVeil): Manufacturer's standard non-depreciating twenty-five year limited warranty to the original purchaser/building owner (not to the dealer/installer).

B. Roller Shade Motors and Motor Control Systems: Manufacturer's standard non-depreciating five-year warranty.

C. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 - PRODUCTS

2.0 MANUFACTURERS

A. Acceptable Manufacturer: MechoShade Systems, Inc.; 42-03 35th Street, Long Island City, NY 11101. Local representative: Kathleen Powers: T 480-656-8769,
email: kathleenp@mechoshade.com

Alternates: The following products and manufacturers may be bid as an alternate product in accordance with Section 01030. Any pricing for alternate products shall be listed separately from the base bid specified product. Any alternate pricing must include line-by-line compliance or non-compliance with the specifications. If the

alternate product is acceptable to the Architect, the specified manufacturer will be given the opportunity to provide an equivalent proposal.

1. Suburban/2 Shade System by MechoShade Systems, Inc.

2.1 APPLICATIONS /SCOPE

Roller Shade Schedule:

1. Shade Type 1: Manual operating, chain drive, sunscreen roller shades in all exterior windows of rooms and spaces shown on the Drawings.
2. Shade Type 2: Motorized interior solar roller shades in all exterior windows of rooms and spaces shown on Drawings, and related motor control systems. Shades in lobby will be controlled by a switch and a sun sensor.
3. Shade Type 3: Sloping motorized interior solar roller shades with guide cables in all exterior windows of rooms and spaces shown on Drawings, and related motor control systems.

2.2 SHADE CLOTH

A. Visually Transparent Single-Fabric Shadecloth: MechoShade Systems, Inc., Eurotwill group, single thickness non-raveling 0.030-inch (0.762 mm) thick vinyl fabric, woven from 0.018-inch (0.457 mm) diameter extruded vinyl yarn comprising of 21 percent polyester and 79 percent reinforced vinyl, in colors selected from manufacturer's available range.

1. Extra Dense Twill Weave "6000" series, 3 percent open.
2. Color: Selected from manufacturer's standard colors.

2.3 SHADE BAND

Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.

Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.

1. Shade band and Shade Roller Attachment:
   a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.
   b. Provide for positive mechanical engagement with drive / brake mechanism.
   c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.
   d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
   e. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

2.4 SHADE FABRICATION

Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.

Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch (3.18 mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design. Fabricate hem as follows:

1. Bottom hem
weights. Concealed
hemtube.
2. Exposed hemtube.
3. Exposed blackout hembar with light seal.
4. Exposed blackout hembar with polybond seal.

Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.

For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.

Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.

2.5 COMPONENTS

Access and Material Requirements:

1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.

Motorized Shade Hardware and Shade Brackets:

1. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel, or heavier, thicker, as required to support 150 percent of the full weight of each shade.
2. Provide shade hardware system that allows for field adjustment of motor or replacement of any operable hardware component without requiring removal of brackets, regardless of mounting position (inside, or outside mount).
3. Provide shade hardware system that allows for operation of multiple shade bands offset by a maximum of 8-45 degrees from the motor axis between shade bands (4-22.5 degrees) on each side of the radial line, by a single shade motor (multi-banded shade, subject to manufacturer's design criteria).

Manual Operated Chain Drive Hardware and Brackets:

1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable
7. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
8. Drive Bracket / Brake Assembly:
    a. MechoShade Drive Bracket model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.
    b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
    c. The brake shall be an over -unning clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.
    d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly.

which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.

e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.

Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.

2.6 SHADE MOTOR DRIVE SYSTEM

Shade Motors:

1. Tubular, asynchronous (non-synchronous) motors, with built-in reversible capacitor operating at 110v AC (60hz), single phase, temperature Class A, thermally protected, totally enclosed, maintenance free with line voltage power supply equipped with locking disconnect plug assembly furnished with each motor.
2. Conceal motors inside shade roller tube.
3. Maximum current draw for each shade motor of 2.3 amps.
4. Use motors rated at the same nominal speed for all shades in the same room.

Total hanging weight of shade band shall not exceed 80 percent of the rated lifting capacity of the shade motor and tube assembly.

2.7 MOTOR CONTROL SYSTEMS

INTELLIGENT ENCODED SHADE MOTOR DRIVE SYSTEM

A. Quiet Intelligent Encoded Motor System (software, two-way communication): Specifications and design are based on the Intelligent Motor Control System / WhisperShade-IQ Motor System) as manufactured by MechoShade Systems, Inc. Other systems may be acceptable providing all of the following performance capabilities are provided. Motor control systems not in complete compliance with these performance criteria shall not be accepted as equal systems.

1. Quiet operation of up to 46dBa within 3' feet, open air.
2. Upper and lower stopping points (operating limits) of shade bands shall be programmed into motors via a hand held removable program module / configurator.
3. Intermediate stopping positions for shades shall allow for up to three (3) repeatable and precise aligned positions.
4. Up to 103 available alignment points including 3-user programmable predefined intermediate positions, for a total of 5-defined and aligned positions. All shades on the same switch circuit with the same opening height shall align at each intermediate stopping position.
5. Two inherent methods of control:
   a. Cost effective, low voltage, hardwired dry-contact for local switch or 3rd party control operation.
   b. Expandable to 2-way communication network with IQ/485-NI to support whole building low-voltage control and integration.
6. Alternate: Mecho-RF via Zigby wireless mesh, network communication available to reduce low voltage wiring and field labor associated costs.
7. Uniform or Regular Modes of Operation:
   a. Uniform mode shall allow for shades to only move to intermediate stop positions.
   b. Regular mode shall allow for shades to move to both intermediate stop positions, plus any position desired between the upper and lower limits as set by the installer.
8. Wall Switches:
   a. IQ-Switch: in 5 or 10 button, single gang, low voltage.

2.8 ACCESSORIES

Fascia:

1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
2. Fascia shall be able to be installed across two or more shade bands in one piece.
3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.

4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
   a. Notching of Fascia for manual chain shall not be acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

Do not begin installation until substrates have been properly prepared.

If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

Clean surfaces thoroughly prior to installation.

Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow proper clearances for window operation hardware.

B. Coordinate the following with the roller shade installer/dealer:
   1. Contractor shall provide power panels and circuits of sufficient size to accommodate roller shade manufacturer's requirements, as indicated on the mechanical and electrical drawings.
   2. Contractor shall coordinate with requirements of roller shade installer/dealer, before inaccessible areas are constructed.
   3. Electrician shall run line voltage as dedicated home runs (of sufficient quantity, in sufficient capacity as required) terminating in junction boxes in locations designated by roller shade dealer.
   4. Electrician shall provide and run all line voltage (from the terminating points) to the motor controllers, wire all roller shade motors to the motor controllers, and provide and run low voltage control wiring from motor controllers to switch/ control locations designated by the Architect. All above-ceiling and concealed wiring shall be plenum-rated, or installed in conduit, as required by the electrical code having jurisdiction.
   5. Contractor shall provide conduit with pull wire in all areas, which might not be accessible to roller shade contractor due to building design, equipment location or schedule.

C. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

D. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

E. Engage Installer to train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.

3.4 PROTECTION

Protect installed products until completion of project.

Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 12 24 13

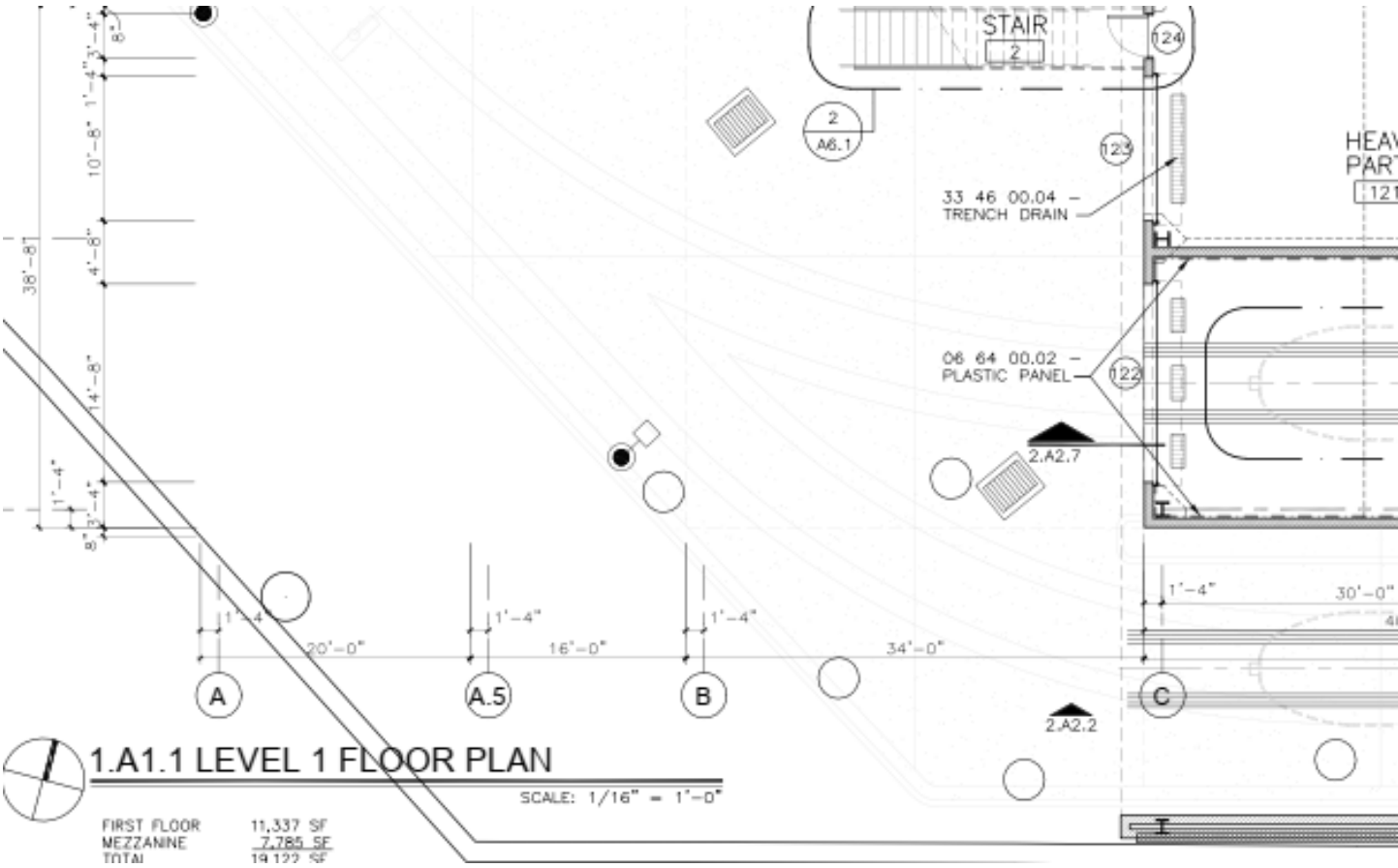
Package #5 – MSF Wash Bay – Forced Air Ventilation

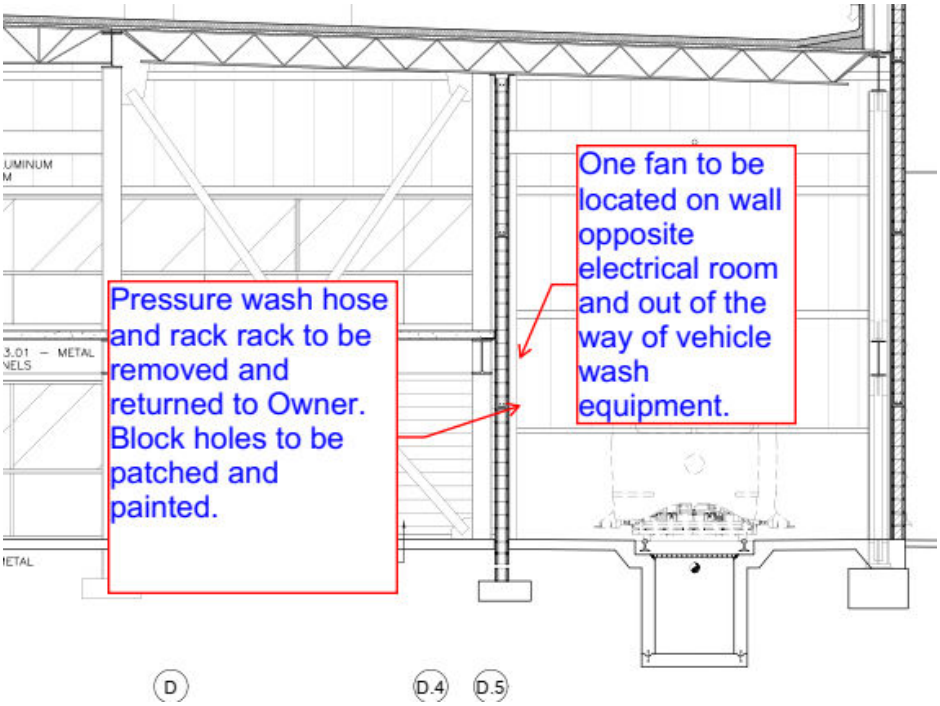
Package Scope
Furnish and install 2 30-inch directional fan with wall mount including bringing electrical supply. Fans shall be AirEye Directional Fan (SKU number F-AE1-3001L13S34 or approved equal. Work to include connection to power source in electrical room, electrical conduit and wiring to connect both fans to a separate breaker, detailing of an mounting plates required for secure mounting to both concrete block and steel girds as necessary. Removal and delivery of existing wall mounted pressure hose and reel to Owner.

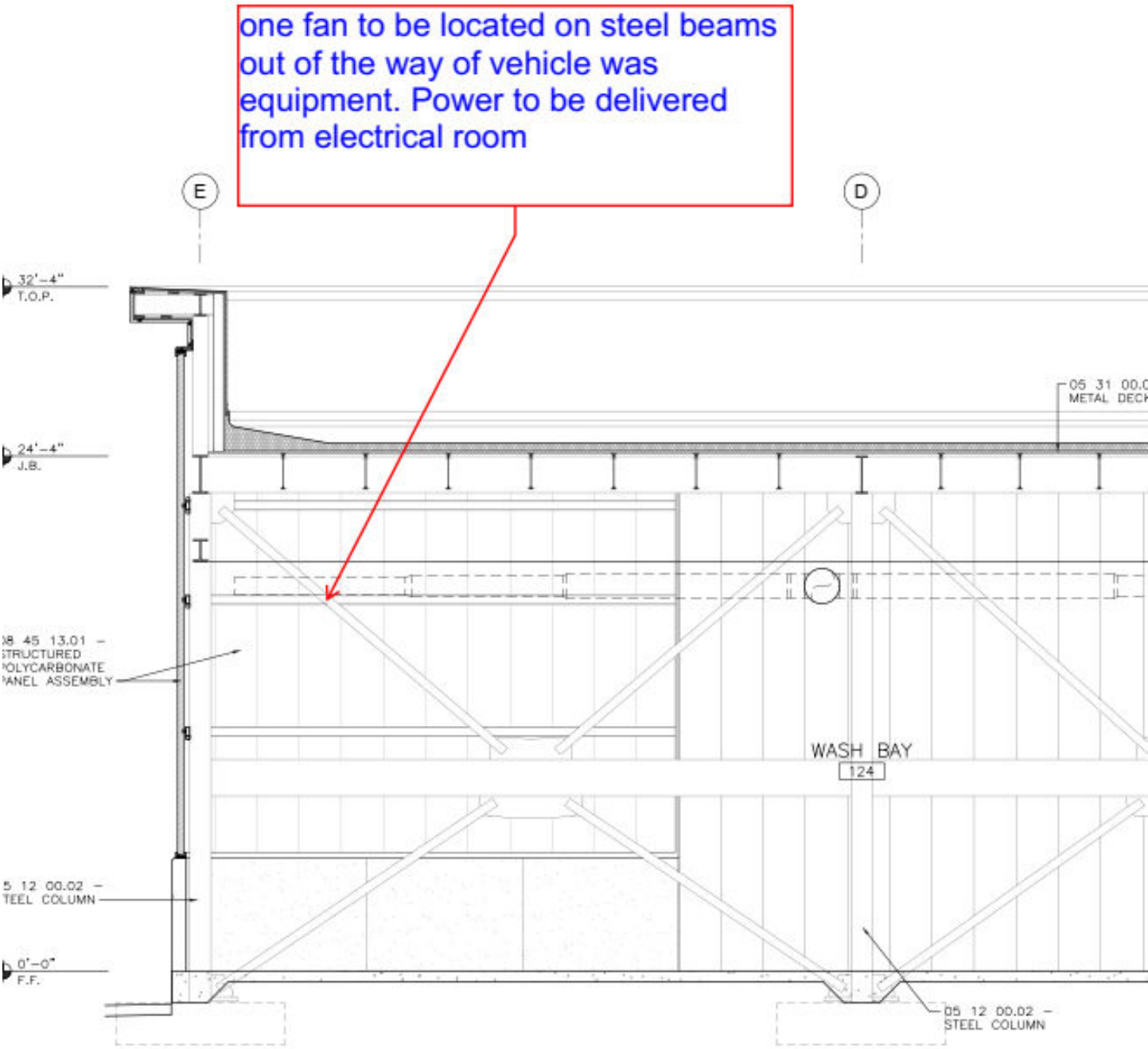
Bill of Materials

	DESCRIPTION	
2	30-inch Directional Fans	LS
1	Removal of existing pressure hose reel assembly	LS
	Electrical wiring, conduit, breaker, switches, etc. necessary to meet City of El Paso Electrical code.	LS
	Repair, patch and paint hose reel assembly holes in block wall and penetration holes for electrical power to fans.	

Method of Payment
Lump Sum upon satisfactory completion of work. Progress payments may be made in accordance with an approved schedule of values or Materials on Hand.


STAIR
2
124
2
A6.1
123
33 46 00.04 –
TRENCH DRAIN
06 64 00.02 –
PLASTIC PANEL
122
2.A2.7
2.A2.2
1'-4"
20'-0"
16'-0"
34'-0"
30'-0"
A
A.5
B
C
1.A1.1 LEVEL 1 FLOOR PLAN
SCALE: 1/16" = 1'-0"
FIRST FLOOR 11,337 SF
MEZZANINE 7,785 SF


Pressure wash hose and rack rack to be removed and returned to Owner. Block holes to be patched and painted.
One fan to be located on wall opposite electrical room and out of the way of vehicle wash equipment.
D
D.4
D.5



6.A5.4 WASH BAY 124

SCALE: 1/8"= 1'-0"

W. ADD ALTERNATE BID PACKAGES

Add Alternate Package #6 – Replace Maintenance Manager's cubicle with Modular Wall System Office

Package Scope

Design furnish and install a Maintenance Manager's off (nominal interior dimension of 10'-9" by 13' – 9" modular wall system including bringing electrical supply. Modular wall system components shall be as manufactured by Starrco Pre-engineered Modular Systems or approved equal. Work to include all items listed in the bill of materials below and shall include incidental materials and work to connect to existing facilities. Removal and delivery of existing cubicle and desks to Owner.

Bill of Materials

	DESCRIPTION	
1	Corrugated 22 ga Steel Roof Deck	
2	3068 20 ga. Steel Door with Window and Steel Frame	
3	Acoustical Grid Ceiling	
4	2' x 4' Recessed Light Fixture	
5	Aluminum Wiring Studs to all fo installation of electrical and communications devices	
6	Duplex Receptables – two on each wall.	
7	Wall Mounted HVAC Heat Pump Unit 0 23 81 00A	
8	Fixed Window – pre-glazed with ¼" tempered safety glass in aluminum frame – three windows	
9	Corner posts – Four posts as needed for complete installation	
10	Sound batt Insulation 0 12' x 11' (verify dimension)	
11	Sound Control Panels 3" thick - 8 feet high STC rating 33, Thermal Rating R11 (Verify height adjustment to allow for construction under existing ceiling and ductwork.	
12	Aluminum Floor Track – pre-cut and mitered (size to be measured)	
13	Aluminum Ceiling Track pre-cut and mitered (size to be measured)	
14	Pre-wired Modular Quick-Tric Electrical system.	

Note:

Method of Payment

Lump Sum upon satisfactory completion of work. Progress payments may be made in accordance with an approved schedule of values in accordance with the special provisions or Materials on Hand.

SECTION 12 59 00 SYSTEMS FURNITURE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Systems furniture, work includes, but not limited to the following:
   1. Components:
      a. Tack surfaces.
      b. Raceways.
      c. Power and data outlets.

B. Detailed Components located in Furniture Package- see typicals.

.

1.02 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Include electrical characteristics of electrical components, devices and accessories.

B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction. Include diagrams for power, signal, and control wiring.

C. Verification Samples: For each finish product specified, two samples, representing actual product and finish.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5-year experience manufacturing similar products.

B. Installer Qualifications: Minimum 2-year experience installing similar products.

1.04 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Handling: Handle materials to avoid damage.

1.06 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.07 SEQUENCING AND COORDINATION

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
B. Coordinate layout and installation of electrical wiring and devices with systems furniture layout to ensure the electrical devices are accurately located to allow connection without exposed conduit.

3 PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers: STARRCO Modular Wall Systems, Sapphire Wall Systems, or approved equal.

2.02 MATERIALS

A. Systems Furniture:
    a. Movable units.
    b. Tack surfaces.
    c. Raceways.
    d. Power and data outlets.
B. Detailed Components located in Furniture Package- see drawings and sketches.

.

4 PART 3 EXECUTION

5

5.01 EXAMINATION

A. Examine floors and other adjacent work and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the work. Verify that electrical connections are properly located. Proceed with installation only after unsatisfactory conditions have been corrected.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

5.02 INSTALLATION

A. Install system furniture and components in locations indicated and fasten to substrates in accordance with manufacturer's written installation instructions. Connect power and data in accordance to Section 26 0500.

B. Install in accordance with layouts found in this package.

5.03 FIELD QUALITY CONTROL

A. Inspect components, assemblies, and equipment, including connections, to verify proper, complete, and sturdy installation according to manufacturer's written instructions and product specifications. Test power receptacles and data ports when data connection is activated.

5.04 ADJUSTING AND PROTECTION

A. Adjust systems furniture and components to function smoothly so they operate easily. Lubricate bearings and sliding parts as recommended in writing by manufacturer.

B. Protect installed systems furniture and components until completion of project.

C. Touch-up, repair or replace damaged systems furniture and components, as directed by Engineer, before Substantial Completion.

END OF SECTION

Section 23 81 00A – Decentralized HVAC Equipment

Part 1 – General

1.01 SYSTEM DESCRIPTION

The heat pump heat recovery air conditioning system shall be a 9,000 BTU 24.6 SEER Wall Mounted Mitsubishi Mini-Split GL Single Zone Heat Pump – MZ-GL09NA or approved equal.

1.02 QUALITY ASSURANCE

A. The units shall be listed by Electrical Testing Laboratories (ETL) and bear the ETL label.

B. All wiring shall be in accordance with the National Electrical Code (N.E.C.).

C. The units shall be manufactured in a facility registered to ISO 9001 and ISO14001 which is a set of standards applying to environmental protection set by the International Standard Organization (ISO).

D. All units must meet or exceed the 2010 Federal minimum efficiency requirements and the proposed ASHRAE 90.1 efficiency requirements for VRF systems. Efficiency shall be published in accordance with the DOE alternative test procedure, which is based on the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Standards 340/360, 1230 and ISO Standard 13256-1.

E. A full charge of R-410A for the condensing unit only shall be provided in the condensing unit.

1.03 DELIVERY, STORAGE AND HANDLING

A. Unit shall be stored and handled according to the manufacturer's recommendation.

1.04 CONTROLS

A. The control system shall consist of a low voltage communication network of unitary built-in controllers with on-board communications and a web-based operator interface. A web controller with a network interface card shall gather data from this system and generate web pages accessible through a conventional web browser on each PC connected to the network.

Operators shall be able to perform all normal operator functions through the web browser interface.

B. System controls and control components shall be installed in accordance with the manufacturer's written installation instructions.

C. Furnish energy conservation features such as optimal start, night setback, request-based logic, and demand level adjustment of overall system capacity as specified in the sequence.

D. System shall provide direct and reverse-acting on and off algorithms based on an input condition or group conditions to cycle a binary output or multiple binary outputs.

4 Part 2 – Warranty

2.01 The units shall be covered by the manufacturer's limited warranty for a period of one (1) year from date of installation.

In addition, the compressor shall have a manufacturer's limited warranty for a period of seven (7) years from date of installation.

If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at the discretion of the manufacturer.

This warranty shall not include labor.

2.02 Manufacturer shall have a minimum of twenty-nine years of HVAC experience in the U.S. market.

2.03 All manufacturer technical and service manuals must be readily available for download by any local contractor should emergency service be required. Registering and sign-in requirements which may delay emergency service reference are not allowed.

5 Part 3 – Products

3.01 9,000 BTU 24.6 SEER Wall Mounted Mitsubishi Mini-Split GL single zone Heat Pump – MZ- GL09NA or approved equal.

A. General:

1. Outdoor unit shall have a sound rating no higher than 50 dB(A). Units shall have a sound rating no higher than 40 dB(A) while in night mode operation. If an alternate manufacturer is selected, any additional material, cost, and labor to meet published sound levels shall be incurred by the contractor.

2. Both refrigerant lines from the outdoor unit to the BC (Branch Circuit) Controller (Single or Main) shall be insulated.

3. The outdoor unit shall have an accumulator with refrigerant level sensors and controls.

4. The outdoor unit shall have a high-pressure safety switch, over-current protection, crankcase heater and DC bus protection.

5. The outdoor unit shall be capable of operating in heating mode down to -4 degrees F ambient temperatures or cooling mode down to 23 degrees ambient temperatures, without additional low ambient controls. If an alternate manufacturer is selected, any additional material, cost, and labor to meet low ambient operating condition and performance shall be incurred by the contractor.

6. The outdoor unit shall be capable of operating in cooling mode down to -10 degrees with optional manufacturer supplied low ambient kit.

7. Manufacturer supplied low ambient kit shall be provided with predesigned control box rated for outdoor installation and capable of controlling kit operation automatically in all outdoor unit operation modes.
8. Manufacturer supplied low ambient kit shall be listed by Electrical Laboratories (ETL) and bear the ETL label.

9. Manufacturer supplied low ambient kit shall be factory tested in low ambient temperature chamber to ensure operation. Factory performance testing data shall be available when requested.

10. The outdoor unit shall have a high efficiency oil separator plus additional logic controls to ensure adequate oil volume in the compressor is maintained.

11. The outdoor unit shall be provided with a manufacturer supplied 20-gauge hot dipped galvanized snow /hail guard. The snow/hail guard protects the outdoor coil surfaces from hail damage and snow build-up in severe climates.

12. Unit must defrost all circuits simultaneously in order to resume full heating more quickly. Partial defrost which may extend “no or reduced heating” periods shall not be allowed.

B. Unit Cabinet:

1. The casing(s) shall be fabricated of galvanized steel, bonderized and finished. Units cabinets shall be able to withstand 960 hours per ASTM B117 criteria for seacoast protected models (–BS models)

C. Fan:

1. Each outdoor unit module shall be furnished with one direct drive, variable speed propeller type fan. The fan shall be factory set for operation under 0 in. WG external static pressure, but capable of normal operation under a maximum of 0.24 in. WG external static pressure via dipswitch.

2. All fan motors shall have inherent protection, have permanently lubricated bearings, and be completely variable speed.

3. All fan motors shall be mounted for quiet operation.

4. All fans shall be provided with a raised guard to prevent contact with moving parts.

5. The outdoor unit shall have vertical discharge airflow.

D. Refrigerant

1. R410A refrigerant shall be required for PURY-P-T/Y(S)KMU-A outdoor unit systems.

2. Polyolester (POE) oil shall be required. Prior to bidding,

manufacturers using alternate oil types shall submit material safety data sheets (MSDS) and comparison of hygroscopic properties for alternate oil with list of local suppliers stocking alternate oil for approval at least two weeks prior to bidding.

E. Coil:

1. The outdoor coil shall be of nonferrous construction with lanced or corrugated plate fins on copper tubing.

2. The coil fins shall have a factory applied corrosion resistant blue-fin finish.

3. The coil shall be protected with an integral metal guard.

4. Refrigerant flow from the outdoor unit shall be controlled by means of an inverter driven compressor.

5. The outdoor coil shall include 4 circuits with two position valves for each circuit, except for the last stage.

F. Compressor:

1. Each outdoor unit module shall be equipped with one inverter driven scroll hermetic compressor. Non-inverter-driven compressors, which cause inrush current (demand charges) and require larger wire sizing, shall not be allowed.

2. A crankcase heater(s) shall be factory mounted on the compressor(s).

3. The outdoor unit compressor shall have an inverter to modulate capacity. The capacity shall be completely variable with a turndown of 19%-5% of rated capacity, depending upon unit size.

4. The compressor will be equipped with an internal thermal overload.

5. The compressor shall be mounted to avoid the transmission of vibration.

6. Field-installed oil equalization lines between modules are not allowed. Prior to bidding, manufacturers requiring equalization must submit oil line sizing calculations specific to each system and module placement for this project.

G. Controls:

1. The outdoor unit shall have the capability of up to 8 levels of demand control for each refrigerant system

H. Electrical:

1. The outdoor unit electrical power shall be 208/230 volts, 3-phase, 60 hertz. or 460 volts, 3-phase, 60 hertz.

2. The outdoor unit shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz), 207-253V (230V/60Hz) or 414-506V (460V/60Hz).

3. Unit shall be controlled by integral microprocessors.

4. The control circuit between the indoor units, BC Controller and the outdoor unit shall be 24VDC completed using a 2-conductor, twisted pair shielded cable to provide total integration of the system.

6 Part 4 – Controls

6.01 Electrical Characteristics

A. General:

The CMCN shall operate at 24VDC. Controller power and communications shall be via a common non- polar communications bus.

B. **Wiring**:

1. Control wiring shall be installed in a daisy chain configuration from indoor unit to ME remote controller to indoor unit, to the BC controller (main and subs, if applicable) and to the outdoor unit. Control wiring to remote controllers shall be run from the indoor unit terminal block to the controller associated with that unit.

C. Wiring type:

1. Wiring shall be 2-conductor (16 AWG), twisted, stranded, shielded wire as defined by the Diamond System Builder output.

2. Network wiring shall be CAT-5e with RJ-45 connection.

6.02 CMCN: System Integration

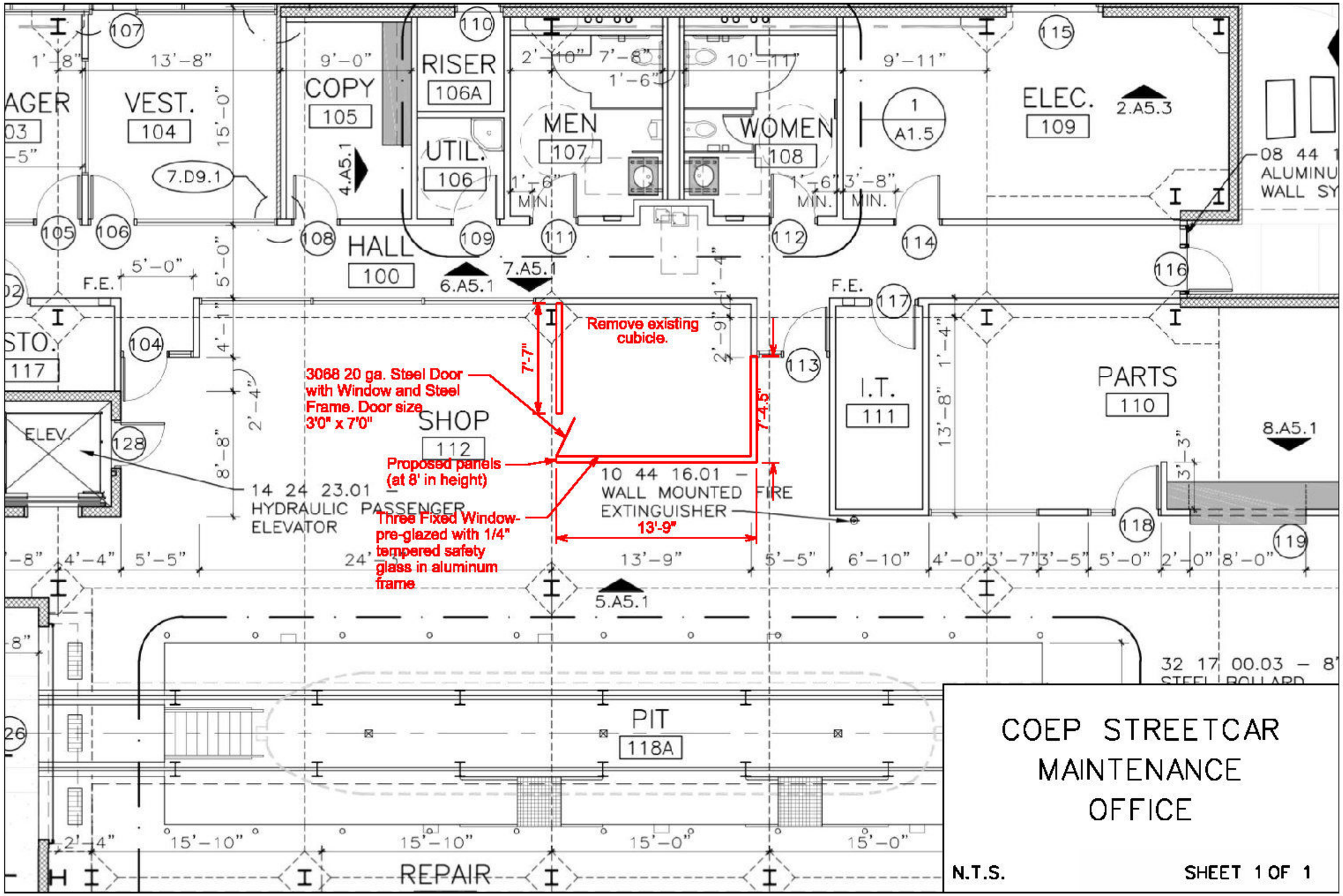
The CMCN shall be capable of supporting integration with Building Management Systems (BMS).

A. BAC-HD150: BACnet® Interface

6.03 The Mitsubishi Electric Cooling & Heating BACnet® interface, BAC-HD150, shall be compliant with BACnet® Protocol (ANSI/ASHRAE 135-2004) and be Certified by the (BTL) BACnet® Testing Laboratories. The BACnet® interface shall support BACnet Broadcast Management (BBMD). The BACnet® interface shall support a maximum of 50 indoor units. Operation and monitoring points include, but are not limited to, on/off, operation mode, fan speed, prohibit remote controller, filter sign reset, alarm state, error code, and error address. Power Supply (PAC-SC51KUA)

The power supply shall supply 24VDC (TB 3) for the AG-150 centralized controller and 24VDC (TB 2) voltage for the central control transmission.

END OF SECTION


Remove existing cubicle.
3068 20 ga. Steel Door with Window and Steel Frame. Door size 3'0" x 7'0"
Proposed panels (at 8' in height)
Three Fixed Window- pre-glazed with 1/4" tempered safety glass in aluminum frame
14 24 23.01 – HYDRAULIC PASSENGER ELEVATOR
10 44 16.01 – WALL MOUNTED FIRE EXTINGUISHER
13'-9"
7'-7"
7'-4.5"
AGER
03
VEST.
104
7.D9.1
COPY
105
4.A5.1
RISER
106A
UTIL.
106
MEN
107
WOMEN
108
1
A1.5
ELEC.
109
2.A5.3
HALL
100
6.A5.1
7.A5.1
STO.
117
ELEV.
128
SHOP
112
I.T.
111
PARTS
110
8.A5.1
PIT
118A
REPAIR
5.A5.1
32 17 00.03 – 8'
08 44 1
ALUMINU
WALL SY
COEP STREETCAR MAINTENANCE OFFICE
N.T.S.
SHEET 1 OF 1

Package #7 – Remove and replace laminated Countertop in MSF Dispatch Office.

Package Scope
Remove and replace laminated Countertop in MSF Dispatch Office. Work to include all items listed in the bill of materials below and shall include incidental materials and work to connect to existing facilities.

Bill of Materials

	DESCRIPTION	
	Remove existing laminated countertop	
	Install new 36 inch wide laminated countertop	
	Adjust base cabinets as required	

Note:
Method of Payment
Lump Sum upon satisfactory completion of work. Progress payments may be made in accordance with an approved schedule of values in accordance with the special provisions or Materials on Hand.

3 SECTION 06 40 23 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Interior standing and running trim.
2. Plastic-laminate countertops.
3. Shop finishing of interior woodwork.

1.3 DEFINITIONS

A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated, including cabinet hardware and accessories, handrail brackets, and finishing materials and processes.

B. Product Data: For panel products, high-pressure decorative laminate, adhesive for bonding plastic laminate, solid-surfacing material, fire-retardant-treated materials, cabinet hardware and accessories, handrail brackets, and finishing materials and processes.

1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show details full size.
2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
3. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers and other items installed in architectural woodwork.
4. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
5. Apply WI-certified compliance label to first page of Shop Drawings.

D. Samples for Initial Selection:

1. Shop-applied transparent finishes.
2. Plastic laminates: Submit sample ring of 2” x3” size samples.
3. PVC edge material.
4. Solid-surfacing materials.

E. Samples for Verification:

1. Lumber with or for transparent finish, not less than 50 sq. in. , 5 inches wide by 24 inches long, for each species and cut, finished on 1 side and 1 edge.
2. Veneer-faced panel products with or for transparent finish, 12 by 24 inches , for each species and cut. Include at least one face-veneer seam and finish as specified.

F. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

G. Forest Certification: Provide interior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

B. Hardware Coordination: Distribute copies of approved hardware schedule specified in Division 08 Section "Door Hardware (Scheduled by Describing Products)" to fabricator of architectural woodwork; coordinate Shop Drawings and fabrication with hardware requirements.

4 PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated. Wood Species and Cut for Transparent Finish: Softwood Plywood: PS 20; Northern White Pine; Veneer Core Plywood; Graded in accordance with contract documents and AWI Premium Quality Grade and Hardwood Lumber: FS MM-L-736; White Oak- Natural; graded in accordance with AWI Premium Grade Quality.

B. Wood Products: Comply with the following:

1. Hardboard: AHA A135.4.
2. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.
3. Softwood Plywood: DOC PS 1, Medium Density Overlay.
4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.

C. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high- pressure decorative laminates that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following: Basis of Design, Formica Corporation.
    a. Abet Laminati, Inc.

b. Arborite; Division of ITW Canada, Inc.
c. Lamin-Art, Inc.
d. Nevamar Company, LLC; Decorative Products Div.
e. Panolam Industries International Incorporated.
f. Westinghouse Electric Corp.; Specialty Products Div.
g. Wilsonart International; Div. of Premark International, Inc.

2.2 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

C. Adhesives, General: Do not use adhesives that contain urea formaldehyde.

D. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L.
2. Contact Adhesive: 250 g/L.

2.3 FABRICATION, GENERAL

A. Interior Woodwork Grade: Unless otherwise indicated, provide Premium-grade interior woodwork complying with referenced quality standard.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

D. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch Thick or Less: 1/16 inch
2. Edges of Rails and Similar Members More Than 3/4 Inch Thick: 1/8 inch.
3. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch).

E. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.

F. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

1. Seal edges of openings in countertops with a coat of varnish.

G. Fabricate back splash integral with countertops where indicated.

H. Provide felt bumpers, minimum 2 per cabinet door.

I. All toe base to be constructed of softwood lumber as specified.

J. All millwork components shall be fabricated of medium density fiberboard with following exceptions only.

1. All cabinet back panels and drawer bottoms shall be constructed of hardboard panels as specified.

2.4 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

A. Grade: Premium.

B. Wood Species and Cut: Softwood Lumber: PS 20; Northern White Pine; Graded in accordance with contract documents and AWI Premium Grade,

C. Wood Species and Cut: Hardwood Lumber: FS MM-L-736; Yellow Birch – Natural; Graded in accordance with contract documents and AWI Premium Quality Grade.

1. Plain Sliced Yellow Birch for transparent finish, or as scheduled on drawings.
2. Provide split species on trim that faces areas with different wood species, matching each face of woodwork to species and cut of finish wood surfaces in areas finished.

D. For trim items wider than available lumber, use veneered construction. Do not glue for width.

E. For rails wider or thicker than available lumber, use veneered construction. Do not glue for width or thickness.

F. Backout or groove backs of flat trim members and kerf backs of other wide, flat

members, except for members with ends exposed in finished work.

G. Assemble casings in plant except where limitations of access to place of installation require field assembly.

H. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.

2.5 PLASTIC-LAMINATE COUNTERTOPS

K. Grade: Premium.

L. High-Pressure Decorative Laminate Grade: HGS.

M. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As selected by Engineer from manufacturer's full range in the following categories:

    a. Solid colors, matte finish.
    b. Solid colors with core same color as surface, matte finish.
    c. Wood grains, matte finish.
    d. Patterns, matte finish.

D. Grain Direction: Parallel to cabinet fronts.

E. Edge Treatment: High pressure decorative laminate to match cabinet body.

F. Core Material: Particleboard made with exterior glue.

G. Core Material at Sinks: Particleboard made with exterior glue.Backer Sheet: Provide plastic-laminate backer sheet, Grade BKL, on underside of countertop substrate.

H. Paper Backing: Provide paper backing on underside of countertop substrate.

2.6 SHOP FINISHING

A. Grade: Provide finishes of same grades as items to be finished.

B. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

C. General: Shop finish transparent-finished interior architectural woodwork at fabrication shop as specified in this Section.

D. General: Drawings indicate items that are required to be shop finished. Finish such items at

fabrication shop as specified in this Section. Refer to Division 09 painting Sections for finishing architectural woodwork not indicated to be shop finished.

E. Shop Priming: Shop apply the prime coat including back priming, if any, for transparent-finished items specified to be field finished. Refer to Division 09 painting Sections for material and application requirements.

F. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Back priming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require back priming when surfaced with plastic laminate, backing paper, or thermoset decorative panels.

G. Transparent Finish:

1. Grade: Premium.
2. AWI Finish System: Catalyzed polyurethane, satin finish.

3. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

5 PART 3 - EXECUTION

5.1 PREPARATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and back priming.

5.2 INSTALLATION

A. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
3. Secure backsplashes to tops with concealed metal brackets at 16 inches o.c. and to walls with adhesive.
4. Calk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."

B. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

C. Refer to Division 09 Sections for final finishing of installed architectural woodwork not indicated to be shop finished.

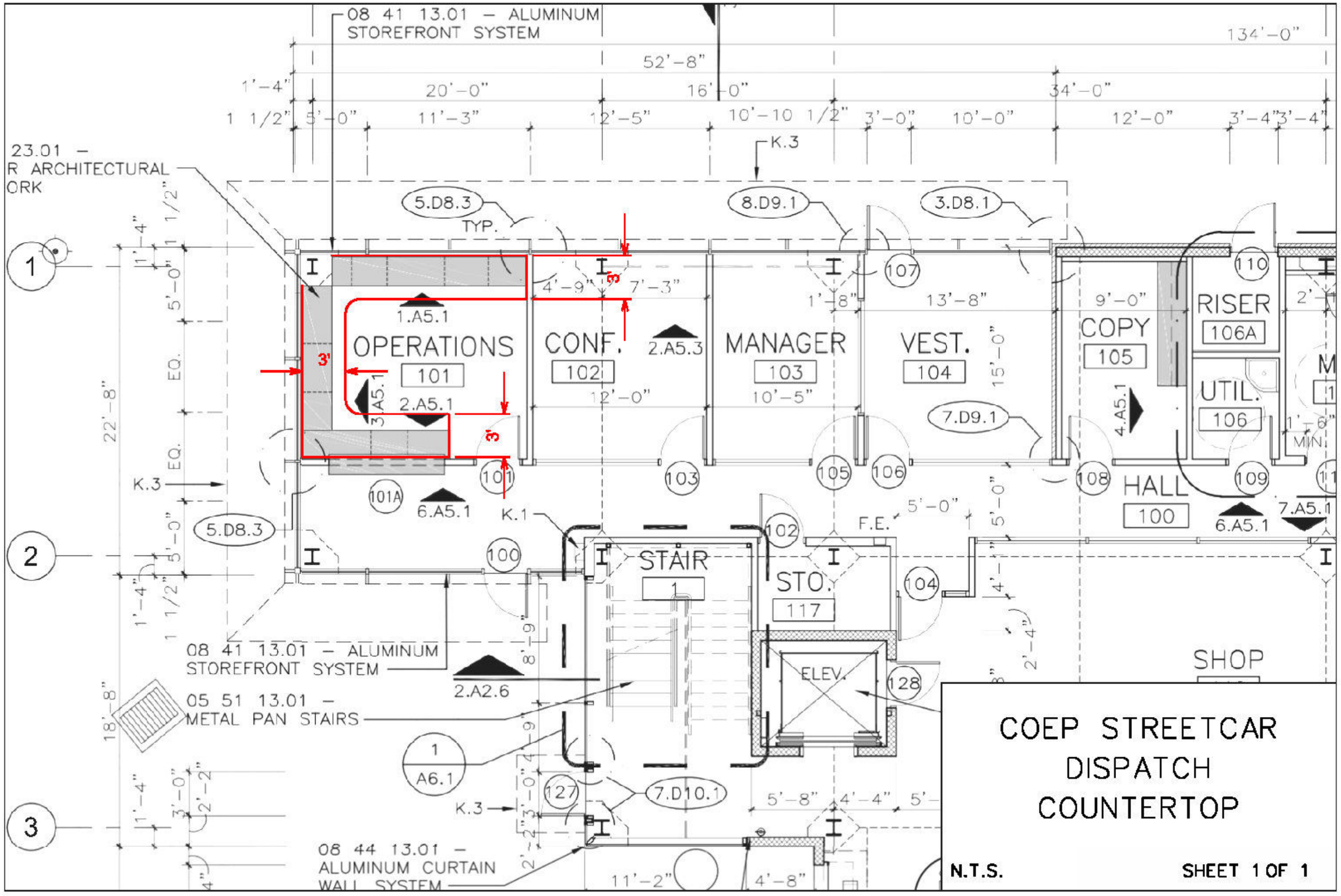
5.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semi exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

6 END OF SECTION 06 40 23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OPERATIONS
101
CONF.
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MANAGER
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COPY
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RISER
106A
UTIL.
106
HALL
100
STAIR
1
STO.
117
ELEV.
SHOP
08 41 13.01 – ALUMINUM STOREFRONT SYSTEM
05 51 13.01 – METAL PAN STAIRS
08 44 13.01 – ALUMINUM CURTAIN WALL SYSTEM
COEP STREETCAR DISPATCH COUNTERTOP
N.T.S.
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