SUBMITTAL TRANSMITTAL FORM

East 64th Street Phase I, Pacific to McKinley
Project Number PWK-G0018
Specification No. PW19-0213F

ATTN: Construction Division Date: _____

Submittal Number _____

Specification Number _____ Bid Item No. _____

Submittal Description _____

We are sending you:

Copies	Date	Page	Description

Transmitted: ☐ Submittals (Product Data) for information only.
☐ Submittals for review and comment.

Remarks: _____

Certify Either A or B:

☐ A. This document has been detail-checked for accuracy of content and for compliance with the Contract documents **(no exceptions)**. The information contained herein has been fully coordinated with all involved Subcontractors.

☐ B. This document has been detail-checked for accuracy of content and for compliance with the Contract documents **except for the attached deviations**. The information contained herein has been fully coordinated with all involved Subcontractors.

Certified By: _____
Signature

END OF SECTION

1-06 CONTROL OF MATERIAL

1-06.1 Approval of Materials Prior To Use
(September 15, 2010 Tacoma GSP)

The first sentence is revised to read:

All materials and equipment shall be submitted for review in accordance with section 1-05.3 of these special provisions.

For aggregates, the Contractor shall notify the Engineer of all proposed aggregates. The Contractor shall use the Aggregate Source Approval (ASA) Database.

All equipment, materials, and articles incorporated into the permanent Work:

1. Shall be new, unless the Special Provisions or Standard Specifications permit otherwise;

2. Shall meet the requirements of the Contract and be approved by the Engineer;

3. May be inspected or tested at any time during their preparation and use; and

4. Shall not be used in the Work if they become unfit after being previously approved.

1-06.1(1) Qualified Products List (QPL)

This section is revised in its entirety to read:

QPL's are not accepted by the City.

1-06.1(2) Request for Approval of Material (RAM)

This section is deleted in its entirety:

1-06.6 Recycled Materials
(January 4, 2016 APWA GSP)

Delete this section, including its subsections, and replace it with the following:

The Contractor shall make their best effort to utilize recycled materials in the construction of the project. Approval of such material use shall be as detailed elsewhere in the Standard Specifications.

Prior to Physical Completion the Contractor shall report the quantity of recycled materials that were utilized in the construction of the project for each of the items listed in Section 9-03.21. The report shall include hot mix asphalt, recycled concrete aggregate, recycled glass, steel furnace slag and other recycled materials (e.g. utilization of on-site material and aggregates from concrete returned to the supplier). The Contractor's report shall be provided on DOT form 350-075 Recycled Materials Reporting.

END OF SECTION

1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC

1-07.1 Laws to be Observed
(October 1, 2005 APWA GSP)
Supplement this section with the following:

In cases of conflict between different safety regulations, the more stringent regulation shall apply.

The Washington State Department of Labor and Industries shall be the sole and paramount administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA).

The Contractor shall maintain at the project site office, or other well-known place at the project site, all articles necessary for providing first aid to the injured. The Contractor shall establish, publish, and make known to all employees, procedures for ensuring immediate removal to a hospital, or doctor's care, persons, including employees, who may have been injured on the project site. Employees should not be permitted to work on the project site before the Contractor has established and made known procedures for removal of injured persons to a hospital or a doctor's care.

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the project site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

1-07.2 State Taxes
(January 6, 2015 TACOMA GSP)
Supplement this section with the following:

Washington State Department of Revenue Rules 170 and 171 shall apply as shown in the Proposal and per Section 1-07.2 of the WSDOT and APWA Standard Specifications for Road, Bridge, and Municipal Construction.

1-07.2(3) Services

The Contractor shall not collect retail sales tax from the Contracting Agency on any contract wholly for professional or other services (as defined in Washington State Department of Revenue Rules 138 and 244).

1-07.9 Wages

1-07.9(5) Required Documents
(March 1, 2004 Tacoma GSP)
The first sentence of the third paragraph is revised to read:

Weekly certified payrolls shall be submitted for the Contractor and all lower tier subcontractors or agents.

This section is supplemented with the following:

Where fringe benefits are paid in cash, certified payrolls shall include the fringe benefit dollar amount paid to each employee for each employee classification.

Where fringe benefits are paid into approved plans, funds, or programs, the amount of the fringe benefits shall be identified in the "Benefit Distribution" section of the Certified Payroll Affirmation form.

1-07.15 Temporary Water Pollution/Erosion Control
(March 23, 2010 Tacoma GSP)
This section is supplemented with the following:

Stormwater or dewatering water that has come in contact with concrete rubble, concrete pours, or cement treated soils shall be maintained to pH 8.5 or less before it is allowed to enter waters of the State or the City stormwater system. If pH exceeds 8.5, the Contractor shall immediately discontinue work and initiate treatment according to the plan to lower the pH. Work may resume, with treatment, once the pH of the stormwater is 8.5 or less or it can be demonstrated that the runoff will not reach surface waters or the City stormwater system.

High pH process water shall not be discharged to waters of the State or the City stormwater system. Unless specific measures are identified in the Special Provisions, high pH water may be infiltrated, dispersed in vegetation or compost, or discharged to a sanitary sewer system. Disposal shall be in accordance with the City of Tacoma Surface Water Management Manual or to City wastewater system with proper approval. Water being infiltrated or dispersed shall have no chance of discharging directly to waters of the State or the City stormwater system, including wetlands or conveyances that indirectly lead to waters of the State. High pH process water shall be treated to within a range of 6.5 to 8.5 pH units prior to infiltration to ensure the discharge does not cause a violation of groundwater quality standards. If water is discharged to the sanitary sewer, the Contractor shall provide a copy of permits and requirements for placing the material into a sanitary sewer system prior to beginning the work. Process water may be collected and disposed of by the Contractor off the project site. The Contractor shall provide a copy of the permit for an approved waste site for the disposal of the process water prior to the start of work that generates the process water. A Special Approved Discharge permit shall be required for all discharges to the sanitary sewer system.

1-07.15(1) Spill Prevention, Control and Countermeasures Plan
(February 9, 2011 Tacoma GSP)
This section is revised to read:

The Contractor shall prepare a project-specific spill prevention, control, and countermeasures plan (SPCC Plan) that will be used for the duration of the project. The Contractor shall submit the plan to the Project Engineer no later than the date of the preconstruction conference. No on-site construction activities may commence until the Contracting Agency accepts an SPCC Plan for the project.

The SPCC Plan shall address all fuels, petroleum products, hazardous materials, and other materials as defined in Chapter 447 of the WSDOT Environmental Procedures Manual (M 31-11). Occupational safety and health requirements that may pertain to SPCC Plan implementation are contained in, but not limited to, WAC 296-824 and WAC 296-843.

Implementation Requirements

The SPCC Plan shall be updated by the Contractor throughout project construction so that the written plan reflects actual site conditions and practices. The Contractor shall update the SPCC Plan at least annually and maintain a copy of the updated SPCC Plan on the project site. All project employees shall be trained in spill prevention and containment, and they shall know where the SPCC Plan and spill response kits are located and have immediate access to them.

If hazardous materials are encountered or spilled during construction, the Contractor shall do everything possible to control and contain the material until appropriate measures can be taken. The Contractor shall supply and maintain spill response kits of appropriate size within close proximity to hazardous materials and equipment.

The Contractor shall implement the spill prevention measures identified in the SPCC Plan before performing any of the following:

1. Placing materials or equipment in staging or storage areas.

2. Refueling, washing, or maintaining equipment.

3. Stockpiling contaminated materials.

SPCC Plan Element Requirements

The SPCC Plan shall set forth the following information in the following order:

1. Responsible Personnel

   Identify the name(s), title(s), and contact information, including a 24/7 emergency contact number, for the personnel responsible for implementing and updating the plan, including all spill responders.

2. Spill Reporting

   List the names and telephone numbers of the Federal, State, and local agencies the Contractor shall notify in the event of a spill. The City of Tacoma contact will be the Wastewater Treatment Plant Operations number at 253.591.5595 and the City Source Control Spill Response number at 253.502.2222.

3. Project and Site Information

   Describe the following items:

   A. The project Work.
   B. The site location and boundaries.
   C. The drainage pathways from the site, including both stormwater and sanitary conveyance pathways.
   D. Nearby waterways and sensitive areas and their distances from the site.

4. Potential Spill Sources

Describe each of the following for all potentially hazardous materials brought or generated on-site (including materials used for equipment operation, refueling, maintenance, or cleaning):

A. Name of material and its intended use.
B. Estimated maximum amount on-site at any one time.
C. Location(s) (including any equipment used below the ordinary high water line) where the material will be staged, used, and stored and the distance(s) from nearby waterways and sensitive areas.
D. Decontamination location and procedure for equipment that comes into contact with the material.
E. Disposal procedures.
F. Include a Material Safety Data Sheet (MSDS) for each potentially hazardous material.

5. Pre-Existing Contamination

Describe any pre-existing contamination and contaminant sources (such as buried pipes or tanks) in the project area that are described in the Contract documents. Identify equipment and work practices that will be used to prevent the release of contamination.

6. Spill Prevention and Response Training

Describe how and when all personnel (including refueling Contractors and Subcontractors) will be trained in spill prevention, containment, and response in accordance with the Plan. Describe how and when all spill responders will be trained in accordance with WAC 296-824.

7. Spill Prevention

Describe the following items:

A. Spill response kit contents and location(s).
B. Security measures for potential spill sources.
C. Secondary containment practices and structures for all containers to handle the maximum volume of potential spill of hazardous materials.
D. Methods used to prevent stormwater from contacting hazardous materials.
E. Site inspection procedures and frequency.
F. Equipment and structure maintenance practices.
G. Daily inspection and cleanup procedures that ensure all equipment used below the ordinary high water line is free of all external petroleum-based products.
H. Refueling procedures for equipment that cannot be moved from below the ordinary high water line.

8. Spill Response

Outline the response procedures the Contractor will follow for each scenario listed below. Include a description of the actions the Contractor shall take and the specific on-site spill response equipment that shall be used to assess the spill, secure the area, contain and eliminate the spill source, and clean up and dispose of spilled and contaminated material.

Response procedures shall be outlined in the Spill Response section and shall include notification to the City of Tacoma Wastewater Treatment Plant

Operations number at 253.591.5595 and the City Source Control Spill Response number at 253.502.2222.

A. A spill of each type of hazardous material at each location identified in 4, above.
B. Stormwater that has come into contact with hazardous materials.
C. Drainage pathways from the site, including both stormwater and sanitary conveyance pathways.
D. A release or spill of any unknown pre-existing contamination and contaminant sources (such as buried pipes or tanks) encountered during project Work.
E. A spill occurring during Work with equipment used below the ordinary high water line.

If the Contractor will use a Subcontractor for spill response, provide contact information for the Subcontractor under item 1 (above), identify when the Subcontractor will be used, and describe actions the Contractor shall take while waiting for the Subcontractor to respond.

9. Project Site Map

Provide a map showing the following items:

A. Site location and boundaries.
B. Site access roads.
C. Drainage pathways from the site.
D. Nearby waterways and sensitive areas.
E. Hazardous materials, equipment, and decontamination areas identified in 4, above.
F. Pre-existing contamination or contaminant sources described in 5, above.
G. Spill prevention and response equipment described in 7 and 8, above.

10. Spill Report Forms

Provide a copy of the spill report form(s) that the Contractor will use in the event of a release or spill.

Payment

Payment will be made in accordance with Section 1-04.1 for the following Bid item when it is included in the Proposal:

"SPCC Plan," lump sum.

When the written SPCC Plan is accepted by the Contracting Agency, the Contractor shall receive 50-percent of the lump sum Contract price for the plan.

The remaining 50-percent of the lump sum price will be paid after the materials and equipment called for in the plan are mobilized to the project.

The lump sum payment for "SPCC Plan" shall be full pay for:

1. All costs associated with creating the accepted SPCC Plan.

2. All costs associated with providing and maintaining the on-site spill prevention equipment described in the accepted SPCC Plan.

3. All costs associated with providing and maintaining the on-site standby spill response equipment and materials described in the accepted SPCC Plan.

4. All costs associated with implementing the spill prevention measures identified in the accepted SPCC Plan.

5. All costs associated with updating the SPCC Plan as required by this Specification.

As to other costs associated with releases or spills, the Contractor may request payment as provided for in the Contract. No payment shall be made if the release or spill was caused by or resulted from the Contractor's operations, negligence, or omissions.

1-07.16 Protection and Restoration of Property

1-07.16(1) Private/Public Property
(January 13, 2011 Tacoma GSP)
This section is supplemented with the following:

Stockpiling in City of Tacoma right-of-way or on existing or new improvements shall not occur unless approved by the Engineer. All stockpile sites shall be restored to as good or better condition.

The Contractor shall contact all property owners and tenants in the vicinity of this project, via newsletter/mailing, a minimum of one (1) week prior to start of construction. The Contractor shall submit a draft of the property owner notification prior to posting/mailing.

The newsletter/mailing shall advise the owners and tenants of the construction schedule and indicate the Contractor's name, contact person, and telephone numbers.

1-07.17 Utilities and Similar Facilities
(March 7, 2017 Tacoma GSP)
The first paragraph is supplemented with the following:

Public and private utilities or their Contractors will furnish all work necessary to adjust, relocate, replace, or construct their facilities unless otherwise provided for in the Plans or these Special Provisions. Such adjustment, relocations, replacement, or construction will be done within the time for performance of this project. The Contractor shall coordinate their work with such adjustment, relocation, or replacement of utility work. This may require the Contractor to phase their work in a manner that will allow for the utility work.

The Contractor shall coordinate their work with all utilities and other organizations, which have to adjust or revise their facilities within the project area. These may include, but are not limited to:

- City of Tacoma Light Division, Contact: Kevin Kelley, phone: (253) 502-8229
- City of Tacoma Water Division, Contact: Kimberly Baard, phone: (253) 396-3317
- City of Tacoma Traffic Division, Signal/Streetlight Shop, phone: (253) 591-5287
- CLICK! Network, Contact: Ken Mathes, phone: (253) 502-8851
- Puget Sound Energy, Contact: Mike Klapperich, Electric, phone: (253) 313-3790 OR Cheryl Paras, Gas, phone: (253) 476-6300

- CenturyLink, Contact: Eric Charity, phone: (206) 733-8871
- Comcast, Contact: Todd Gallant, phone: (253) 878-4955
- AT&T Broadband Information Services, Contact: Dan McGeough, phone: (425) 896-9830
- Level 3 Communications, Level3NetworkRelocations@Level3.com
- One-Number Locator Service "One Call System" telephone **1-800-424-5555**

If the Contractor plans to excavate or trench within ten (10) feet of any utility pole or other electric or water utility structure owned by the City of Tacoma, the Contractor shall contact the City of Tacoma, Department of Public Utilities, Field Coordinator, telephone number 502-8044, and arrange for an inspection before proceeding. The Contractor shall perform, at the Contractor's expense, such additional work as is required to protect the pole or structure from subsidence. The Contractor may be directed to suspend work at the site of any such excavation until such utility structures are adequately protected.

Garbage, recycling, and yard waste pick up within the project limits is on Wednesdays.

The contractor shall coordinate closely with all utilities doing work as part of the project to ensure that each utility has time to complete their work associated with the project. Work involving Tacoma Water is especially critical as the work needed to install the new water meters and pressure reducing valves will need to be closely coordinated to ensure that the existing retaining walls are removed and the new sidewalk grave is placed such that Tacoma water may install their new infrastructure prior to the new retaining walls and fences are installed.

The contractor shall provide Tacoma Water (7) calendar days advance notice for it to coordinate its work. This notification applies to all work phases needed for Tacoma Water after removal of existing retaining walls and grading work for permanent improvements such as sidewalk.

No payment consideration will be made for the Contractor to coordinate its work with utilities and for time associated with the utility owner to complete its work. Consideration will only be made for an extension of time in accordance with 1-08.8.

1-07.18 Public Liability and Property Damage Insurance
Delete this section in its entirety, and replace it with the following:

1-07.18 Insurance

Reference the City's "Insurance Requirements" document included in Appendix I.

1-07.23 Public Convenience and Safety

1-07.23(1) Construction Under Traffic
(May 2, 2017 APWA GSP)

Revise the third sentence of the second paragraph to read:
Accessibility to existing or temporary pedestrian push buttons shall not be impaired; if approved by the Contracting Agency activating pedestrian recall timing or other accommodation may be allowed during construction.

1-07.23(1) Construction under Traffic
(March 1, 2004 Tacoma GSP)
This section is supplemented with the following:

The following special traffic requirements shall be adhered to during all phases of construction:

South/East 64th Street*, Pacific Avenue*, McKinley Avenue*, East 56th Street*, East 72nd Street*, Bell Street, A Street, East B Street, East D Street, East E Street, and East F Street, shall remain fully open to vehicular and pedestrian traffic at all times (roadways identified with an * are classified as arterials).

EXCEPTION:

1. East 64th Street shall be permitted to be partially closed (for a given direction of traffic flow), with approval of submitted traffic control plan, to aid expeditiously completion of the project work elements; suggested traffic controls for potential work extents are included in the bid documents. Directional closures to address work generally within the center of the right-of-way, with sufficient separation from major arterial intersections and for durations of two (2) weeks or less, shall utilize flagger control with one lane open to serve both directions of traffic. Directional closures to address work, including sidewalk and side of roadway elements and for durations up to fifty (50) working days, are permitted to implement temporary one-way traffic flow and controls along each of following sub-segments of the corridor at independent times:
    - Temporary eastbound one-way flow/controls from east side of Pacific Ave/East 64th Street intersection to west side of East D Street/East 64th Street intersection;
    - Temporary westbound one-way flow/controls from east side of Pacific Ave/East 64th Street intersection to west side of East D Street/East 64th Street intersection;
    - Temporary eastbound one-way flow/controls from west side of McKinley Ave/East 64th Street intersection to east side of East D Street/East 64th Street intersection;
    - Temporary westbound one-way flow/controls from west side of McKinley Ave/East 64th Street intersection to east side of East D Street/East 64th Street intersection;

   For temporary one-way operations that impact access to East 64th Street from Pacific Avenue and/or McKinley Avenue, a signed detour (submitted to and pre-approved by the City of Tacoma) is required using alternate routes along arterial-classified roadways.

   Any directional closures of East 64th Street shall be accompanied by advance deployment of Portable Changeable Messages Signs (PCMS) and continued use during the given scope of work, unless otherwise directed or approved by the City of Tacoma.

2. East 64th Street shall be permitted to be fully closed, with legal allowances for local access, for a period not to exceed five (5) consecutive working days to facilitate the reconstruction of the railroad crossing located approximately 300 feet west of McKinley Avenue. The extent of the closure may expand to the west side of the East 64th Street/McKinley intersection and the east side of the driveway serving the church approximately 250 feet west of the railroad crossing for traffic control purposes and this additional closure area may be utilized for other work so long as the railroad crossing reconstruction is not hindered and local access needs are accommodated.

3. Non-arterial classified roadways are permitted to be closed to traffic so long as local access to properties and businesses is accommodated in the following scenarios:
    - During construction working hours when arrangements in advance have been made through coordination between the requestor, the contractor, and the City;
    - During construction working hours when special/emergency access is needed;
    - During construction working hours when emergency services needs to use the roadway;
    - During construction working hours when passage through/along the work area is the only means to access an intersecting road and/or adjacent property; and
    - During non-construction hours.

4. Project work areas adjacent to or intersecting arterial streets (as identified above) shall not hinder the safety or traffic operations of the arterial street such that two-way vehicular traffic cannot be maintained at all times (which can include parking restrictions to allow for the roadway space needed). If the work is occurring on the arterial street and cannot practicably be completed while maintaining two-way traffic, then a detour must be established using an alternate arterial route to be submitted for review and approval by the City; dates/durations/working hours may be limited at these locations based on the proposed traffic control plan.

5. Spotters to assist pedestrians, and particularly students, through or around the work zone must be available when indicated on the plans and/or when project work intersects a route used by students to/from a school property as indicated below:
    - East 64th Street at A Street

To minimize the disruption to access to adjacent properties, and to Pierce Transit operations, the lane closure area shall be limited to that area of active work and necessary for appropriate lane closure tapers. The Contractor shall stage work to maintain legal access to and egress from all properties at all times. The Contractor shall coordinate with Tacoma School District (Fawcett Elementary School) for any special access needs or accommodations to facilitate parent drop-off/pick-up and/or school bus routing to/from the school sites nearby the project work areas.

A safe pedestrian access shall be provided at all times through the project area and in the process of doing so, no more than one corner at an arterial intersection shall be rendered inaccessible at a given time.

All lane closures shall be coordinated with the adjacent businesses, school/school district, other contractors working within the project vicinity, local transit agencies and the City.
Where, in the opinion of the Engineer, parking is a hazard to through traffic or to the construction work, parking may be restricted either entirely or during the time when it creates a hazard. Signs for restricting parking shall be approved by the City and placed by the Contractor at least twenty-four (24) hours in advance for residential property, and at least forty-eight (48) hours in advance for commercial property. The Contractor shall be responsible for and shall maintain all such signs. The replacement of signs restricting parking shall be as approved by the Engineer.

The Contractor shall notify all property owners and tenants of detours, street and alley closures, or other restrictions that may interfere with their access. Notification shall be at least twenty-four (24) hours in advance for residential property, and at least forty-eight (48) hours in advance for commercial/school property.

Emergency traffic, such as police, fire, and disaster units, shall be provided access at all times. In addition, the Contractor shall coordinate Contractor activities with all disposal firms and transit bus service that may be operating in the project area.

If street closures or lane restrictions, not provided for in the Specifications, are allowed subsequent to award of the contract, an equitable adjustment of the Contract amount shall be negotiated.

It is the intent of the Contract to effectively prevent the deposition of debris on streets in areas of public traffic or where such debris may be transported into a drainage system. When construction operations are such that debris from the work is deposited on the streets, the Contractor shall, at a minimum, remove on a daily basis any deposits or debris which may accumulate on the roadway surface. Should daily removal be insufficient to keep the streets clean, the Contractor shall perform removal operations on a more frequent basis. If the Engineer determines that a more frequent cleaning is impractical or if the Contractor fails to keep the streets free from deposits and debris resulting from the work, the Contractor shall, upon order of the Engineer, provide facilities for and remove all deposits from the tires or between wheels before trucks or other equipment will be allowed to travel over paved streets. Should the Contractor fail or refuse to clean the streets in question, or the trucks or equipment in question, the Engineer may order the work suspended at the Contractor's risk until compliance with Contractor's obligations is assured, or the Engineer may order the streets in question cleaned by others and such costs incurred by the City in achieving compliance with these contract requirements, including cleaning of the streets, shall be deducted from moneys due or to become due the Contractor on monthly estimate. The Contractor shall have no claim for delay or additional costs should the Engineer choose to suspend the Contractor's work until compliance is achieved.

The fifth paragraph of this section is supplemented with the following:
An all-weather, functional roadway shall consist of a minimum four inch (4") layer of crushed surfacing base material to be provided and maintained on all roadway areas

disturbed by construction and used to maintain vehicular traffic as required by these Special Provisions.

The unit Contract price for "Crushed Surfacing Base Course," at per ton, as listed in the Proposal shall be full pay for all labor, equipment, and materials required to furnish, place, compact, and grade the material necessary to maintain an all-weather functional roadway.
The Proposal quantity for "Crushed Surfacing Base Course" is intended to provide for the additional material necessary to maintain an all-weather, functional roadway as described above and is an estimate only.

The sixth paragraph of this section is supplemented with the following:

Trenches backfilled with CDF shall be protected from traffic with steel plates. The plates shall remain in place for 24-hours after placement of the CDF or until CDF is compacted or hardened to prevent rutting by construction equipment or traffic.

1-07.23(2) Construction and Maintenance of Detours
(April 1, 2018 Tacoma GSP)
This section is supplemented with the following:

Detour signing during any allowed road closures shall be in accordance with Detour Plans, when included in the Contract Documents. When plans are not included in the Contract Documents, the Contractor shall submit plans for detours in accordance with the “Manual on Uniform Traffic Control Devices (MUTCD)”. In addition, where the Contractor believes an alternate plan will safely and adequately maintain vehicular and pedestrian traffic, the Contractor may submit alternate plans to those for traffic control and detours required by MUTCD or contract documents. Such alternate plans must comply with the MUTCD and shall be in writing and submitted to the Engineer at least fifteen (15) days in advance of their intended use. In general, detouring of arterial traffic must be accomplished on streets designated as City Arterials. Detouring of arterial traffic on non-arterial streets will not be allowed. The acceptance of any alternate plan shall be entirely at the discretion of the Engineer and the Contractor shall have no claim by reason of a plan being rejected or modified, nor shall there be any additional payment by reason of using a substitute plan.

The Contractor shall notify the Engineer three (3) working days in advance of implementation of any street closures/detours allowed under the Contract. Advance notice signing shall be placed a minimum of three (3) working days prior to implementation of any street closure/detour.

A minimum of three (3) working days prior to any street closure, the Contractor shall notify all entities below:

Tacoma Fire Dept.	(253-591-5775)
Tacoma Police Dept.	(253-591-5932)
LESA Communications Center	(253-798-4721 - Opt.#2)
Tacoma Public Schools Transportation Office	(253-571-1853)
Pierce Transit	(253-581-8001)
Tacoma Environmental Services Solid Waste	(253-591-5544)
Tacoma Public Works Engineering Division	(253-591-5500)

Tacoma Public Works Streets and Grounds (253-591-5495)

1-07.24 Rights of Way
(July 23, 2015 APWA GSP)

Delete this section and replace it with the following:

Street Right of Way lines, limits of easements, and limits of construction permits are indicated in the Plans. The Contractor's construction activities shall be confined within these limits, unless arrangements for use of private property are made.

Generally, the Contracting Agency will have obtained, prior to bid opening, all rights of way and easements, both permanent and temporary, necessary for carrying out the work. Exceptions to this are noted in the Bid Documents or will be brought to the Contractor's attention by a duly issued Addendum.

Whenever any of the work is accomplished on or through property other than public Right of Way, the Contractor shall meet and fulfill all covenants and stipulations of any easement agreement obtained by the Contracting Agency from the owner of the private property. Copies of the easement agreements may be included in the Contract Provisions or made available to the Contractor as soon as practical after they have been obtained by the Engineer.

Whenever easements or rights of entry have not been acquired prior to advertising, these areas are so noted in the Plans. The Contractor shall not proceed with any portion of the work in areas where right of way, easements or rights of entry have not been acquired until the Engineer certifies to the Contractor that the right of way or easement is available or that the right of entry has been received. If the Contractor is delayed due to acts of omission on the part of the Contracting Agency in obtaining easements, rights of entry or right of way, the Contractor will be entitled to an extension of time. The Contractor agrees that such delay shall not be a breach of contract.

Each property owner shall be given 48 hours' notice prior to entry by the Contractor. This includes entry onto easements and private property where private improvements must be adjusted.

The Contractor shall be responsible for providing, without expense or liability to the Contracting Agency, any additional land and access thereto that the Contractor may desire for temporary construction facilities, storage of materials, or other Contractor needs. However, before using any private property, whether adjoining the work or not, the Contractor shall file with the Engineer a written permission of the private property owner, and, upon vacating the premises, a written release from the property owner of each property disturbed or otherwise interfered with by reasons of construction pursued under this contract. The statement shall be signed by the private property owner, or proper authority acting for the owner of the private property affected, stating that permission has been granted to use the property and all necessary permits have been obtained or, in the case of a release, that the restoration of the property has been satisfactorily accomplished. The statement shall include the parcel number, address, and date of signature. Written releases must be filed with the Engineer before the Completion Date will be established.

END OF SECTION

1-08 PROSECUTION AND PROGRESS

Add the following new section:

1-08.0 Preliminary Matters
(May 25, 2006 APWA GSP)

1-08.0(1) Preconstruction Conference
(October 10, 2008 APWA GSP)

Prior to the Contractor beginning the work, a preconstruction conference will be held between the Contractor, the Engineer and such other interested parties as may be invited. The purpose of the preconstruction conference will be:

1. To review the initial progress schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for progress payment, notifications, approvals, submittals, etc.;
4. To establish normal working hours for the work;
5. To review safety standards and traffic control; and
6. To discuss such other related items as may be pertinent to the work.

The Contractor shall prepare and submit at the preconstruction conference the following:

1. A breakdown of all lump sum items;
2. A preliminary schedule of working drawing submittals; and
3. A list of material sources for approval if applicable.

Add the following new section:

1-08.0(2) Hours of Work
(March 3, 2008 Tacoma GSP)

Except in the case of emergency or unless otherwise approved by the Contracting Agency, the normal straight time working hours for the contract shall be any consecutive 8-hour period between 7:00 a.m. and 6:00 p.m. of a working day with a maximum 1-hour lunch break and a 5-day work week. The normal straight time 8-hour working period for the contract shall be established at the preconstruction conference or prior to the Contractor commencing the work.

If a Contractor desires to perform work on holidays, Saturdays, Sundays, or before 7:00 a.m. or after 6:00 p.m. on any day, the Contractor shall apply in writing to the Engineer for permission to work such times. Permission to work longer than an 8-hour period between 7:00 a.m. and 6:00 p.m. is not required. Such requests shall be submitted to the Engineer no later than noon on the working day prior to the day for which the Contractor is requesting permission to work.

Permission to work between the hours of 9:00 p.m. and 7:00 a.m. during weekdays and between the hours of 9:00 p.m. and 9:00 a.m. on weekends or holidays may also be subject to noise control requirements. Approval to continue work during these hours may be revoked at any time the Contractor exceeds the Contracting Agency's noise control regulations or complaints are received from the public or adjoining property owners regarding the noise from the Contractor's operations. The Contractor shall have no claim for damages or delays should such permission be revoked for these reasons.

Permission to work Saturdays, Sundays, holidays or other than the agreed upon normal straight time working hours Monday through Friday may be given subject to certain other conditions set forth by the Contracting Agency or Engineer. These conditions may include but are not limited to: requiring the Engineer or such assistants as the Engineer may deem necessary to be present during the work; requiring the Contractor to reimburse the Contracting Agency for the costs in excess of straight-time costs for Contracting Agency employees who worked during such times, on non-Federal aid projects; considering the work performed on Saturdays and holidays as working days with regards to the contract time; and considering multiple work shifts as multiple working days with respect to contract time even though the multiple shifts occur in a single 24-hour period. Assistants may include, but are not limited to, survey crews; personnel from the Contracting Agency's material testing lab; inspectors; and other Contracting Agency employees when in the opinion of the Engineer, such work necessitates their presence.

Add the following new section:

1-08.0(3) Reimbursement for Overtime Work of Contracting Agency Employees (September 29, 2009 Tacoma GSP)

Where the Contractor elects to work on a Saturday, Sunday, or holiday, or longer than an 8-hour work shift on a regular working day, as defined in the Standard Specifications, such work shall be considered as overtime work. On all such overtime work, city staff may be required at the discretion of the Engineer. In such case, the Contracting Agency may deduct from amounts due or to become due to the Contractor for the costs in excess of the straight-time costs for employees of the Contracting Agency required to work overtime hours.

The Contractor by these specifications does hereby authorize the Engineer to deduct such costs from the amount due or to become due to the Contractor.

1-08.1 Subcontracting - D/M/WBE Reporting
(September 29, 2009 Tacoma GSP)

The eighth paragraph is revised to read:

On all projects funded with Contracting Agency funds only, the Contractor shall certify to the actual amounts paid Disadvantaged, Minority, or Women's Business Enterprise firms that were used as subcontractors, lower tier subcontractors, manufacturers, regular dealers, or service providers on the contract. <u>This certification shall be submitted to the Engineer, on the form provided by the Engineer, 20 calendar days after physical completion of the contract.</u>

1-08.1 Subcontracting
(May 17, 2018 APWA GSP, Option B)

Delete the eighth paragraph.

Revise the ninth paragraph to read:

The Contractor shall comply with the requirements of RCW 39.04.250, 39.76.011, 39.76.020, and 39.76.040, in particular regarding prompt payment to Subcontractors. Whenever the Contractor withholds payment to a Subcontractor for any reason including

disputed amounts, the Contractor shall provide notice within 10 calendar days to the Subcontractor with a copy to the Contracting Agency identifying the reason for the withholding and a clear description of what the Subcontractor must do to have the withholding released. Retainage withheld by the Contractor prior to completion of the Subcontractors work is exempt from reporting as a payment withheld and is not included in the withheld amount. The Contracting Agency's copy of the notice to Subcontractor for deferred payments shall be submitted to the Engineer concurrently with notification to the Subcontractor.

1-08.3(2)A Type A Progress Schedule
(March 13, 2012 APWA GSP)
Revise this section to read:

The Contractor shall submit 4 copies of a Type A Progress Schedule no later than at the preconstruction conference, or some other mutually agreed upon submittal time. The schedule may be a critical path method (CPM) schedule, bar chart, or other standard schedule format. Regardless of which format used, the schedule shall identify the critical path. The Engineer will evaluate the Type A Progress Schedule and approve or return the schedule for corrections within 15 calendar days of receiving the submittal.

1-08.4 Prosecution of Work
Delete this section and replace it with the following:

1-08.4 Notice to Proceed and Prosecution of Work
(July 23, 2015 APWA GSP)

Notice to Proceed will be given after the contract has been executed and the contract bond and evidence of insurance have been approved and filed by the Contracting Agency. The Contractor shall not commence with the work until the Notice to Proceed has been given by the Engineer. The Contractor shall commence construction activities on the project site within ten days of the Notice to Proceed Date, unless otherwise approved in writing. The Contractor shall diligently pursue the work to the physical completion date within the time specified in the contract. Voluntary shutdown or slowing of operations by the Contractor shall not relieve the Contractor of the responsibility to complete the work within the time(s) specified in the contract.

When shown in the Plans, the first order of work shall be the installation of high visibility fencing to delineate all areas for protection or restoration, as described in the Contract. Installation of high visibility fencing adjacent to the roadway shall occur after the placement of all necessary signs and traffic control devices in accordance with 1-10.1(2). Upon construction of the fencing, the Contractor shall request the Engineer to inspect the fence. No other work shall be performed on the site until the Contracting Agency has accepted the installation of high visibility fencing, as described in the Contract.

1-08.5 Time for Completion
(March 16, 2016 Tacoma GSP)
Revise the third and fourth paragraphs to read:

Contract time shall begin on the first working day following the Notice to Proceed Date.

Each working day shall be charged to the contract as it occurs, until the contract work is physically complete. If substantial completion has been granted and all the authorized working days have been used, charging of working days will cease. Each week the Engineer will provide the Contractor a statement that shows the number of working days: (1) charged to the contract the week before; (2) specified for the physical completion of the contract; and (3) remaining for the physical completion of the contract. The statement will also show the nonworking days and any partial or whole day the Engineer declares as unworkable. Within 10 calendar days after the date of each statement, the Contractor shall file a written protest of any alleged discrepancies in it. To be considered by the Engineer, the protest shall be in sufficient detail to enable the Engineer to ascertain the basis and amount of time disputed. By not filing such detailed protest in that period, the Contractor shall be deemed as having accepted the statement as correct. If the Contractor is approved to work 10 hours a day and 4 days a week (a 4-10 schedule) and the fifth day of the week in which a 4-10 shift is worked would ordinarily be charged as a working day then the fifth day of that week will be charged as a working day whether or not the Contractor works on that day.

Revise the sixth paragraph to read:

The Engineer will give the Contractor written notice of the completion date of the contract after all the Contractor's obligations under the contract have been performed by the Contractor. The following events must occur before the Completion Date can be established:

1. The physical work on the project must be complete; and
2. The Contractor must furnish all documentation required by the contract and required by law, to allow the Contracting Agency to process final acceptance of the contract. The following documents must be received by the Project Engineer prior to establishing a completion date:
   a. Certified Payrolls (per Section 1-07.9(5)).
   b. Material Acceptance Certification Documents
   c. Reports of Amounts Credited as SBE Participation, as required by the Contract Provisions.
   d. Final Contract Voucher Certification
   e. Copies of the approved "Affidavit of Prevailing Wages Paid" for the Contractor and all Subcontractors
   f. Property owner releases per Section 1-07.24

This section is supplemented with the following:
(March 1, 2004 Tacoma GSP)

This project shall be physically completed within *200* working days.

1-08.9 Liquidated Damages
(August 14, 2013 APWA GSP)
Revise the fourth paragraph to read:

When the Contract Work has progressed to Substantial Completion as defined in the Contract, the Engineer may determine that the work is Substantially Complete. The Engineer will notify the Contractor in writing of the Substantial Completion Date. For overruns in Contract time occurring after the date so established, the formula for liquidated damages shown above will not apply. For overruns in Contract time occurring

after the Substantial Completion Date, liquidated damages shall be assessed on the basis of direct engineering and related costs assignable to the project until the actual Physical Completion Date of all the Contract Work. The Contractor shall complete the remaining Work as promptly as possible. Upon request by the Project Engineer, the Contractor shall furnish a written schedule for completing the physical Work on the Contract.

END OF SECTION

1-09 MEASUREMENT AND PAYMENT

1-09.2(1) General Requirements for Weighing Equipment
(July 23, 2015 APWA GSP, Option 2)

Revise item 4 of the fifth paragraph to read:

4. Test results and scale weight records for each day's hauling operations are provided to the Engineer daily. Reporting shall utilize WSDOT form 422-027, Scaleman's Daily Report, unless the printed ticket contains the same information that is on the Scaleman's Daily Report Form. The scale operator must provide AM and/or PM tare weights for each truck on the printed ticket.

1-09.6 Force Account
(October 10, 2008 APWA GSP)

Supplement this Section with the following:

The Contracting Agency has estimated and included in the Proposal, dollar amounts for all items to be paid per force account, only to provide a common proposal for Bidders. All such dollar amounts are to become a part of Contractor's total bid. However, the Contracting Agency does not warrant expressly or by implication, that the actual amount of work will correspond with those estimates. Payment will be made on the basis of the amount of work actually authorized by Engineer.

(January 13, 2011 Tacoma GSP)

Item #3 of this Section is supplemented with the following:

The Contractor shall submit a comprehensive summary list of all equipment anticipated to be used on the project and their associated AGC/WSDOT Equipment Rental Rates. The list shall include the contractor's equipment number, make, model, year, operation rate, standby rate, applicable attachments and any other applicable information necessary to determine the applicable rates in accordance with this section. In addition, the contractor shall submit an Equipment Watch rate sheet (www.equipmentwatch.com) for each piece of equipment in the summary list. Access to the Equipment Watch web site is available at the City's Construction Management Office.

1-09.9 Payments
(March 13, 2012 APWA GSP)

Delete the first four paragraphs and replace them with the following:

The basis of payment will be the actual quantities of Work performed according to the Contract and as specified for payment.

The Contractor shall submit a breakdown of the cost of lump sum bid items at the Preconstruction Conference, to enable the Project Engineer to determine the Work performed on a monthly basis. A breakdown is not required for lump sum items that include a basis for incremental payments as part of the respective Specification. Absent a lump sum breakdown, the Project Engineer will make a determination based on information available. The Project Engineer's determination of the cost of work shall be final.

Progress payments for completed work and material on hand will be based upon progress estimates prepared by the Engineer. A progress estimate cutoff date will be established at the preconstruction conference.

The initial progress estimate will be made not later than 30 days after the Contractor commences the work, and successive progress estimates will be made every month thereafter until the Completion Date. Progress estimates made during progress of the work are tentative, and made only for the purpose of determining progress payments. The progress estimates are subject to change at any time prior to the calculation of the final payment.

The value of the progress estimate will be the sum of the following:

1. Unit Price Items in the Bid Form — the approximate quantity of acceptable units of work completed multiplied by the unit price.
2. Lump Sum Items in the Bid Form — based on the approved Contractor's lump sum breakdown for that item, or absent such a breakdown, based on the Engineer's determination.
3. Materials on Hand — 100 percent of invoiced cost of material delivered to Job site or other storage area approved by the Engineer.
4. Change Orders — entitlement for approved extra cost or completed extra work as determined by the Engineer.

Progress payments will be made in accordance with the progress estimate less:

1. Retainage per Section 1-09.9(1), on non FHWA-funded projects;
2. The amount of progress payments previously made; and
3. Funds withheld by the Contracting Agency for disbursement in accordance with the Contract Documents.

Progress payments for work performed shall not be evidence of acceptable performance or an admission by the Contracting Agency that any work has been satisfactorily completed. The determination of payments under the contract will be final in accordance with Section 1-05.1.

This section is supplemented with the following:
(January 6, 2015 Tacoma GSP)

Breakdowns of all lump sum items shall be provided for all lump sum items and shall include all costs for labor, equipment, materials, and taxes (as applicable) associated with the lump sum item. Washington State Department of Revenue Rules 170 and 171 apply to lump sum items per Section 1-07.2 of the WSDOT State Amendments to the Standard Specifications.

Stockpiled Material - The point of acceptance of stockpiled material for payment and quality shall be at the time of incorporation into the contract.

1-09.9(1) Retainage
(May 10, 2006 Tacoma GSP)
The fourth paragraph is supplemented with the following:

6. A “General Release to the City of Tacoma” is on file with the Contracting Agency.
7. A release has been obtained from the City of Tacoma’s City Clerk’s Office.

1-09.13(3)A Administration of Arbitration
(October 1, 2005 APWA GSP)
Revise the third paragraph to read:

The Contracting Agency and the Contractor mutually agree to be bound by the decision of the arbitrator, and judgment upon the award rendered by the arbitrator may be entered in the Superior Court of the county in which the Contracting Agency’s headquarters are located. The decision of the arbitrator and the specific basis for the decision shall be in writing. The arbitrator shall use the contract as a basis for decisions.

END OF SECTION

1-10 TEMPORARY TRAFFIC CONTROL

1-10.1 General
(April 7, 2014, WSDOT GSP)
Section 1-10.1 is supplemented with the following:

Temporary Pedestrian Access
(******)
All pedestrian access paths shall be maintained per Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) and Specification Sections 1-07.23, and 1-10. The Contractor shall submit the proposed material type for "Temporary Pedestrian Access" to the Engineer for approval prior to construction. The Contractor shall maintain each pedestrian access and make repairs as directed for the duration of the construction, until the sidewalk and entry ways are finished at each respective location.

A safe pedestrian access shall be provided at all times through the project area and in the process of doing so, no more than one corner at an arterial intersection shall be rendered inaccessible at a given time.

Automated Flagger Assistance Devices
Automated Flagger Assistance Devices (AFADs) shall meet the requirements of the MUTCD.

1-10.1(2) Description
(January 11, 2006 Tacoma GSP)
The first sentence of the fourth paragraph is revised to read:

The Contractor shall keep lanes, on-ramps, and off-ramps open to traffic at all times except when Work requires closure(s) that have been requested and approved in accordance with section 1-10.2(2).

The third sentence of the fourth paragraph is revised to read:

Approved lane and ramp closures shall be for the minimum time required to complete the Work.

This section is supplemented by the following:

Only uniformed off-duty police officers shall be used to control traffic when it is necessary to override or provide traffic control at signalized intersections.

The City will make all necessary temporary adjustments to existing traffic signals and traffic signal activators.

Existing signs shall not be removed until the Contractor has provided for temporary measures sufficient to safeguard and direct traffic after existing signs have been removed. Preservation of temporary traffic control and street name signs shall be the sole responsibility of the Contractor.

As the work progresses and permits, temporarily relocated and/or removed traffic signs shall be reset in their permanent location. Permanent signs and other traffic control devices damaged or lost by the Contractor shall be replaced or repaired at the Contractor's expense.

Traffic Control Management
1-10.2(1) General
(January 3, 2017)
Section 1-10.2(1) is supplemented with the following:

Only training with WSDOT TCS card and WSDOT training curriculum is recognized in the State of Washington. The Traffic Control Supervisor shall be certified by one of the following:

The Northwest Laborers-Employers Training Trust
27055 Ohio Ave.
Kingston, WA 98346
(360) 297-3035

Evergreen Safety Council
12545 135th Ave. NE
Kirkland, WA 98034-8709
1-800-521-0778

The American Traffic Safety Services Association
15 Riverside Parkway, Suite 100
Fredericksburg, Virginia 22406-1022
Training Dept. Toll Free (877) 642-4637
Phone: (540) 368-1701

Section 1-10.3 is supplemented with the following:

1-10.3(2)F Signalized Intersections
(January 11, 2006 Tacoma GSP)

When construction operations are such that an existing traffic signal is required to be overridden to allow for traffic control measures, the signal shall be overridden only by a uniformed off-duty police officer.

All off-duty officers shall be commissioned within the State of Washington.

1-10.3(3)A Construction Signs
(January 11, 2006 Tacoma GSP)
The fifth paragraph is revised to read:

Signs, posts, or supports that are lost, stolen, damaged, destroyed, or which the Engineer deems to be unacceptable while their use is required on the project shall be replaced by the Contractor at their expense.

1-10.3(3)C Portable Changeable Message Sign
(August 4, 2010 Tacoma GSP)
This section is supplemented with the following:

Portable Changeable Message Signs shall be required on arterials streets where construction occurs for durations longer than seven (7) calendar days. Signs shall be solar charged and programmable. Signs shall be provided a minimum of seven (7) calendar days prior to construction and remain through the duration of the construction on the arterial street. Signs shall be provided on each end of the arterial street construction zone notifying oncoming traffic of the construction conditions. All costs associated with providing and maintain the signs for the required duration shall be included in the proposal item, "Project Temporary Traffic Control", per lump sum

1-10.4(2) Item Bids with Lump Sum for Incidentals
(January 11, 2006 Tacoma GSP)
This section is supplemented with the following:

No unit of measure will apply to the position of traffic control manager and it will be considered incidental to unit contract prices.

"Uniformed Police Officer for Traffic Control" will be measured by the hour. Portions of an hour will be rounded up to a whole hour.

1-10.4(3) Reinstating Unit Items with Lump Sum Traffic Control
Section 1-10.4(3) is supplemented with the following:

(August 2, 2004)
The bid proposal contains the item **"Project Temporary Traffic Control," lump sum** and the additional temporary traffic control items listed below. The provisions of Section 1-10.4(1), Section 1-10.4(3), and Section 1-10.5(3) shall apply.

***
"Pedestrian Traffic Control," lump sum
"Uniformed Police Officer for Traffic Control", per hour
***

1-10.5(2) Item Bids with Lump Sum for Incidentals
(January 11, 2006 Tacoma GSP)
This section is supplemented with the following:

"Uniformed Police Officer for Traffic Control", per hour
The unit contract price, when applied to the number of units measured for this item in accordance with Section 1-10.4(2), shall be full compensation for all cost incurred by the Contractor in performing the work in accordance with Section 1-10.3(2)F.

END OF SECTION

Add the following new Section:

1-11 GREENROADS DOCUMENTATION

1-11.1 Description

Greenroads is a sustainability rating system for roadway design and construction. It is applicable to all roadway projects including new, reconstruction and rehabilitation.

Greenroads is a collection of sustainability best practices, called "credits," that relate to roadway design and construction. Achieving these credits can earn points toward a total score for the project, and in general, this Greenroads™ score can be used as an indicator of sustainability for the roadway.

Templates for many of the submittals included herein are provided in Appendix G in these Special Provisions. Word format files will be made available to the successful contractor upon award of the Contract. These templates are provided for the Contractor's convenience but will require modification to fully meet the requirements herein.

The Contractor is advised that the level of effort to complete these tasks may be substantial.

1-11.2 Vacant

1-11.3 Construction Requirements

The Contractor shall establish, implement and maintain several plans and tracking systems during the project to satisfy 4 Greenroads Project Requirements credits (0 points) as noted in these Special Provisions, and earn the credits selected by the Engineer as summarized below. These resulting points will count toward the total score. More information about each credit can be found at the Greenroads website at: http://www.greenroads.org/

Credit No.	Credit Title	Points
CA-1	Environmental Excellence	3 (1 EC)
CA-2	Workzone Health and Safety	2 (1 EC)
CA-6	Workzone Water Use	2
CA-10	Fair and Skilled Labor	1
CA-11	Local Economic Development	1
MD-2	Recycled Materials	2 to 4
MD-5	Local Materials	5
UC-6	Lighting and Controls	2
CE-4	Local Values	3
	TOTAL	**21-23 (2 EC)**

Upon submittal to the City, each Plan will be reviewed for conformance with Greenroads requirements. Any approvals issued by the City will be conditional, contingent upon final approval by Greenroads staff. Final approval may not occur until after the project has reached physical completion.

1-11.3(1) Quality Control Plan

The Contractor shall establish, implement, and maintain a formal construction Quality Control Plan (QCP). The QCP must address the following quality control elements:

1. Key quality control personnel, their responsibilities and their qualifications (résumés, certifications, etc.).
2. Procedures used to control quality during construction including (as a minimum):
   - Items to be monitored (including pavement mix designs)
   - Testing to be done (including testing standards and frequency)
3. When corrective action is required (action limits)
   - Procedures to implement corrective action
   - Procedures to modify QCP if ineffective or when modifications are necessary

A template is available in Appendix G-1 in these Special Provisions.

1-11.3(2) Pollution Prevention Plan

The prime contractor shall establish, implement, and maintain a formal construction Pollution Prevention Plan (PPP) that applies throughout construction and to all subcontractors, signed by an authorized party responsible for pollution prevention activities. The PPP must be in place and approved by the Owner prior to the start of construction and be available on site.

The PPP must address the following pollution prevention elements:

1. Key pollution prevention personnel, their responsibilities, and their qualifications
2. Schedule of activities for construction operations
3. A list of expected pollutants generated by construction operations
4. Relevant regulatory compliance information, including minimum effluent and air quality standards
5. Identification of buffers and potentially impacted bodies of water
6. Procedures used to control pollutants and prevent pollution, including but not limited to effluent from stormwater and snowmelt, non-stormwater discharges (e.g. groundwater, washing water, other fluids from chemicals, etc.), erosion and dust control, spills, and other human health and environmental hazards, such as contaminated soils or water.
7. Emergency procedures, including:
   a. a. A list of preventive measures and site controls

b. A map of locations for installed site controls

8. Procedures for inspection and maintenance of preventive measures and site controls
9. Procedures for corrective action for non-compliance with the plan
10. Expected staff training needs

Prepare and record any corrective actions made during construction of the project, including corrective actions due to non-compliance events.

1-11.3(3) Waste Management and Site Recycling Plan

Establish, implement, and maintain a formal Construction and Demolition Waste Management Plan (CWMP) during Project construction. The CWMP must clearly describe the plan for implementing, communicating, monitoring, and maintaining appropriate recycling and diversion practices on site. The CWMP must be in place at the start of construction and cover all project activities, including subcontractor work.

The CWMP should be included in the project contract documents and identify, at minimum, these items:

1. Type of construction waste
2. Expected or actual tonnage
3. Costs and fees for landfills, recovery facilities, and hauling
4. Contact information of the party responsible for hauling
5. Destination of waste (e.g. recycling facility, landfill, contractor's backyard)
6. Contact information of responsible party for disposal or materials recovery site
7. Locations of site receptacles
8. Diversion and recovery goals and targets
9. Proper handling for recyclable or reusable materials
10. Training requirements for all site employees related to waste management and recycling
11. Means of corrective action

Collect waste summary reports or diversion reports for any facility receiving waste or recyclables from the Project. Report any modifications to the CWMP and provide supporting evidence of the monitoring activities that occur throughout construction.

A template is available in Appendix G-2 in these Special Provisions.

1-11.3(4) Noise Mitigation Plan

The Contractor shall establish, implement, and maintain a formal Noise Mitigation Plan (NMP) during construction.

The NMP must address, at minimum, the following elements:

1. Responsible party for noise mitigation activities, contact information, their responsibilities and their qualifications. Include information for NMP preparer, if applicable or completed by an outside party.
2. Project location and distance to closest receptor of noise. Include a description of the surrounding zoning and parcel information (i.e., commercial, residential, hospitals, schools, parks, sensitive habitat).
3. A list of proposed construction activities (e.g. demolition, excavation, paving, bridge foundations, finishing).
4. Dates and working hours of proposed construction activities.
5. A list of noise-generating devices used during each construction activity listed in #3.
6. A list of noise-mitigating devices used during each construction activity listed in #3, including personal safety equipment requirements for all site employees.
7. Noise permit numbers, agency or local authority policies associated with construction work, as applicable.
8. Description of noise monitoring standards, methods, and acceptable levels.
9. Description of correction procedures for non-compliant noise levels.
10. Signature of responsible party.

A template is available in Appendix G-3 in these Special Provisions.

1-11.3(5) Environmental Training

The Contractor shall provide information and training to on-site workers to identify environmental issues, hazards and best management practices to minimize environmental impacts.

The Contractor shall provide, to the Engineer, an environmental training plan that is customized to the project, including:

1. List of the types of project personnel to be trained. This may be a list by job-type or by employer need not contain actual employee names.
2. Description of the types, goals and objectives of training to be given.
3. A process to track training efforts, including dates, means (e.g., online, classroom, field training), topics, the identification of those participating in training, and attendance numbers
4. A process to measure of training effectiveness such as self-assessment, pre-test and post- test, and productivity measurement.

A template is available in Appendix G-4 in these Special Provisions. The process for measuring the training effectiveness is not included in the template and will need to be proposed by the Contractor and approved by Greenroads.

1-11.3(6) Environmental Compliance Manager

The Contractor shall designate an environmental compliance manager that is accountable for environmental performance on the Project's construction site. This individual shall maintain a professional credential in environmental compliance that is granted by an independent third-party authority or accreditation program. The environmental compliance manager shall document all compliance issues that occur during construction and track the Project's environmental commitments from Project development through construction.

1-11.3(7) Environmental Violation Reporting

After final completion and acceptance of construction, the Contractor shall provide a signed letter from a designated representative of the Project stating that zero environmental violations were incurred as a result of the Project. This requirement shall only be required if zero environmental violations occurred.

1-11.3(8) Safety Officer

The Contractor shall designate a safety officer who is accountable for safety performance on the Project's construction site. This individual shall maintain a professional credential in construction worksite safety that is granted by an independent third-party safety authority or accreditation program. The safety officer shall document all reportable injuries and illnesses on the Occupational Health & Safety Administration (OSHA) Form 300, scoped specifically to include reportable information for the Greenroads Project only. The OSHA 300 form can be accessed here:

osha.gov/recordkeeping/new-osha300form1-1-04.pdf

1-11.3(9) Injury Reporting

After final completion and acceptance of construction, the Contractor shall provide a signed letter that states there were zero OSHA reportable injuries or illnesses as a result of the Project. This requirement shall only be required if zero OSHA 300 reportable injuries or illnesses occurred.

1-11.3(10) Workzone Water Use

Create a spreadsheet that records total water use during Project construction. This spreadsheet should identify, at minimum:

- Dates of use
- Amounts of use
- Locations and sources of water used
- Potability of water sources
- Each construction activity requiring water use
- Total water quantity used in each construction activity
- Method of measurement to determine total quantity used
- Disposal method for unused water
- Type of water use permit, if any
- Total cost of water used from each source, if any

Report the percentage of non-potable water sources used for construction activities, expressed as a percentage of total water use.

A template is available in Appendix G-5 in these Special Provisions

1-11.3(11) Fair and Skilled Labor

The Contractor shall compile in one document (PDF format), all of the approved statements of intent, certified payroll, and affidavits from all contractors and subcontractors showing that 100% of all paid individuals involved in the construction contract are paid prevailing wages. This document shall be provided to the City at the completion of construction.

1-11.3(12) Local Employment Reporting

The Contractor shall provide reporting of the total number of employees that live within 50 miles of the project site. This includes all employees for the prime contractor and lower tier sub-contractors who are paid through work done as part of this project.

Prior to submittal, remove all personally identifying information from payroll records, including addresses and identification numbers.

The Contractor may select one of the following options, at their discretion

1. On a map, draw a circle with a radius of 50 miles (80.5 km) around the geographic center of the Project.
2. Use contractor payroll records to identify the total number of paid employees and apprentices with primary residences within the circle.
3. Report the total number of paid employees and apprentices.
4. Show that a minimum of 50% of the paid employees and apprentices have primary residences within the circle. Provide the exact percentage.

OR

1. On a map, draw a circle with a radius of 50 miles (80.5 km) around the geographic center of the Project.
2. Use contractor payroll records to identify paid employees and apprentices with primary residences within the circle and the total pay received at the end of construction by these paid employees and apprentices.
3. Report the total wages, benefits, and allowances received by paid employees and apprentices with primary residences within the circle.
4. Show that a minimum of 50% of wages, benefits, and allowances paid are received by paid employees and apprentices that have primary residences within the circle. Provide the exact percentage.

This reporting is most efficiently completed using a GIS or Google Earth software and plotting employees' home addresses and/or zip codes on the map. The map shall be zoomed out far enough to prevent exact locations of homes from being identifiable. Placemarks shall not identify employees or their address.

The map shall be accompanied by a signed letter on the Contractor's letterhead stating the total percentage of employees that reside within the circle.

1-11.4 Measurement

No specific unit of measurement shall be applied to the Lump Sum item “Greenroads Documentation”.

1-11.5 Payment

Payment will be made in accordance with Section 1-04.1 for the following Bid items:

“Greenroads Documentation”, lump sum

The lump sum bid price for “Greenroads Documentation” shall be full compensation for developing and implementing the plans, procedures and reporting specified herein. Work shall include all incidental work and be full compensation for labor, material, tools and equipment necessary to satisfactorily complete the work as defined in these Special Provisions.

END OF SECTION

2-02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS (******)

2-02.1 Description

The first sentence of the first paragraph is revised to read:

The Work described in this section includes relocating, removing and disposing of, or salvaging, materials named in the Special Provisions or as shown on the plans, including all such items that are omitted in bid items outside of Section 2-02.

This section is supplemented with the following:

The Work described in this section also includes test holes according to this special provision, for determining the location and depth of existing utilities or structures.

2-02.3(3) Removal of Pavement, Sidewalks, and Curbs

This section is deleted.

Section 2-02.3 is supplemented with the following:

2-02.3(19)Test Holes

The engineer may at certain locations on the project site need to discover or locate an existing utility or structure that does not have proper as-built information. The contractor shall excavate a small test hole, where directed by the engineer, in determining the location and depth of the existing utility or structure.

The test hole may be excavated by conventional excavation methods or by the use of a vacuum truck. The test hole for the conventional method shall be a minimum of 48” by 48” in width. The test hole shall be no deeper than 17 feet in depth. Gravel borrow shall be used to backfill the excavated hole. The gravel borrow shall be compacted in accordance to section 2-09 of the standard specifications. Three inches of asphalt shall be placed on top of the gravel borrow to provide a driving surface in a travel lane.

2-02.4 Measurement

This section is supplemented with the following:

Measurement of the test hole shall be measured per linear foot from the surface of the existing ground to the bottom of the excavated test hole.

2-02.5 Payment

This section is supplemented with the following:

Payment will be made in accordance with Section 1-04.1, for the following Bid items when they are included in the Proposal:

“Removal of Structure and Obstruction”, per lump sum

Any demolition, relocation, and removal work not specifically included in other bid items shall be paid for under “Removal of Structure and Obstruction”, per lump sum.

"Test Hole", per linear foot

The unit contract price per linear foot for "Test Hole" shall be full pay for all labor, equipment, and materials required to perform potholing, complete and close the test hole, and construct temporary pavement repair in accordance with these specifications, and section 5-04.

For the purpose of providing a common Proposal for all Bidders, the quantity for "Test Hole" has been entered in the Proposal based on 10 test holes to be excavated to prevent construction conflicts. Payment shall be made for the actual quantity used.

END OF SECTION

2-03 ROADWAY EXCAVATION AND EMBANKMENT (******)

2-03.1 Description

The last sentence of the first paragraph is deleted.

2-03.3(5) Slope Treatment

This section is deleted.

2-03.3(19) Removal of Pavement, Sidewalks, Curbs, and Gutters

This section is deleted.

2-03.5 Payment

The Pay Item "Unsuitable Foundation Excavation Incl. Haul" is supplemented with the following:

For the purpose of providing a common Proposal for all Bidders, the Proposal quantity for "Unsuitable Foundation Excavation Incl. Haul" is based on the estimated amount of unsuitable foundation in embankment areas.

END OF SECTION

2-06 SUBGRADE PREPARATION
(September 20, 2018 Tacoma GSP)

2-06.3 Construction Requirements
This section is supplemented with the following:

Subgrade Repair for Subgrade Not Constructed Under Same Contract
Upon removal of pavement, the Contractor and City Inspector shall walk the subgrade surface to determine and delineate any subgrade areas that need to be repaired. Any Subgrade areas that require repair, from the initial walkthrough, shall be determined solely by the City Inspector. Any initial subgrade repairs shall be paid for according to Section 2-06.5(2). Subgrade repair shall be performed in accordance with Section 2-06 and immediately after it has been determined and delineated. In order to minimize damage to the subgrade, the Contractor is encouraged to minimize pavement removal during the work.

Subgrade Maintenance and Protection
Immediately after the contractor constructs the subgrade or completes initial subgrade repair to the City's satisfaction, the contractor shall maintain and protect the subgrade. Any defects or damage of the subgrade thereafter shall be repaired or replaced according to Section 2-06, at the Contractor's expense before placement of any succeeding courses or pavement. Maintenance and protection of the subgrade shall be the responsibility of the Contractor. The Contractor shall be required to take precautionary measures to prevent damage by heavy loads or equipment, as well as from inclement weather.

The Contractor and City Inspector should walk the exposed subgrade on a daily basis to determine if there is damage to the subgrade. Any Subgrade areas that require repair according to this section shall be determined solely by the City Inspector.

2-06.5 Measurement and Payment
This section is supplemented with the following:

Subgrade Maintenance and Protection shall be paid by lump sum and shall apply to all subgrade.

"Subgrade Maintenance and Protection", per lump sum

The lump sum price for "Subgrade Maintenance and Protection" shall be full pay for all material, labor, and equipment for implementation of subgrade maintenance and protection, as determined by the City Inspector.

If the contractor fails to protect the subgrade so that additional subgrade repairs are required as determined by the City Inspector, then the city shall not owe payment for these additional subgrade repairs in accordance with Section 2-06.3.

2-06.5(2) Subgrade Not Constructed Under Same Contract
Item 5 under this section is deleted.

END OF SECTION

2-07 WATERING
(******)

2-07.3 Construction Requirements
The last sentence of the first paragraph is revised to read:

The Engineer may direct that the Contractor apply water during non-working hours such as evenings, weekends, or recognized holidays.

Section 2-07.3 is supplemented with the following:

2-07.3(1) Water Supplied from Hydrants

There is no guarantee that all fire hydrants will be available for use for cleaning, lining, or any other construction activities associated with this project. Prior to construction activities, it shall be the Contractor's responsibility to verify which hydrants will be available by contacting Tacoma Water. The Contractor shall use only those hydrants designated by Tacoma Water.

Water supplied from hydrants governed by Tacoma Water shall be used in strict compliance with the "Operating Procedures for the use of Water Division Hydrants" available at the Tacoma Water Permit Counter.

The Contractor shall obtain a Hydrant Permit prior to start of work by contacting the Water Permit Counter at:

Tacoma Public Utilities
Administrative Building, 2nd floor
3628 South 35th Street
Tacoma, WA 98409
(253) 502-8247

A copy of the approved Hydrant Permit shall be submitted to the Engineer.

Contractor personnel shall be in possession of a valid Tacoma Public Utilities Hydrant Certification Card prior to obtaining a permit. If necessary, contractor personnel shall undergo training to receive the required certification. Contact the Water Permit Counter to set up training as necessary.

There will be no unit of payment and all costs shall be included in appropriate bid items.

END OF SECTION

2-09 STRUCTURE EXCAVATION
(March 17, 2016 Tacoma GSP)

2-09.4 Measurement

This section is supplemented with the following:

Longitudinal Limits. For all storm and sanitary sewers the longitudinal measurement will be from center of manhole to center of manhole or to the inside face of catch basins and similar type structures.

The fourth paragraph is revised to read:

There will be no specific unit of measure for the excavation required for manholes, catch basins, grate inlets, and drop inlets.

2-09.5 Payment

The pay item for "Structure Excavation Class B", is revised to read:

"Structure Excavation Class B", per cubic yard.

The unit Contract price for "Structure Excavation Class B" shall be full payment for all excavation, removal of water; storing, protecting and re-handling of suitable backfill material; backfilling of the trench, compaction of backfill, and all other work necessary for the construction of the sewer trench.

END OF SECTION

2-14 PAVEMENT REMOVAL
(******)

2-14.1 Description

The Work described in this section includes the removal and disposal of pavement surfaces identified on the Plans or as marked in the field.

2-14.2 Pavement Classification

Removal of pavement will be according to type and class based on composition and thickness, as defined below:

Type I Pavement removal where all or portions of the existing pavement is being removed in conjunction with street construction or any other removal not described below for Type II or Type III.

Type II Pavement removal required for the placing of utilities at greater and varying depths, such as sewers.

Type III Pavement removal required for narrow and shallow utility cuts in order to install light cables, conduits and similar shallow utilities.

Class A2 Class A2 pavement removal shall apply to the removal of asphalt concrete, bituminous road surfacing, multiple lift bituminous surface treatments or any combination of these components having an average thickness of two inches or less.

Class A4 Class A4 pavement removal shall apply to the removal of asphalt concrete, bituminous road surfacing, multiple lift bituminous surface treatments or any combination of these components having an average thickness between two inches and four inches.

Class A8 Class A8 pavement removal shall apply to the removal of asphalt concrete, bituminous road surfacing, multiple lift bituminous surface treatments or any combination of these components having an average thickness between four inches and eight inches.

Class C6 Class C6 pavement removal shall apply to all non-reinforced cement concrete pavements or slabs having an average thickness of six inches or less. After the curbs and pavement have been constructed, the Contractor may be required to remove additional sidewalk necessary to provide proper connections and grades, as determined by the Engineer.

Class C12 Class C12 pavement removal shall apply to all non-reinforced cement concrete pavements or slabs having an average thickness of between 6 inches and 12 inches.

Class CA Class CA pavement removal shall apply to all pavements that have a wearing surface of asphalt concrete upon a cement concrete

pavement or, cement concrete base, and for which the total combined thickness of the pavement averages between six inches and twelve inches.

Class H Class H pavement removal shall apply to early type pavement of a cement concrete base with a brick or cobblestone surface and potentially an additional layer of asphalt concrete pavement for which the total combined thickness of the pavement averages between ten inches and twenty inches.

2-14.3 Construction Requirements

All final meetlines shall be sawcut.

Where monolithic cement concrete pavement and curb are being removed, the curb removal shall be considered as pavement removal, and the measurement for payment will be to the back of the curb.

The removal of existing street improvements shall be conducted in such a manner as not to damage utilities and any portion of the improvement that is to remain in place. Any deviation in this matter will obligate the Contractor, at no expense to the Contracting Agency, to repair, replace, or otherwise make proper restoration to the satisfaction of the Engineer.

In the event a pavement averages more than the maximum thickness specified for its class, an additional payment will be made to cover the extra thickness removed by a proportional conversion into additional square yards.

Contractor shall provide a relief sawcut 1-ft in front of all existing buildings.

2-14.3(1) Stair Removal

Removing staircases involves removal and disposal of all concrete, wood, and steel that is part of the staircase including handrails and reinforcing steel. All work shall be done in a manner as not to damage existing features that are not marked for removal.

2-14.3(2) Brick Paver Removal

Removing brick pavers involves removal and disposal of bricks, or removal and storing bricks that are to be reinstalled regardless of the material out of which the brick is made, and including any grout. Work shall be done in a manner as not to damage any bricks that are not designated for removal or any bricks that are to be reinstalled after other work is complete.

2-14.4 Measurement

Pavement removal will be measured per square yard.

Type I pavement removal will be measured in its original position.

Removal of existing stairs will be measured by the linear foot along the centerline of each tread of the staircase, including landings, but excluding the vertical rise of the step.

Removal of brick pavers will be measured by the square yard.

2-14.5 Payment

Payment will be made in accordance with Section 1-04.1.

"Remove Existing Pavement, Type ___Class___", per square yard

All costs associated with saw cutting meet lines shall be included in the unit Contract price for pavement removal.

"Remove Existing Stairs", per linear foot.

The unit contract price for "Remove Existing Stairs" shall be full pay for all labor, materials, and equipment to perform this work including, but not limited to, cutting of concrete and reinforcing steel, removal of handrail and steps, hauling from the site, and disposing of the removed material.

"Remove Existing Pavers", per square yard.

The unit contract price for "Remove Existing Pavers" shall be full pay for all labor, materials, and equipment to perform this work as specified.

END OF SECTION

2-15 CURB AND CURB AND GUTTER REMOVAL (******)

2-15.1 Description

The work described in this section includes the complete removal and disposal of curbs and curb and gutter identified on the Plans or as marked in the field.

2-15.2 Curb Classification

Removal of curb and/or curb and gutter will be based on composition, as defined below:

Integral Curb - Integral curb shall consist of curb that is constructed monolithic with the adjacent cement concrete pavement.

Curb - Curb may consist of cement concrete curb, granite curb, or any other combination of rigid material that extends below the pavement surface elevation.

Extruded/Precast Curb - Extruded or precast curb may consist of asphalt or concrete extruded or precast curb that is installed on a pavement surface.

Curb and Gutter - Curb and gutter may be cement concrete, or a cement concrete curb with a brick gutter on a cement concrete base, or other combination of rigid material.

2-15.3 Construction Requirements

Integral curb removal shall consist of the removal of the curb and the integral base section under the curb. The removal shall be accomplished by sawcutting along the face of the curb.

The removal of the curb and/or curb and gutter shall be conducted in such a manner as not to damage utilities and any portion of the improvement that is to remain in place. Any deviation in this matter will obligate the Contractor, at no expense to the Contracting Agency, to repair, replace, or otherwise make proper restoration to the satisfaction of the Engineer.

2-15.4 Measurement

Curb and curb and gutter removal will be measured per linear foot.

2-15.5 Payment

Payment will be made in accordance with Section 1-04.1.

“Remove Curb”, per linear foot

The unit price per linear foot for “Remove Curb” shall include all classifications of concrete curb removal encountered on the project. All costs associated with saw cutting necessary for the removal of curb and/or curb and gutter shall be included in the unit contract price for removal.

END OF SECTION

2-16 REMOVAL OF CATCH BASINS, MANHOLES, CURB INLETS, ETC. (******)

2-16.1 Description

The Work described in this section includes the complete removal and disposal of catch basins, manholes, and curb inlets as identified on the Plans.

2-16.2 Vacant

2-16.3 Construction Requirements

Where the structures are removed, the excavation shall be backfilled with native material if deemed suitable by the Engineer or imported backfill material.

Material determined by the Engineer to be unsuitable at the time of excavation shall be removed and replaced with imported backfill material.

All pipe openings shall be plugged in accordance with 7-08.3(4).

The removal of the structures shall be conducted in such a manner as not to damage utilities and any portion of the improvement that is to remain in place. Any deviation in this matter will obligate the Contractor, at no expense to the Contracting Agency, to repair, replace, or otherwise make proper restoration to the satisfaction of the Engineer.

2-16.4 Measurement

The removal of catch basins, manholes, and curb inlets will be measured per each.

2-16.5 Payment

Payment will be made in accordance with Section 1-04.1.

“Remove Catch Basin”, per each

“Remove Manhole”, per each

“Remove Curb Inlet”, per each

All costs associated with the placement and compaction of the backfill material shall be included in the unit Contract price for removal.

END OF SECTION

3-04 ACCEPTANCE OF AGGREGATE
(April 1, 2012 Tacoma GSP)

3-04.1 Description
The first and third paragraphs are deleted.

The fourth paragraph is revised to read:

Nonstatistical evaluation will be used for the acceptance of aggregate materials.

3-04.3(1) General
The first sentence is revised to read:

For the purpose of acceptance sampling and testing, all test results obtained for a material type will be evaluated collectively.

3-04.3(4) Testing Results
This section is replaced with the following:

The results of all acceptance testing will be provided by the City's Project Engineer within 3 working day of testing.

3-04.3(6) Statistical Evaluation
This section is deleted:

END OF SECTION

4-04 BALLAST AND CRUSHED SURFACING
(March 17, 2003 Tacoma GSP)

4-04.5 Payment

This section is supplemented with the following:

All costs for labor, equipment, and materials required to furnish, place, and compact the crushed surfacing top course for all asphalt concrete approaches and non-paved approaches shall be included in the unit Contract price for “Crushed Surfacing Top Course”, per ton.

END OF SECTION

The following new section is added:

4-05 FULL DEPTH RECLAMATION

4-05.1 Description

This Work shall consist of blending cementitious material and water into the existing road and subgrade soils to produce a suitable subgrade to support the finished roadway, as shown in the plans and in the manner described in these specifications.

4-05.2 Materials

Materials shall meet the requirements of the following sections:

Portland Cement	9-01
Water	9-25
Cationic Emulsified Asphalt	9-02.1(6)

4-05.3 Construction Requirements

After the existing pavement surface is pulverized and any existing planting areas in the final roadway area stripped to remove all organic matter and topsoil, Portland Cement shall be evenly mixed at the rate specified to the depth shown in the plans. Mixing of Portland Cement with the existing soil shall be done in a manner as to create a uniform distribution over the whole area and full depth. Care shall be taken during mixing as to not damage any existing utilities and services.

Final grading of the cement-modified subgrade shall be accomplished within 3 hours of beginning the incorporation of cement into the existing subgrade.

Within 2 hours of completing final grading emulsified asphalt or other curing sealant shall be applied to the surface of the subgrade. Construction traffic shall not be allowed to on the modified soil until 4 days after completion of the work. Alternatively, if the Contractor demonstrates that the subgrade is firm, unyielding, and will not sustain damage from construction traffic paving operations may commence.

4-05.3(1) Application Rate

The Contractor shall apply and blend Portland Cement with the existing soils at a rate of 5.75 pounds per cubic foot of soil.

4-05.4 Measurement

Full Depth Reclamation will be paid by the square yard of fully treated subgrade, no deduction will be made for areas left untreated due to conflicting utility structures.

4-05.5 Payment

Payment will be made for each of the following bid items that are included in the Proposal:

“Full Depth Reclamation”, per square yard.

The unit contract price per square yard for “Full Depth Reclamation” shall be full pay for all labor, materials, and equipment to complete the work as specified.

END OF SECTION

Supplement Division 4 with the following new section:

4-06 ASPHALT TREATED BASE (ATB)
(June 16, 2016 Tacoma GSP)

4-06.1 Description

Asphalt treated base (ATB) consists of a compacted course of base material which has been weatherproofed and stabilized by treatment with an asphalt binder.

The Work shall consist of one or more courses of asphalt treated base placed on the Subgrade in accordance with these Specifications and in conformity with the lines, grades, thicknesses, and typical cross-sections shown in the Plans or as staked.

4-06.2 Materials

Materials shall meet the requirements of the following sections:

Asphalt	9-02.1
Anti-Stripping Additive	9-02.4
Aggregates	9-03.6

The grade of paving asphalt shall be as required in the Contract.

4-06.3 Construction Requirements

4-06.3(1) Asphalt Mixing Plant

Asphalt mixing plants for asphalt treated base shall meet the following requirements:

Heating
The plant shall be capable of heating the aggregates to the required temperature.

Proportioning
The mixing plant shall be capable of proportioning: the aggregates to meet the Specifications, and the asphalt binder will be introduced at the rate specified in the approved mix design. If the aggregates are supplied in two or more sizes, means shall be provided for proportioning or blending the different sizes of aggregates to produce material meeting the Specification requirements.

Recycled asphalt pavement (RAP) may be used in the production of ATB. If utilized, the amount of RAP shall not exceed 30 percent of the total weight of the ATB. The final gradation and asphalt binder content will conform to the approved Job Mix Formula (JMF). ATB will be evaluated under Commercial Evaluation as shown in section 9-03.8(7). Va limts under 9-03.8(7) are excluded from ATB evaluation criteria.

Mixing
The mixer shall be capable of producing a uniform mixture of uniformly coated aggregates meeting the requirements of these Specifications.

4-06.3(2) Preparation of Aggregates

Aggregates for asphalt treated base shall be stockpiled before use in accordance with the requirements of Section 3-02.

The aggregates shall be heated as required by the Engineer.

4-06.3(2)A Mix Design

The mix design requirements for asphalt treated base shall be as described in Section 9-03.6(3). Ndesign will be 100 gyrations for all ATB design applications. The asphalt binder shall be PG 64-22 unless specifically altered in the project specifications. The proposed mix design will be submitted for review on WSDOT Form 350-042 with included notes applicable to the ATB design evaluation.

4-06.3(3) Vacant

4-06.3(4) Mixing

The asphalt treated base shall be mixed in accordance with the requirements of Section 5-04.3(8).

4-06.3(5) Hauling Equipment

Hauling equipment for asphalt treated base shall conform to the requirements of Section 5-04.3(2).

4-06.3(6) Spreading and Finishing

Asphalt treated base shall be spread with a spreading machine equipped with a stationary, vibratory, or oscillating screed or cut-off device, subject to the approval of the Engineer. Approval of the equipment shall be based on a job demonstration that the finished product will meet all requirements of the Specifications. Automatic controls will not be required. Unless otherwise directed by the Engineer, the nominal compacted depth of any ATB layer shall not exceed 0.40 feet. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the paving may be done with other equipment or by hand.

The internal temperature of the ATB mixture at the time compaction is achieved shall be a minimum of 185°F. Rollers shall only be operated in the static mode when the internal temperature of the mix is less than 175°F.

4-06.3(6)A Subgrade Protection Course

Unless otherwise specified by the Engineer, the Contractor shall place the asphalt treated base as a protection for the prepared Subgrade on all sections of individual Roadways which are to receive asphalt treated base as soon as 10,000 square yards of Subgrade is completed. This requirement shall not be limited to contiguous areas on the project.

The surface of the Subgrade protection layer when constructed on a grading project shall conform to grade and smoothness requirements that apply to the Subgrade upon which it is placed.

4-06.3(6)B Finish Course

The final surface course of the asphalt treated base, excluding Shoulders, shall not deviate at any point more than ⅜ inch from the bottom of a 10-foot straightedge laid in any direction on the surface on either side of the Roadway crown. Failure to meet this requirement shall necessitate sufficient surface correction to achieve the required tolerance, as approved by the Engineer, at no expense to the Contracting Agency.

When portland cement concrete pavement is placed on an asphalt base, the surface tolerance of the asphalt base shall be such that no elevation lies more than 0.05 feet below nor 0.00 feet above the plan grade minus the specified plan depth of portland cement concrete pavement. Prior to placing the portland cement concrete pavement, any such irregularities shall be brought to the required tolerance by grinding or other means approved by the Engineer, at no expense to the Contracting Agency.

4-06.3(7) Density

The asphalt treated base shall be compacted to a density of not less than 80% percent of the maximum theoretical density established for the mix by WSDOT FOP for AASHTO T 209. The density of the base shall be determined by means of tests on cores taken from the Roadway or with the nuclear gauge in accordance with Section 5-04.3(10)B. The frequency of these tests shall be at the discretion of the Engineer, but in no case shall it be less than one control lot for each normal day's production. The use of equipment which results in damage to the materials or produces substandard workmanship will not be permitted.

4-06.3(8) Anti-Stripping Additive

An anti-stripping additive shall be added to the asphalt binder material in accordance with Section 9-02.4 in the amount designated in a WSDOT mix design/anti-strip evaluation report for a dense graded hot mix asphalt design from the same gravel source within the last 24 months or as evaluated separately by an accredited lab using current WSDOT test methods (AASHTO T324 – Hamburg or WSDOT TM T718 – Modified Lottman). Alternately, the ATB may be evaluated for anti-strip additive using ASTM D3625 (Standard Practice for Effect of Water on Bituminous-Coated Aggregate Using Boiling Water) by an accredited lab. The anti-stripping additive required will be the minimum amount necessary to achieve a passing evaluation.

4-06.4 Measurement

Asphalt treated base including paving asphalt will be measured by the ton.

No specific unit of measure will apply to Anti-Stripping Additive, which shall be included in the measurements for the HMA items that are included in the Bid Proposal.

4-06.5 Payment

Payment will be made in accordance with Section 1-04.1, for each of the following Bid items that are included in the Proposal:

"Asphalt Treated Base, PG __", per ton.

The unit Contract price per ton for "Asphalt Treated Base, PG __" shall be full payment for all costs incurred to carry out the requirements of Section 4-06 in accordance with the Contract, including coring and testing, and shall include anti-stripping additive.

END OF SECTION

5-02 BITUMINOUS SURFACE TREATMENT
(March 3, 2008 Tacoma GSP)

5-02.3(1) Equipment

The third sentence of the third paragraph is revised to read:

Each roller shall not weigh less than 8-tons and shall be capable of providing constant contact pressure.

END OF SECTION

5-04 HOT MIX ASPHALT
(******)

This Section is revised according to the following overriding provisions:

Nonstatistical or test point evaluation shall be the method for HMA compaction acceptance for all HMA pavement, except where visual or commercial evaluation is specified. Visual evaluation shall be considered synonymous with commercial evaluation. The Contracting Agency will not be required to perform any acceptance by statistical evaluation.

All references to "statistical" are revised to read "nonstatistical", and "nonstatistical" evaluation shall be considered synonymous with "test point" evaluation. Thus, all Specifications for test procedures, methods, construction requirements, and requirements for evaluation and acceptance shall apply to the Work with the following exceptions:

- The Contracting Agency shall not be required to perform statistical analysis of any acceptance test results.
- Quantities for sublots and lots shall be as determined by the Engineer. If test results are found not to be within specification requirements, additional testing as needed to determine a CPF may be performed.
- The Contracting Agency shall not be required to make price adjustments based on pay factors and composite pay factors.

5-04.1 Description
(******)

This section is supplemented with the following:

HMA pavement may also consist of fiber reinforcement evenly distributed throughout the approved mix.

5-04.2 Materials

5-04.2(1) How to Get an HMA Mix Design on the QPL
(April 1, 2018 Tacoma GSP)

For Subsection 5-04.2(1) the term "Contracting Agency" is revised to read "WSDOT".

Add this new section:

5-04.2(1)D Fiber Reinforced HMA
(******)

Fiber reinforcement shall consist of Aramid fibers and polyolefin fibers, with the polyolefin fibers intended to keep the Aramid fibers together until incorporation into the HMA mix. Once incorporated into the mix and during the HMA production process polyolefin fibers will melt and/or become plastically deformed allowing Aramid fibers to separate.

Aramid fibers shall meet the following requirements:

Length	3/4" (19 mm)
Form	Monofilament
Acid/Alkali Resistance	Inert
Tensile Strength	400,000 psi

Specific Gravity	1.44
Operating Temperatures	-300° F to 800° F (-73° C to 427° C)

Polyolefin fibers shall meet the following requirements:

Length	3/4” (19 mm)
Form	Fillibrated
Acid/Alkali Resistance	Inert
Specific Gravity	0.91

5-04.2(2) Mix Design – Obtaining Project Approval
(April 1, 2018 Tacoma GSP)
This section is revised to read:

The Contactor shall submit each HMA mix design to the Contracting Agency on WSDOT Form 350-042. The Contractor shall provide a mix design based upon 3 million ESAL’s.

No paving shall begin prior to the HMA mix design acceptance by the Engineer for the Job Mix Formula (JMF) that will be used for the same paving. The Contracting Agency will evaluate HMA mix design submittals according to Visual Evaluation per Table 1. The mix design will be the initial JMF for the class of HMA. The Contractor may request a change in the JMF. Any adjustments to the JMF will require the approval of the Project Engineer and must be made in accordance with Section 9-03.8(7).

Mix designs for HMA shall have the aggregate structure and asphalt binder content determined in accordance with WSDOT Standard Operating Procedure 732 and meet the requirements of Sections 9-03.8(2) and 9-03.8(6). The Contractor shall determine anti-strip additive requirements for the HMA and submit laboratory test data for anti-stripping and rutting in accordance with the following options:

- Hamburg Wheel track Test and Section 9-03.8(2), or
- Tensile Strength Ratio (TSR) Test per AASHTO T 283, or
- Previous WSDOT Lab mix design verification test data and stripping evaluation, per the Engineer’s discretion and as stated below.

With the HMA mix design submittal the Contractor shall provide one of the following mix design verification certifications for Contracting Agency review:

- The WSDOT Mix Design Evaluation Report from the current WSDOT QPL, or one of the mix design verification certifications listed below.
- The proposed HMA mix design on WSDOT Form 350-042 with the seal and certification (stamp & signature) of a valid licensed Washington State Professional Engineer.**
- The Mix Design Report for the proposed HMA mix design developed by a qualified City or County laboratory that is within one year of the approval date.**

**The mix design shall be performed by a lab accredited by a national authority such as Laboratory Accreditation Bureau, L-A-B for Construction Materials Testing, The Construction Materials Engineering Council (CMEC’s) ISO 17025 or AASHTO Accreditation Program (AAP) and shall supply evidence of participation in the AASHTO resource proficiency sample program.

At the discretion of the Engineer, the Contracting Agency may accept verified mix designs older than 12 months from the original verification date with a certification from the Contractor that the materials and sources are the same as those shown on the original mix design.

For the use of Commercial HMA, the Contractor shall select a class of HMA and design level of Equivalent Single Axle Loads (ESAL's) appropriate for the required use. Commercial HMA can be accepted by a Contractor certificate of compliance letter stating the material meets the HMA requirements defined in the Contract.

5-04.2(2)B Using HMA Additives
(April 1, 2018 Tacoma GSP)
This section is revised to read:

The Contractor may, at the Contractor's discretion, elect to use additives that reduce the optimum mixing temperature or serve as a compaction aid for producing HMA. Additives include organic additives, chemical additives and foaming processes. The use of Additives is subject to the following:

- Do not use additives that reduce the mixing temperature in the production of High RAP/Any RAS mixtures.

- Before using additives, obtain the Engineer's approval using WSDOT Form 350-076 to describe the proposed additive and process.

5-04.3 Construction Requirements

5-04.3(2) Paving Under Traffic
(April 1, 2018 Tacoma GSP)
The second paragraph is supplemented with the following:

No traffic shall be allowed on any newly placed pavement without the approval of the Engineer.

5-04.3(3)C Pavers
(April 1, 2018 Tacoma GSP)
The second paragraph is deleted.

5-04.3(3)D Material Transfer Device or Material Transfer Vehicle
(April 1, 2018 Tacoma GSP)
The first paragraph is revised to read:

A Material Transfer Device/Vehicle (MTD/V) shall not be used unless specific paving areas are specified below. A MTD/V shall only be used according to this special provision for the following paving areas:

5-04.3(4)C Pavement Repair
(April 1, 2018 Tacoma GSP)
This section is revised to read:

Pavement repair shall be in accordance with the City of Tacoma Right-of-Way Restoration Policy found at:

https://www.cityoftacoma.org/government/city_departments/public_works/right-of-way

Pavement repair consists of asphalt concrete saw-cutting, removing asphalt concrete pavement, removing crushed surfacing and subgrade, and installing Construction Geotextile for Separation, placing crushed surfacing top course over the Construction Geotextile, and HMA in accordance with the Contract or as directed by the Engineer.

Pavement repair excavation may also be performed by the use of a milling machine of a type that has operated successfully on work comparable with that to be done under the Contract and shall be approved by the Engineer prior to use. If a milling machine is used for excavation, the excavation shall be as directed by the Engineer.

In all types of excavation, after the removal of the asphalt, the base material will be evaluated by the Engineer to determine if it is suitable. If the base is determined not to be suitable, the Contractor shall remove the base material and restore the sub-grade in accordance with Section 2-06 and the Plans, regardless of the method used for excavation.

Estimated plan quantities for pavement repair are approximate and are provided for bidding purposes only. The actual dimensions to be used will be verified by the Engineer at the time of construction. Contrary to Section 1-04.6, no changes to the unit prices bid for the various items will be permitted due to any increase or decrease in the amount of pavement repair.

Payment for pavement repair shall be by the unit Bid prices according to the Contract for all materials, labor, and equipment required to complete the pavement repair. Items not included in the Proposal shall be paid for according to Section 1-04.1(2).

5-04.3(6) Mixing
(April 1, 2018 Tacoma GSP)
The first paragraph is revised to read:

The asphalt supplier shall add anti-stripping additive to the liquid asphalt prior to shipment to the asphalt mixing plant. The Contractor shall submit the anti-stripping additive amount and the manufacturer's certification, together with the HMA mix design submittal in accordance with Section 5-04.2. Paving shall not begin before the anti-stripping additive submittal is accepted by the Engineer.

5-04.3(9) HMA Mixture Acceptance
(April 1, 2018 Tacoma GSP)
The first paragraph is revised to read:

The Contracting Agency will evaluate the HMA mixture by nonstatistical or visual evaluation as determined from the criteria in Table 7 or as determined by the Engineer.

5-04.3(9)A Test Sections
(April 1, 2018 Tacoma GSP)
The first paragraph is revised to read:

At the start of paving, if requested by the Contractor, a compaction test section shall be constructed as directed by the Engineer to determine the compactibility of the mix design. Compactibility shall be based on the ability of the mix to attain the specified minimum density (91 percent of the maximum density determined by WSDOT SOP 729, and FOP for AASHTO T 209).

Following determination of compactibility, the Contractor is responsible for the control of the compaction effort. If the Contractor does not request a test section, the mix will be considered compactible. See also Section 5-04.3(10)C2.

The Contractor shall also construct a test section when requested by the Engineer. Test sections that are in complete compliance with the requirements of Section 5-04 can be incorporated into the Work, and shall be included in the quantities for related Bid Items; otherwise, the Contractor shall remove the defective pavement in failed test sections as determined by the Engineer and at no cost to the Contracting Agency. The Contracting Agency will only pay for HMA pavement that is accepted and incorporated into the project at the discretion of the Engineer. See also Section 5-04.3(10)C2.

The second paragraph is revised to read:

The purpose of a test section is to determine whether or not the Contractor's mix design and production processes will produce HMA meeting the Contract requirements related to mixture. Construct HMA mixture test sections at the beginning of paving, using at least 100 tons and a maximum of 800 tons or as specified by the Engineer. Each test section shall be constructed in one continuous operation.

5-04.3(9)B Mixture Acceptance – Statistical Evaluation
(April 1, 2018 Tacoma GSP)
The title of this Section is revised to read:
5-04.3(9)B Mixture Acceptance – Nonstatistical Evaluation

5-04.3(9)B1 Mixture Statistical Evaluation – Lots and Sublots
(April 1, 2018 Tacoma GSP)
The title of this Section is revised to read:
5-04.3(9)B1 Mixture Nonstatistical Evaluation – Lots and Sublots
This Section is revised to read:

For HMA in a structural application, sampling and testing for total project quantities less than 400 tons is at the discretion of the engineer. For HMA used in a structural application and with a total project quantity less than 800 tons but more than 400 tons, a minimum of one acceptance test shall be performed:

i. If test results are found to be within specification requirements, additional testing will be at the engineer's discretion.
ii. If test results are found not to be within specification requirements, additional testing as needed to determine a CPF shall be performed.
iii. For a mixture lot in progress with a mixture CPF less than 0.75, a new mixture lot will begin at the Contractor's request after the Engineer is satisfied that material conforming to the Specifications can be produced. See also Section 5-04.3(11)F.

iv. If, before completing a mixture lot, the Contractor requests a change to the JMF which is approved by the Engineer, the mixture produced in that lot after the approved change will be evaluated on the basis of the changed JMF, and the mixture produced in that lot before the approved change will be evaluated on the basis of the unchanged JMF; however, the mixture before and after the change will be evaluated in the same lot. Acceptance of subsequent mixture lots will be evaluated on the basis of the changed JMF.

5-04.3(9)E Mixture Acceptance – Notification of Acceptance Test Results
(April 1, 2018 Tacoma GSP)
The first and second paragraphs of this section are revised to read:

The Contracting Agency will endeavor to provide written notification (via email to the Contractor's designee) of acceptance test results within 24 hours of the sample being made available to the Contracting Agency. However, the Contractor agrees:

1. Quality control, defined as the system used by the Contractor to monitor, assess, and adjust its production processes to ensure that the final HMA mixture will meet the specified level of quality, is the sole responsibility of the Contractor.

2. The Contractor has no right to rely on any testing performed by the Contracting Agency, nor does the Contractor have any right to rely on timely notification by the Contracting Agency of the Contracting Agency's test results (or statistical analysis thereof), for any part of quality control and/or for making changes or correction to any aspect of the HMA mixture.

3. The Contractor shall make no claim for untimely notification by the Contracting Agency of the Contracting Agency's test results (or statistical analysis thereof).

5-04.3(10)B HMA Compaction - Cyclic Density
(April 1, 2018 Tacoma GSP)
This section is deleted.

5-04.3(10)C1 HMA Compaction Statistical Evaluation – Lots and Sublots
(April 1, 2018 Tacoma GSP)
This section is deleted.

5-04.3(10)C2 HMA Compaction Statistical Evaluation – Acceptance Testing
(April 1, 2018 Tacoma GSP)
The title of this section is revised to read:
5-04.3(10)C2 HMA Compaction Nonstatistical Evaluation – Acceptance Testing
The second paragraph is revised to read:

Compaction tests will be performed at a minimum of 5 various locations, as determined by the Engineer, for each 400 tons placed. The locations will be determined by the stratified random sampling procedure conforming to WSDOT Test Method T 716. For an area in progress with a CPF less than 0.75, a new compaction sequence will begin at the Contractor's request after the Project Engineer is satisfied that material conforming to the Specifications can be produced. The Compaction Test Procedures will be

provided to the Contractor by the Contracting Agency at the Pre-Construction Conference or a Pre-Paving Meeting, prior to the placement of HMA material on site.

This Section is supplemented with the following:

Cores may be used as an addition to the nuclear density gauge tests. When cores are taken by the Engineer at the request of the Contractor, the request shall be made by noon of the first working day following placement of the mix. The Engineer shall be reimbursed for the coring expenses.

The Engineer will inform the Contractor of field compaction test results as work is being performed. Formal Test Report(s) will be provided to the Contractor within 3 Working Days.

HMA for preleveling shall be compacted to the satisfaction of the Engineer.

Add this new Section:

5-04.3(17) Fiber Reinforced HMA
(******)

Fiber reinforcement shall be added to the approved HMA mix at a rate of 1 pound of fiber per 1 ton of HMA.

Fiber shall be added to the HMA mix through specialized equipment that can accurately proportion and/or meter, by weight, the proper amount per batch for batch plants, or continuously and in a steady uniform manner for drum plants. Alternatively, upon the approval of the engineer, fiber may be added manually using pre-weighed dissolvable bags.

Specialized equipment shall be of the type and capable of controlling the weight of fibers added as recommended by the fiber manufacturer.

Fiber shall be mixed with the HMA in accordance with the fiber manufacturer's recommendations.

5-04.4 Measurement
(******)
The first paragraph is revised to read:

HMA Cl. ___ PG ___, Fiber Reinforced HMA Cl. __ PG __, and Commercial HMA will be measured by the ton in accordance with Section 1-09.2, with no deduction being made for the weight of asphalt binder, blending sand, mineral filler, anti-stripping additive, or any other component of the mixture; and the measurement shall include asphalt wedge curbs and thickened edges in accordance with the Plans or as directed by the Engineer. If the Contractor elects to remove and replace mix as allowed in Section 5-04.3(11), the material removed will not be measured.

The second paragraph is revised to read:

No specific unit of measure will apply to roadway cores, which shall be included in the measurements for the HMA items that are included in the Proposal.

This section is supplemented with the following:

HMA for Approach Cl. __ PG 58H-22 shall be measured per square yard of finished driveway and approach.

No specific unit of measure will apply to anti-stripping additive, which shall be included in the measurements for the HMA items that are included in the Proposal.

5-04.5 Payment
(******)

Pay items for "Job Mix Compliance Price Adjustment" and "Compaction Price Adjustment" are deleted.

The following pay items for HMA are revised to read:

"HMA Cl. ___ PG ___", per ton.

The unit Contract price per ton for "HMA Cl. ___ PG ___" shall be full payment for all costs incurred to carry out the requirements of Section 5-04, including coring and testing, and shall include anti-stripping additive, asphalt wedge curbs, thickened edges, curb drains, and connection to existing drains in accordance with the Contract. Any costs that are already included in other Bid items in the Proposal shall not be included in the unit Contract prices per ton for these HMA Bid items.

The pay item "HMA for Approach Cl. _PG__" is revised to read:

"HMA for Approach Cl. __PG 58H-22", per square yard.

The unit Contract price per square yard for "HMA for Approach Cl.__ PG 58H-22" shall be full payment for all costs incurred to carry out the requirements of Section 5-04, including anti-stripping additive; and shall include asphalt wedge curbs, thickened edges, curb drains, and connection to existing drains in accordance with the Contract. Any costs that are already included in other Bid items in the Proposal shall not be included in the unit Contract price per square yard for this HMA Bid item. The Contractor shall also include all costs associated with excavating for driveways and approach, including haul and disposal in the unit Contract price per square yard for "HMA for Approach Cl. __ PG 58H-22", regardless of the depth.

This section is supplemented with the following:

"Fiber Reinforced HMA Cl. ___ PG ___", per ton.

The unit Contract price per ton for "Fiber Reinforced HMA Cl. ___ PG ___" shall be full payment for all costs incurred to carry out the requirements of Section 5-04, including coring and testing, and shall include fiber reinforcement anti-stripping additive, asphalt wedge curbs, thickened edges, curb drains, and connection to existing drains in accordance with the Contract. Any costs that are already included in other Bid items in the Proposal shall not be included in the unit Contract prices per ton for these HMA Bid items.

"Temporary Pavement Patch", per ton.

The unit Contract price for "Temporary Pavement Patch" shall be full pay for all labor, equipment, and materials required to furnish and install; maintain; and remove and dispose of the temporary patch. The unit contract price shall apply to Temporary Pavement Patches made with HMA or Cold Plant Mix.

Temporary pavement patches placed between October 1st and March 31st shall be HMA Cl. ½" PG 58H-22.

END OF SECTION

5-05 CEMENT CONCRETE PAVEMENT (******)

5-05.1 Description

This section is supplemented with the following:

All concrete pavement restoration shall be performed in accordance with the City of Tacoma's Right-of-Way Restoration Policy found at: https://www.cityoftacoma.org/government/city_departments/public_works/right-of-way

5-05.3 Construction Requirements

5-05.3(1) Concrete Mix Design for Paving

The sixth paragraph is supplemented with the following:

The submittal for the concrete mix design shall provide the following: the date, the amount of materials (i.e. cement, sand, aggregates, water), the type and amount of each admixture, and the designated 28-day compressive strength specific to the mix design being submitted. The design compressive strength shall be a minimum of 4,000 psi.

5-05.3(4)A Acceptance of Portland Cement Concrete Pavement

This section is supplemented with the following:

Acceptance of concrete will be on a non-statistical acceptance only.

The first, second, third and fourth paragraphs are deleted.

5-05.3(8) Joints

The second paragraph is revised to read:

The Contractor shall submit a concrete panel jointing plan in accordance with the Plans and these Specifications. When a concrete panel jointing plan is included in the Plans, the Contractor may adopt or submit a revised jointing plan in accordance with Standard Plans and the Specifications at the Contractor's own expense. The Contractor's jointing plan shall be approved in writing by the Engineer before the start of concrete paving.

When new pavement abuts existing pavement, the locations of the joints in the new pavement shall match with the joints in the existing pavement unless otherwise approved by the Engineer.

5-05.3(11) Finishing

The third paragraph is revised to read:

In advance of curing operations, the pavement shall receive an initial texturing followed by final finishing. Initial texturing shall be performed with a burlap drag or broom device, creating striations in the same orientation as the final finish. The concrete roadway surface shall be finished with a transverse heavy tining finish. Where integral concrete curbs are constructed, the roadway surface finish shall end 12 inches from the flowline.

The fourth paragraph is revised to read:

Burlap drags, brooms and tine devices may be installed on self-propelled equipment having external alignment control. When texturing the pavement with burlap, the area of burlap in contact with the pavement shall be maintained constant at all times. Broom and tine devices shall be provided with positive elevation control. Downward pressure on pavement surface shall be maintained at all times during texturing so as to achieve uniform texturing without measurable variations in pavement profile. If self-propelled texturing machines are used, these shall be operated so that travel speed during texturing is maintained constant. Failure of the texturing equipment to perform according to this section shall constitute cause for stopping placement of concrete until the equipment deficiency or malfunction is corrected.

The seventh paragraph is revised to read:

Test Panel:
At the start of concrete pavement construction, the Contractor shall first finish a textured concrete test panel and the Engineer shall give approval of the achieved finish according to this section prior to further concrete pavement construction. If the test panel is rejected by the Engineer, the Contractor shall remove and replace the test panel at no additional cost to the Contracting Agency. The Contractor can designate one of the project panels as a test panel or create a sacrificial test panel on site of at least four feet by eight feet.

Project panels not meeting the characteristics of the test panel shall be removed and replaced at no additional cost to the Contracting Agency.

The eighth through tenth paragraphs are deleted.

5-05.3(14) Cold Weather Work
This section is supplemented with the following:

The following additional requirements for placing concrete shall be in effect from November 1 to April 1:

- Engineer shall be notified at least 24 hours prior to placement of concrete.
- All concrete placement shall be completed no later than 2:00 p.m. each day.
- Where forms have been placed and the subgrade has been subjected to frost, no concrete shall be placed until the ground is completely thawed. At that time, the forms shall be adjusted and subgrade repaired as determined by the Engineer.

5-05.4 Measurement
This section is revised to read:

Measurement for cement concrete pavement and concrete base pavement shall be by the square yard for the pavement completed and accepted according to Section 5-05 and the Plans, including the area underneath curbs. No deduction will be made for castings in pavement.

5-05.5 Payment

This section is revised to read:

Payment will be made in accordance with Section 1-04.1.

"Cement Conc. Pavement, ___-Inch Section", per square yard.

The unit Contract price per square yard for "Cement Conc. Pavement, ___-Inch Section" shall be full payment for all costs incurred to carry out the requirements of Section 5-05 and the Plans, and shall include furnishing and installing epoxy coated dowel bars and tie bars.

END OF SECTION

6-02 CONCRETE STRUCTURES
(February 16, 2011 Tacoma GSP)

6-02.3(2)B Commercial Concrete

This section is supplemented with the following:

Where concrete Class 3000 is specified for driveways, the Contractor may use commercial concrete.

6-02.3(4) Ready-Mix Concrete

The first paragraph is revised to read.

All concrete shall be batched in a prequalified manual, semi-automatic, or automatic plant as described in Section 6-02.3(4)A.

END OF SECTION

7-02 CULVERTS
(April 1, 2012 Tacoma GSP)

7-02.2 Materials

This section is supplemented with the following:

All culvert pipe shall have a smooth interior wall.

END OF SECTION

7-04 STORM SEWERS
(March 17, 2003 Tacoma GSP)

This section is deleted. The requirements of Section 7-17 shall apply to storm sewers.

END OF SECTION

7-05 MANHOLES, INLETS, CATCH BASINS, AND DRYWELLS (******)

7-05.1 Description

This section is supplemented with the following:

All references to sanitary sewers shall be construed to also mean storm sewers.

7-05.2 Materials

This section is supplemented with the following:

All manholes or other utility structures placed within the sidewalk, bike lane, or other pedestrian path shall have a cover with non-slip coating.

7-05.3 Construction Requirements

The first sentence of the eleventh paragraph is revised to read:

A flexible pipe-to-manhole connector shall be used in all connections of rigid and thermoplastic pipes to **new** precast concrete manholes to provide a watertight joint between the pipe and the manhole, unless otherwise directed by the Engineer. The connector shall be “Kor-N-Seal” with “Wedge Korband” (Type I or II as required for pipe diameter), manufactured by NPC, Inc., Milford, New Hampshire, or Engineer approved equal. The connectors shall be installed in accordance with the manufacturer’s recommendations.

7-05.3(1) Adjusting Manholes and Catch Basins to Grade

This section is revised to read:

7-05.3(1) Adjusting Utility Structures to Grade

Where shown in the Plans or where directed by the Engineer, utility structures shall be adjusted to grade as staked or as otherwise designated by the Engineer.

Where shown to adjust utility structure to grade and the new cover will be located within the sidewalk, bike lane, or other pedestrian pathway, the contractor shall furnish a new cover with non-slip coating to be used for the utility adjustment.

The materials and methods of construction shall conform to the requirements specified in Section 7-05.3 and City of Tacoma Standard Plans No. SU-25 and SU-37. The finished structure shall conform to the requirements of the standard plan for the specific structure.

7-05.3(3) Connections to Existing Manholes

The first sentence is revised to read:

The Contractor shall inspect the existing manholes in the field to verify invert elevations and the scope of work necessary to make the connection(s) prior to construction.

7-05.4 Measurement

The sixth paragraph is revised to read:

Connections to existing structures will be measured per each.

This section is supplemented with the following:

Reconnecting existing sewer pipes to new manhole structures will be measured per each.

Manholes with Cast-in-Place Base will be measured per each.

Catch Basin Type 2 __ in excess of 10 feet in height will be measured per linear foot for each additional foot of height over 10 feet. Measurement will be the distance from the flow line of the outlet pipe to the top of the manhole ring measured to the nearest foot.

7-05.5 Payment

The first paragraph is supplemented with the following:

The unit Contract price for "Manhole_____" shall be full pay for all work required to furnish and install the new manhole to finished grade, including, but not limited to, excavating for, furnishing backfill, compaction of backfill, connection of new pipe(s), channeling, covers, frames, ladders, steps, and handholds, as applicable per Standard Plans. This includes providing nonslip covers where required.

The unit Contract price for "Catch Basin____" shall be full pay for all work required to furnish and install the new catch basin to finished grade, including, but not limited to, excavating for, furnishing backfill, compaction of backfill, connection of new pipe(s), frame, cover, as applicable per Standard Plans.

The pay item for "Drop Manhole Connection" is revised to read:

"Drop Manhole Connection, ___-Inch Diam.", per each.

The pay item for "Connection to Drainage Structure" is revised to read:

"Connect New Sewer Pipe ___-In. Diam. to Existing Structure", per each

This section is supplemented with the following:

"Reconnect Existing Sewer Pipe, ___-In. Diam., to New Structure", per each.

The unit Contract price per each shall be full pay for all labor, equipment and materials necessary to reconnect the existing sewer pipe to the new structure as specified in Section 7-05.3.

"Adjust Existing Catch Basin, Furnish New Frame and Grate", per each

The unit Contract price per each for "Adjust Existing Catch Basin, Furnish New Frame and Grate" shall be full pay for all costs associated with adjusting the frame and grate to finished grade, including but not limited to, excavating, furnish and place backfill,

furnishing and installing the new frame and grate, compacting, surfacing, and restoration.

"Adjust Existing Manhole, Furnish New Frame and Cover", per each

The unit Contract price per each for “Adjust Existing Manhole, Furnish New Frame and Cover” shall be full pay for all costs associated with adjusting the frame and cover to finished grade, including but not limited to, excavating, furnish and place backfill, furnishing and installing the new frame and cover, compacting, surfacing, and restoration. This includes providing nonslip covers where required.

“Adjust Existing Valve Chamber to Grade”, per each

The unit Contract price per each for “Adjust Existing Valve Chamber to Grade” shall be full pay for all costs associated with the adjusting the valve chamber to finished grade, including but not limited to, excavating, furnish and place backfill, compacting, surfacing, and restoration.

“Manhole ___-In. Diam. Type ___, with Cast-in-Place Base”, per each.

The unit Contract price per each for “Manhole ___-In. Diam. Type ___, with Cast-in-Place Base” shall be full pay for all labor, equipment and materials required to furnish, excavate for, furnish and place backfill, compact, and install to finished grade the new manhole with a cast-in-place base, including, but not limited to, insuring proper support of existing main, channeling, connection of new pipe, covers, frames, ladders, steps, and handholds, as applicable per Standard Plans. This includes providing nonslip covers where required.

“Catch Basin Type 2 Additional Height, __ In. Diam.”, per linear foot.

“Adjust to Grade”, per each

The unit contract price per each for “Adjust to Grade” shall be full pay for all costs associated with the adjusting utility structures such as, but not limited to, water meter boxes and telecommunications vault covers to finished grade, including but not limited to, excavating, furnish and place backfill, compacting, surfacing, and restoration. This includes providing nonslip covers where required. This bid item shall include structures identified in the plans or directed in the field for adjustment that are not covered under other bid items.

For the purpose of providing a common Proposal for all Bidders, the quantity for “Adjust to Grade” has been entered in the Proposal based on known existing structures, where adjustment to grade is not covered by other bid items, that will be affected by the Contract Work. Payment shall be made for the actual quantity measured in the field.

END OF SECTION

7-07 CLEANING EXISTING DRAINAGE STRUCTURES
(March 23, 2010 Tacoma GSP)

7-07.3 Construction Requirements

Item three of paragraph two is revised to read:

3. If sediment and water from structures does not meet the conditions described in 1 or 2 above, the Contractor shall collect and dispose of all water used and all debris generated in cleaning operations. No cleaning water or debris shall be flushed downstream beyond the limits of the work.

END OF SECTION

7-08 GENERAL PIPE INSTALLATION REQUIREMENTS (******)

7-08.3(1)A Trenches

The tenth paragraph of this section is deleted. All dewatering requirements are found in section 8-01.3(1)C.

7-08.3(1)C Bedding the Pipe

This section is supplemented with the following:

Pipe bedding for sanitary and storm sewers shall be in accordance with City of Tacoma Standard Plan No. SU-16.

7-08.3(2)F Plugs and Connections

This section is supplemented with the following:

Rigid Couplings, manufactured by Romac Industries, Inc., or Engineer approved equal, shall be used at any pipe joint in which bell and spigot or fused joints are not used. Flexible couplings are not permitted, except for side sewer installation.

7-08.3(2)G Jointing of Dissimilar Pipe

This section is revised to read:

Dissimilar pipe shall be joined by use of rigid couplings manufactured by Romac Industries, Inc., or Engineer approved equal, except for side sewer installation.

7-08.3(3) Backfilling

The second paragraph is revised to read:

Pipe zone backfill, backfill above pipe zone, and extra excavation area backfill material shall meet the requirements of Section 9-03.12(2). (Pipe zone backfill shall meet the requirements of Section 9-03.9(3) for Crushed Surfacing Top Course. Backfill above pipe zone and extra excavation area backfill material shall meet the requirements of Section 9-03.12(2), Gravel Backfill for Walls.) Recycled concrete shall not be used for pipe zone bedding, pipe zone backfill, backfill above pipe zone, and extra excavation area backfill.

The fourth paragraph is revised to read:

Backfill above the pipe zone shall be accomplished in such a manner that the pipe will not be shifted out of position nor damaged by impact or overloading. If pipe is being placed in a new embankment, backfill above the pipe zone shall be placed in accordance with Section 2-03.3(14)C. If pipe is being placed under existing paved areas, or roadways, backfill above the pipe zone shall be placed in horizontal layers no more than 12-inches thick and compacted to 95-percent maximum density. If pipe is being placed in non-traffic areas, backfill above the pipe zone shall be placed in horizontal layers no more than 12-inches thick and compacted to 85-percent maximum density. All compaction shall be in accordance with the Compaction Control Test of Section 2-03.3(14)D. Material excavated from the trench shall be used for backfill above the pipe zone, except that organic material, frozen lumps, wood, rocks, or pavement chunks larger than 6-inches in maximum dimension shall not be used. Material

determined by the Engineer to be unsuitable for backfill at the time of excavation shall be removed and replaced with imported backfill material meeting the requirements of Section 9-03.12(2). Material determined to be suitable for backfill at the time of excavation shall be stockpiled and used for backfill material. If the stockpiled material becomes unsuitable, the Contractor shall furnish suitable material in an amount equal to that, which became unsuitable, at no expense to the Contracting Agency.

Section 7-08.3 is supplemented with the following:

7-08.3(5) Temporary Bypass Pumping

It shall be the Contractor's responsibility to maintain operation of the existing storm and/or sanitary sewer systems throughout the duration of the project without any interruption of sewer service. The Contractor shall divert all flows around each segment of the pipe designated for replacement. This diversion shall consist of redirecting flow from an upstream manhole and discharging it to a manhole downstream of the replacement operation. This can be accomplished via a combination of pumping and/or gravity flow. After the pipe replacement work is completed and accepted by the City, flow shall be returned to the reconstructed storm or sanitary sewer. The area affected by the bypass operation shall be fully restored.

Bypass pumping shall be scheduled for continuous operation with back-up equipment available at all times for periods of maintenance and refueling or failure of the primary bypass pump(s) or diversion system. If the Contractor's operation requires bypass pumping at night, he/she must provide monitoring personnel at all times to ensure the system remains functional.

Bypass pumping shall be done in such a manner as not to damage private or public property, or create a nuisance or public menace. The pumped sewage or stormwater shall be in enclosed hoses or pipes that are adequately protected from traffic, and shall be redirected into the appropriate sewer system. <u>The discharge of storm water to private property, city streets, sidewalks, sanitary sewer, or any location other than an approved storm sewer is prohibited. The discharge of sewage to private property, city streets, sidewalks, storm sewer, or any location other than an approved sanitary sewer is prohibited.</u> The Contractor shall be liable for all cleanup, damages, and resultant fines should the Contractor's operation cause any backups, overflows, or property damage.

The Contractor's bypass operation shall be sized to handle, at a minimum, the full pipe capacity in each subject line removed from service. If flow conditions are greater than full pipe, the Contractor may elect to wait for flow conditions to subside prior to removing the subject line from service. Working days may be adjusted per Specification 1-08.5. Once the Contractor removes a section of line from service he/she is responsible to bypass any and all flow in the system during construction, even in the event the system surcharges and exceeds the full pipe capacity, until the line is returned to service.

The Contractor shall submit a Bypass Pumping Plan in accordance with Section 1-05. The Contractor's plan for bypass pumping shall be reviewed by the City before the Contractor will be allowed to commence bypass pumping. The review of the bypassing system and equipment by the Engineer shall in no way relieve the Contractor of his responsibility and public liability.

The Contractor shall use hard pipe to bypass sewers 12-inches in diameter or greater. The Contractor shall not block any driveways or intersections, but shall bury the pipe to allow continuous access through intersections and driveways.

The Contractor may use lay-flat hose to bypass storm and sanitary sewers that are less than 12 inches in diameter. The Contractor shall ensure that sewage spills do not occur with the use of lay flat hoses. If sewage spills occur, the Contractor will be required to use hard pipe for all sanitary sewers.

7-08.3(6) Abandon Existing Pipe

If construction of the new sewer pipe does not result in the removal of the existing pipe due to differing alignments, then the existing pipe shall be abandoned in place as shown in the Plans. The Contractor shall plug all pipe branches, stubs, or other open ends of the pipe to be abandoned and fill with CDF. The Contractor shall submit a Pipe Abandonment Plan in accordance with Section 1-05.3 describing the proposed methods for filling the pipes with CDF, specifically addressing how the pipes will be filled in a manner that will prevent air pockets from being left in the abandoned pipe. The CDF mix design shall meet the requirements of Section 2-09.3(1)E.

If the pipes to be abandoned are removed and disposed of during construction of the new sewers, all costs for the removal and disposal shall be included in the unit contract price for "Structure Excavation Class B," at per cubic yard.

7-08.4 Measurement

This section is supplemented with the following:

No specific measurement shall apply to the lump sum item "Temporary ___ Sewer Bypass".

No specific measurement shall apply to the lump sum item "Temporary ___ Sewer Bypass Plan".

Abandonment of existing sewer pipes will be measured by the cubic yard of CDF necessary to fill the existing pipes.

7-08.5 Payment

The pay item for "Structure Excavation Class B" is revised to read:

Structure Excavation Class B will be paid per section 2-09

This section is supplemented with the following:

"Temporary ___ Sewer Bypass", per lump sum.

The lump sum Contract prices for "Temporary ___ Sewer Bypass" shall be full payment for labor, equipment, and materials, including but not limited to, personnel, fuel, monitoring, power, pumps, piping, barricades, emergency stand-by equipment, trenching, surface restoration costs, and all other work necessary to maintain uninterrupted storm and sanitary sewer services by bypassing the applicable sewer system flows.

"Temporary ___ Sewer Bypass Plan", per lump sum

The lump sum Contract price for "Temporary ___ Sewer Bypass Plan" shall be full pay for all costs, including but not limited to, preparing, submitting, revising, and resubmitting revisions for the Temporary Bypass Plan.

"CDF for Pipe Abandonment", per cubic yard.

The unit Contract price for "CDF for Pipe Abandonment" shall be full payment for all labor, materials, and equipment necessary to abandon the sewer pipes, including submittal of a Pipe Abandonment Plan.

END OF SECTION

7-17 SANITARY SEWERS
(******)

7-17.1 Description
This section is supplemented with the following:

All references to sanitary sewer shall also mean storm sewers.

7-17.2 Materials
The first paragraph is revised to read:

Pipe materials used for storm and sanitary sewers shall be as shown on plans. All references to PVC shall mean Solid Wall PVC Sewer Pipe. Profile Wall PVC will not be permitted.

This section is supplemented with the following:

Polyvinyl Chloride (PVC) Pressure Pipe (4-inches and over)	9-30.1(5)A

7-17.3(2)A General
The first paragraph is revised to read:

Sewers and appurtenances shall be cleaned and tested after backfilling by either exfiltration or low-pressure air method at the option of the Contractor, except where the ground water table is such that the Engineer may require the infiltration test.

7-17.3(2)H Television Inspection
The first sentence is revised to read:

The Contracting Agency will video inspect all sanitary and storm sewers prior to paving where paving occurs over sewers, or prior to final acceptance.

The Contractor shall provide the Contracting Agency written request for video inspection a minimum of 3 working days prior to the requested date for inspection.

7-17.4 Measurement
This section is supplemented with the following:

Removal and replacement of unsuitable backfill material will be determined by the cubic yard in place, based on a neat line measurement per this Section and Section 2-09. Any removal and replacement of unsuitable material outside neat line measurement shall be included to the Bid item.

Horizontal Limits: The horizontal limits shall be as defined in Section 2-09.4.

Longitudinal Limits: The longitudinal limits shall be as defined in Section 2-09.4.

Lower Limits: The lower limits shall be the top of the pipe zone as shown on Standard Plan No. SU-16.

Upper Limits: The upper limits shall be the subgrade elevation of the proposed roadway section or pavement patch section.

All costs associated with the disposal of material located above the upper limits shall be included in the unit contract price for other items of work, unless a proposal item is included for this specific item of work.

Pipe zone limits are as defined in Standard Plan SU-16.

7-17.5 Payment

The first paragraph is supplemented with the following:

"PVC Storm Sewer Pipe ___In. Diam.", per linear foot.
"PVC Sanitary Sewer Pipe, C900 ___In. Diam.", per linear foot.

The second paragraph is revised to read:

The unit Contract price per linear foot for sewer pipe of the kind and size specified shall be full pay for the furnishing, hauling, and assembling in place the complete installation, including but not limited to, disposal of material excavated within the pipe zone, furnishing and installing pipe bedding and backfill material within the pipe zone, and all wyes, tees, special fitting, joint materials, and other appurtenances necessary for the completion of the installation to the required line and grade, unless proposal items are included for these specific items of work.

The pay item "Removal and Replacement of Unsuitable Material" is revised to read:

"Removal and Replacement of Unsuitable Material", per cubic yard.

The unit Contract price per cubic yard for "Removal and Replacement of Unsuitable Material" shall be full pay for all work required to haul and dispose of the unsuitable material as specified in Section 7-08.3(1)A and the furnishing of suitable backfill material as specified in Section 7-08.3(3).

For the purpose of providing a common Proposal for all Bidders, the Proposal quantity for "Removal and Replacement of Unsuitable Material" is based on removal and replacement of all backfill material contained within the neat lines and not included in other bid items.

END OF SECTION

7-18 SIDE SEWERS
(March 4, 2014 Tacoma GSP)

7-18.1 Description
This section is supplemented with the following:

The Contractor shall remove and replace existing side sewers as defined on the Plans and reconnect the existing side sewer. The location of the side sewer at the main is estimated based on a TV inspection of the main and may vary in either direction. The actual location at the point of reconnection is unknown.

7-18.3(1) General
This section is supplemented with the following:

The Contractor shall use solid wall PVC pipe meeting the requirements of Section 9-05.12(1) for all side sewers located 10 feet or more from a water service. If the side sewer is located within 10 feet of a water service, the Contractor shall use solid wall PVC pressure pipe meeting the requirements of Section 9-30.1(5)A. If the side sewer crosses above a water main, the side sewer shall be encased per the Department of Ecology Criteria for Sewage Works Design (Orange Book) Section C1-9.1.4A. Any encasement of side sewers shall be paid for under force account per Section 1-09.6.

7-18.4 Measurement
This section is supplemented with the following:

Measurement for payment shall be by the linear foot of pipe installed, and shall be along the pipe invert, through tees, wyes and other fittings, from the centerline of the main to the centerline of the cleanout.

7-18.5 Payment
The second paragraph is revised to read:

The unit Contract price per linear foot for sewer pipe of the various kind and size specified shall be full pay for furnishing, hauling and assembling in place the completed installation including all wyes, tees, special fittings, joint materials, bedding material, and end pipe marker, and any other items necessary for the completion of the installation, unless Proposal items are included for these specific items of Work.

END OF SECTION

7-19 SEWER CLEANOUTS
(May 13, 2009 Tacoma GSP)

7-19.3 Construction Requirements
The third sentence of the first paragraph is deleted.

The fourth sentence of the third paragraph is deleted.

7-19.5 Payment
The third paragraph is revised to read:

The unit Contract price for “Sewer Cleanout” shall be full pay for furnishing and placing the wye, pipe, pipe bends, pipe plug, castings, and collar as specified herein and as shown on Standard Plan SU-24.

END OF SECTION

7-20 RESIDENTIAL STORM DRAIN UNDER SIDEWALK (******)

7-20.1 Description

This work consists of furnishing and installing residential storm drains under sidewalk as located and detailed in the plans.

7-20.2 Materials

PVC Drain Pipe, couplings and fittings	9-05.1(5)
Wire Mesh Reinforcement	9-07.7
Grout	9-20.3

7-20.3 Construction Requirements

A residential drain shall be constructed at each property along the project limits, unless a commercial storm drain is being constructed. The location of each residential storm drain shall either be where an existing residential storm pipe exists at the right-of-way line or at the lowest side of the property, however the location shall always be adjusted when in conflict with a driveway or curb ramp.

The Contractor shall construct the residential storm drains under sidewalk as shown in City of Tacoma Standard Plan SU-29. The slope of the drain pipe shall match the cross-slope of the sidewalk, including grade-breaks in the sidewalk. The drain pipe shall be connected to the building gutter pipe at the right-of-way line or the building face.

Where a segmental concrete retaining wall, in accordance with section 8-32, is to be constructed the residential storm drain pipe shall be connected to the perforated drain pipe for the wall using the appropriate connector for the pipe sizes and number of pipes being joined together.

Where, at a property, there is no existing residential storm pipe extended to the right-of-way line the Contractor shall cap the residential storm pipe at the right-of-way line as shown in City of Tacoma Standard Plan SU-29.

7-20.4 Measurement

Residential storm drains under sidewalks will be measured per linear foot of drain pipe installed along the invert of the pipe.

7-20.5 Payment

Payment will be made in accordance with Section 1-04.1 for each of the following listed Bid items that in included in the proposal:

“Residential Storm Drain Under Sidewalk”, per linear foot.

The unit Contract price per linear foot for “Residential Storm Drain Under Sidewalk” shall be full pay for all labor, materials, and equipment required to construct as specified, as

shown on the Plans, and shown in the Standard Plans, including all work to reconnect existing residential storm pipes and connect perforated drain pipe for walls.

END OF SECTION

7-21 COMMERCIAL STORM DRAIN

7-21.1 Description

This work consists of furnishing and installing commercial storm drains as located and detailed in the plans.

7-21.3 Construction Requirements

The Contractor shall construct the commercial storm drains as shown in the plans. The slope of the drain pipe shall match the cross-slope of the sidewalk; Contractor shall provide any grade breaks in the commercial storm drain that occur due to changes in the cross-slope in the sidewalk. All connections to existing roof drain pipe or other private drainage pipes shall be included in the construction of the commercial drain.

Commercial drain metal cover shall be slip resistant with a minimum Coefficient of Friction of 0.6 as defined by the Architectural and Transportation Barriers Compliance Board (Access Board).

7-21.4 Measurement

Commercial storm drains will be measured per linear foot of drain pipe installed along the invert of the pipe.

7-21.5 Payment

Payment will be made in accordance with Section 1-04.1 for each of the following listed Bid items that in included in the proposal:

“Commercial Storm Drain”, per linear foot.

The unit Contract price per linear foot for “Commercial Storm Drain” shall be full pay for all labor, materials, and equipment required to construct as shown in these Specifications, Plans and Standard Plans.

END OF SECTION

8-01 EROSION CONTROL AND WATER POLLUTION CONTROL (April 1, 2018 Tacoma GSP)

8-01.1 Description

This section is supplemented with the following:

The City of Tacoma Stormwater Management Manual is available on the City's website at www.cityoftacoma.org/stormwatermanual.

The City of Tacoma has been issued a Washington State Department of Ecology NPDES Construction Stormwater General Permit for this project. This Work also consists of administration and compliance with the requirements of this permit for this project. A copy of this permit is included in Appendix P of these Special Provisions.

8-01.3(1) General

This section is supplemented with the following:

The Contractor shall perform all work in compliance with the NPDES Construction Stormwater General Permit issued for this project.

The permit shall be transferred to the Contractor prior to issuance of a Notice to Proceed and terminated upon completion of the project per the following:

1. The City will provide the Contractor with a Transfer of Coverage form prior to issuing a Notice to Proceed.
2. The Contractor shall sign and return the Transfer of Coverage form to the City.
3. The City will process the transfer and pay any associated transfer fees to the Washington State Department of Ecology.
4. Once the transfer is complete and a Notice to Proceed has been issued, the Contractor is responsible for performing all work in compliance with the permit and the plans and specifications.
5. The Contractor shall pay any renewal fees if the need for permit renewal is caused by contractor, otherwise the City will pay all renewal fees.
6. Upon Physical Completion of the Work the Contractor shall submit a Notice of Termination to the Washington State Department of Ecology and provide the City documentation that the termination is effective.

8-01.3(1)A Submittals

This section is revised to read:

The Contractor shall prepare and implement a project-specific Construction Stormwater Pollution Prevention Plan (SWPPP) in accordance with the City of Tacoma Stormwater Management Manual (SWMM), Volume 2. The SWPPP is a document that describes the potential for pollution problems on a construction site and explains and illustrates the measures to be taken on the construction site to control those problems.

The Construction SWPPP shall be prepared as a stand-alone document consisting of two sections: Section 1) Construction SWPPP Narrative and Section 2) Temporary Erosion and Sediment Control (TESC) Plans.

The Contracting Agency has prepared the Construction Stormwater Pollution Prevention Plan Checklist to aid the Contractor in development of the SWPPP. This checklist provides the Contractor with a tool to determine if all the major items are included in the Construction SWPPP and on the TESC Plans and can be found in Volume 2, Chapter 2 of the SWMM. Contractors are encouraged to complete and submit this checklist with the Construction SWPPP.

The Department of Ecology has prepared a SWPPP template that can be used for projects in the City of Tacoma. The template can be found on Ecology's website at: http://www.ecy.wa.gov/programs/wq/stormwater/construction/resourcesguidance.html. The Contractor developing the SWPPP must ensure that all references are appropriate for the City of Tacoma.

The SWPPP is considered a "living" document that shall be revised to account for additional erosion control/pollution prevention BMPs as they become necessary and are implemented in the field during project construction. A copy of the most current SWPPP and TESC Plan shall remain on-site at all times and an additional copy shall be forwarded to the Engineer. At the Contractor's preference, revisions to the SWPPP and TESC Plan may be forwarded to the Engineer rather than submitting a complete document. Revisions to the SWPPP and TESC Plan may be kept on-site in a file along with the original SWPPP document.

The Contractor shall provide Stormwater Pollution Prevention Plan inspection reports or forms per 8-01.3(1) B to the Project Engineer no later than the end of the next working day following the inspection.

8-01.3(1)B Erosion and Sediment Control (ESC) Lead

This section is revised to read:

The Contractor shall identify the ESC Lead at the Preconstruction Meeting and the contact information for the ESC Lead shall be added to the Stormwater Pollution Prevention Plan (SWPPP) Report and the Temporary Erosion and Sediment Control (TESC) Plan Sheet. The ESC Lead shall maintain, for the life of the contract, a current Certified Erosion and Sediment Control Lead (CESCL) certificate or maintain a current Certified Professional in Erosion and Sediment Control (CPESC) certificate from a course approved by the Washington State Department of Ecology. The CESCL or CPESC shall be listed on the Emergency Contact List required under Section 1-05.13(1).

The CESCL or CPESC shall direct implementation of the measures identified in the SWPPP and as shown on the TESC plan. Implementation shall include, but is not limited to the following:

1. Installing and maintaining all temporary erosion and sediment control Best Management Practices (BMPs) included in the SWPPP and as shown on the TESC plan. Damaged or inadequate BMPs shall be corrected as needed to assure continued performance of their intended function in accordance with BMP specifications and Permit requirements.
2. Performing monitoring as required by the NPDES Construction Stormwater General Permit.
3. Inspecting all on-site erosion and sediment control BMPs at least once every calendar week and within 24 hours of any discharge from the site. A SWPPP

Inspection report or form shall be prepared for each inspection and shall be included in the SWPPP file. A copy of each SWPPP Inspection report or form shall be submitted to the Engineer no later than the end of the next working day following the inspection. The report or form shall include, but not be limited to the following:

a. When, where, and how BMPs were installed, maintained, modified, and removed.
b. Observations of BMP effectiveness and proper placement.
c. Recommendations for improving future BMP performance with upgraded or replacement BMPs when inspections reveal SWPPP inadequacies.
d. Approximate amount of precipitation since last inspection and when last inspection was performed.

4. Updating and maintaining a SWPPP file on site that includes, but is not limited to the following:

a. SWPPP Inspection Reports or Forms.
b. SWPPP narrative.
c. National Pollutant Discharge Elimination System Construction Stormwater General Permit (Notice of Intent).
d. All documentation and correspondence related to the NPDES Construction Stormwater General Permit.
e. Other applicable permits.

Upon request, the file shall be provided to the Engineer for review.

8-01.3(1)C Water Management

This section is revised to read:

General. The Contractor is responsible for keeping excavations free from standing water during construction and disposing of the water in a manner that will not cause pollution, injury to public or private property, or cause a nuisance to the public. Groundwater flowing toward, into, or within excavations shall be controlled to prevent sloughing of excavation walls, boils, uplift, and heave in the excavation, and to eliminate interference with orderly progress of construction. The control of groundwater shall be such that softening of the bottom of excavations, or formation of “quick” conditions or “boils” during excavation, shall not occur. The Contractor is responsible for all foundation material required due to lack of dewatering efforts.

Dewatering Requirements. The Contractor shall design, construct, and operate a dewatering system in accordance with this Section and the SAD Authorization. The Contractor shall have competent workers available at all times for the continuous and successful operation of the dewatering and monitoring system.

Dewatering Plan. The Contractor shall submit a dewatering plan to the Engineer for review in accordance with Section 1-05.3 prior to the start of construction. Review of the dewatering plan submitted by the Contractor shall not relieve the Contractor from full responsibility for adequate design and performance of the system. The Contractor shall be solely responsible for the proper design, installation, operation and maintenance of the dewatering system. The Contractor shall be liable for any damages caused by system failure.

The dewatering plan shall include the following components:

1. System Components – Describe the method and equipment proposed for dewatering the excavation. The Contractor shall have on hand sufficient pumping equipment and machinery in good working condition for all emergencies, including power outage and flooding
2. Treatment Method – Describe how dewatering water that is to be discharged to the City's sanitary sewer system will be treated to meet the applicable discharge limits of the Special Approved Discharge Authorization and Tacoma Municipal Code 12.08. Provide applicable calculations.
3. Point of Discharge – Describe the point of discharge of the dewatering water. Any discharges to private property will require written documentation from the property owner that this point of discharge is permitted. The Contractor shall provide all proposed points of discharge as part of the Special Approved Discharge Authorization Application.
4. Maintenance Plan – Describe how the designed system will be maintained over the course of the project.
5. Monitoring Plan – Describe how discharge will be monitored to ensure compliance with all discharge requirements.
6. Special Approved Discharge (SAD) Authorization Application – The Contractor shall apply for a SAD Authorization as part of the dewatering plan. No discharge of dewatering water to the City's sewer systems will be permitted without obtaining this authorization. The City Construction Manager will provide the SAD authorization application to the Contractor after award of the contract.

Requirements for Dewatering Water Discharge to the Storm Sewer System.
Dewatering water will not be permitted to be discharged into the stormwater system on this project.

Requirements for Dewatering Water Discharge to the Sanitary Sewer System.
Prior to discharge of dewatering water to the City's sanitary sewer system, sediment control BMPs must be employed. Groundwater discharges to the sanitary sewer system shall have 225 mg/L or less of Total Suspended Solids (TSS). TSS analysis may be completed by the City Lab with a three-day turnaround, or by a third party laboratory at no additional cost to the City.

In addition to the TSS Requirements, the water shall contain no visible oil sheen or chemical odors. If the Contractor encounters any signs of oil within the soil or dewatering water, including any sheen on the water, and/or any chemical odor in the water or soils, the Engineer and Source Control shall be notified immediately and all discharges to the sanitary sewer system shall be stopped immediately.

In the presence of oil sheens and/or chemical odors, the Contractor shall test the dewatering water prior to discharge for contaminants referenced in the Special Approved Discharge Authorization and Tacoma Municipal Code 12.08.020. All discharges to the City's sanitary sewer system shall not exceed the limits of the Special Approved Discharge Authorization or TMC 12.08.020, whichever is most stringent.

The Contractor shall control the flow of water into the downstream system to ensure that the capacity of the City's sanitary sewer system is not exceeded as a result of the additional flows caused by the dewatering water. The Contractor shall contact the Engineer to request pipe capacity information for the Contractor's proposed discharge points.

The Contractor shall measure and record in gallons the total quantity of dewatering water discharged to the sanitary sewer system. This can be done by metering the flow or calculating batch discharges based on the volume of tanks used. In accordance with the SAD Authorization, the Contractor shall report the discharge quantities with the associated test results to Source Control.

8-01.3(2) Seeding, Fertilizing, and Mulching

8-01.3(2)A1 Seeding

The first paragraph is supplemented with the following:

The depth of cultivation shall be 3 inches.

8-01.3(2)B Seeding and Fertilizing

The first paragraph is supplemented with the following:

All seeding areas shall be seeded with the following mix:

Type of Seed	% by Weight
Dwarf Tall Fescue (variety)	45
Dwarf Perennial Rye (Barclay)	30
Red Fescue	20
Colonial Bentgrass	5

The rate of application shall be per supplier's recommendations for hydroseed application.

Seeding fertilizer shall be per supplier's recommendations for hydroseed application.

The fourth paragraph is supplemented with the following:

Seed shall be distributed uniformly over the designated area. Half of the seed shall be sown with the sower moving in one direction, and the remainder with the sower moving at right angles to the first sowing.

8-01.3(2)D Mulching

The first paragraph is supplemented with the following:

The Contractor shall follow the requirements of the City of Tacoma Surface Water Management Manual BMP C121 for Mulching according to the following provisions: Apply hydromulch with a hydromulcher in two phases per BMP C120 to enhance grass establishment, and follow supplier's recommendations.

8-01.3(2)E Tackifiers
This section is supplemented with the following:

The Contractor shall follow the requirements of the City of Tacoma Surface Water Management Manual BMP C120 for hydroseed applications.

8-01.3(7) Stabilized Construction Entrance
The third paragraph is revised to read:

When the contract requires a wheel wash in conjunction with the stabilized entrance, the details for the wheel wash and the method for containing and treating the sediment-laden runoff shall be included as part of the SWPPP and TESC Plan.

8-01.3(8) Street Cleaning
The third paragraph is revised to read:

Street washing with water shall not be permitted.

8-01.3(9)D Inlet Protection
Replace the third paragraph of this section with the following:

When the depth of accumulated sediment and debris reaches approximately 1/3 the height of an internal device or 1/3 the height of the external device (or less when so specified by the manufacturer), or as designated by the Engineer, the sediment and debris shall be removed and disposed of per SWMM BMP C220 or as specified on the Plans or within the SWPPP.

The section is supplemented with the following:

Only bag-type filters are allowed for use in the public right of way.

8-01.3(10) Wattles
The fifth and sixth sentences are revised to read:

On gradually sloped or clay-type soils trenches shall be 3 to 5 inches deep. On loose soils, in high rainfall areas, or on steep slopes, trenches shall be 3 to 5 inches deep, or 1/2 to 2/3 the thickness of the wattle.

8-01.4 Measurement
This section is supplemented with the following:

No specific unit of measurement shall apply to the lump sum item “Stormwater Pollution Prevention Plan (SWPPP)”.

No specific unit of measurement shall apply to the lump sum item “Dewatering Plan”.

No specific unit of measurement shall apply to the lump sum item “NPDES Construction Stormwater General Permit”.

8-01.5 Payment
This section is supplemented with the following:

Where removal of erosion control BMPs is directed by the Engineer according to 8-01.3(16) or according to these specifications and the plans, removal shall be included in the lump sum or unit cost for these respective BMPs.

"Erosion Control", per lump sum. The lump sum contract price for "Erosion Control" shall be full pay for all cost for labor, equipment, and materials to perform all work associated with erosion control. Work shall include, but shall not be limited to, furnishing, purchase and delivery or required materials, installation and maintenance of temporary erosion and sediment control measures, and all costs incurred by the Contractor in performing the Contract Work defined in Section 8-01, except for unit bid items in Section 8-01 when these are included in the bid proposal. It is the Contractor's responsibility to maintain, repair, and replace any and all erosion control measures as required to maintain compliance with the NPDES Construction Stormwater General Permit and Tacoma Municipal Code 12.08 for the entire duration of the Project.

"Stormwater Pollution Prevention Plan (SWPPP)", per lump sum. The lump sum contract price for "Stormwater Pollution Prevention Plan (SWPPP)" shall be full pay for all costs, including but not limited to, preparing, submitting, revising, and resubmitting revisions for the Stormwater Pollution Prevention Plan.

"Dewatering Plan", per lump sum. The lump sum contract price for "Dewatering Plan" shall be full pay for all costs, including but not limited to, preparing, submitting, revising, and resubmitting revisions for the Dewatering Plan.

"NPDES Construction Stormwater General Permit", per lump sum. The lump sum contract price for "NPDES Construction Stormwater General Permit" shall be full pay for all costs, including but not limited to, transfer of coverage, sampling, monitoring, reporting, coordinating, inspecting, materials and labor, and all fees and any other expenses necessary to fully comply with the requirements of the Permit up to and including termination of the Permit and completion of the Work The lump sum price shall also include all costs necessary to supply the City of Tacoma with all information as necessary to ensure compliance with the permit.

END OF SECTION

8-02 ROADSIDE RESTORATION
(******)

8-02.2 Materials
This section is supplemented with the following:

Root barriers shall meet the requirements of City of Tacoma Standard Plan LS-01 and the details on the Plans.

8-02.3 Construction Requirements

8-02.3(4)A Topsoil Type A
This section is supplemented with the following:

Topsoil type A shall meet the requirements of and be placed at a minimum to the depth shown on City of Tacoma Standard Plan GSI-01d.

8-02.3(5) Planting Area Preparation
This section is supplemented with the following:

All grades shall be maintained in the areas to be planted in a true and even condition. The contractor shall be careful not to disturb any of the existing or cut slopes. Where final grades have not been established, the areas shall be finish graded and all surfaces left in an even and compacted condition. The finished grade shall be such that after planting, the grade shall be flush with adjoining surfaces; positive drainage shall also be maintained.

8-02.3(6) Soil Amendments
This section is supplemented with the following:

Recycled/compost material in accordance with Section 9-14.4(8) shall be blended with the specified topsoil at a ratio of 1/1 by volume.

8-02.3(8) Planting
This section is supplemented with the following:

The Contractor shall provide and install root barriers as shown on the detail in the Plans and on City of Tacoma Standard Plan LS-01 for all newly planted trees.

8-02.3(9) Pruning, Staking, Guying and Wrapping
This section is supplemented with the following:

Crossed or rubbing branches shall be removed providing the natural shape of the tree is preserved. Under no circumstances shall pruning be done prior to inspection and approval of plants by the Engineer. All cuts shall be made flush with the parent stem leaving no stubs. Pruning cuts shall be made in a manner to favor the earliest possible covering of the wound by callus growth. Cuts that produce large wounds and weaken the tree will not be acceptable.

Top growth removal to compensate for root loss shall not exceed one-third (1/3) of the top growth unless otherwise specified or directed by the Engineer. Cuts created 3/4 inch

in diameter shall be treated with an approved tree wound dressing. All pruning shall produce a clean cut without bruising or tearing the bark and shall be in living wood where the wood can properly heal over.

Evergreens shall not be pruned, except to remove injured branches. The use of pole shears and/or hedge shears for pruning deciduous and evergreen trees will not be permitted. All trimmings and other debris left over from the planting operations shall be collected and disposed of off the site.

All evergreen trees and deciduous trees over 15 feet in height shall be guyed with three wires or cables.

All deciduous and evergreen trees shall be staked the same day of planting.

8-02.3(11) Bark or Wood Chip Mulch

The third sentence of the first paragraph is revised to read:

Mulch shall be feathered to plant material trunks, stems, canes, or root collars, and level with the top of junction and valve boxes, curbs and pavement edges.

This section is supplemented with the following:

Bark or wood chip mulch in accordance with Section 9-14.4(3) shall be applied to a depth of 4 inches at the location indicated on the Plans or as directed by the Engineer.

8-02.3(13) Plant Establishment

This section is revised to read:

The Contractor shall maintain the planting areas and all plants planted within the project limits to ensure the resumption and continued growth of the planted material until physical completion of the contract.

Maintenance shall include, but not be limited to, labor and materials necessary for removal of foreign, dead, or rejected plant material, maintaining a weed-free condition, and the replacement of all unsatisfactory plant material planted under the contract.

Planting dates for replacement plant material will be approved by the Engineer.

The Contractor shall meet with the Engineer for the purpose of joint inspection of the project once installation has been completed and thereafter on a periodic “as needed” basis as determined by the Engineer, until the physical completion date of the contract.

All conditions unsatisfactory to the Engineer shall be corrected by the Contractor within a ten-day period immediately following the inspection. Failure to comply with corrective steps as outlined by the Engineer shall constitute justification of the Contracting Agency to take corrective steps and to deduct all costs thereof from any monies due the Contractor.

The Contractor shall replace all plants stolen or damaged by the acts of others until the physical completion date of the contract.

8-02.3(14) Plant Replacement
This section is revised to read:

The Contractor shall provide the Contracting Agency a one (1) year non pro-rated, full labor and materials warranty for all planted material. The warranty shall cause the Contractor to remove and replace all rejected plant material during the warranty period. The warranty period shall begin at the date of physical completion of the contract and end one calendar year from that date.

The Contractor shall be responsible for growing or providing enough plants for replacement of all plant material rejected during the warranty period. All rejected plant material shall be replaced at dates approved by the Engineer.

All replacement plants shall be of the same species and quality as the plants they replace. Plants may vary in size reflecting one season of growth should the Contractor elect to hold plant material under nursery conditions for an additional year to serve as replacement plants.

Replacement plants will be subject to the original warranty provision as stated above.

8-02.3(16) Lawn Installation

8-02.3(16)A Lawn Installation
The second paragraph is revised to read:

All seeding areas shall be seeded with the following mix:

Type of Seed	% by Weight
Dwarf Tall fescue (variety)	45
Dwarf Perennial Rye (Barclay)	30
Red Fescue	20
Colonial bentgrass	5

The rate of application shall be per supplier's recommendations for hydroseed application.

Seeding fertilizer shall be per supplier's recommendations for hydroseed application.

The third paragraph is supplemented with the following:

Where no irrigation system is to be installed, the lawn shall be placed during the following period only:

March 1st – June 30th
September 1st - October 25

The fifth paragraph is supplemented with the following:

Topsoil shall be tilled to a depth of 8 inches.

The sixth paragraph is supplemented with the following:

On sloped areas, the sod strips shall be laid perpendicular to the flow of water.

8-02.3(16)B Lawn Establishment

This section is supplemented with the following:

Lawn that is replaced shall be of the same mixture and grade as the surviving lawn.

8-02.4 Measurement

The first paragraph is revised to read:

Topsoil, mulch and soil amendments will be measured by the cubic yard in the haul conveyance at the point of delivery.

The seventh paragraph is revised to read:

Compost will be measured by the cubic yard in the haul conveyance at the point of delivery.

This section is supplemented with the following:

Irrigation water used to establish vegetation will be considered included in the cost of plants.

"Site Restoration" will be measured per lump sum.

Root barrier will be measured by the linear foot.

8-02.5 Payment

The pay item for "Plant Selection" is revised to read

"Plant Selection ___", per each.

Payment for "Plant Selection ___" shall be full pay for all materials, labor, tools, equipment and supplies necessary for weed control within planting areas, planting area preparation, fine grading, planting, cultivating, and clean-up for the particular items called for in the Plans until the physical completion date of the contract. A one (1) year plant warranty shall be included in the unit contract price.

Paragraphs 7 through 18, pertaining to partial payment, are deleted.

The pay unit of square yards will be used in lieu of acres for all Pay Items in this section.

"Bark or Wood Chip Mulch", per cubic yard.

The unit Contract price per cubic yard for "Bark or Wood Chip Mulch" shall be full pay for all labor, materials, tools, and equipment necessary to complete the Work as specified, which includes hauling, spreading the mulch onto the existing soil, and fine grading.

"Site Restoration", lump sum.

The lump sum payment for “Site Restoration” shall be full pay for all materials, labor, tools, equipment, and supplies necessary for restoration of the job site and any landscape items not included as specific bid items in the Proposal, including but not limited to replacement of irrigation appurtenances, grass sods, lawn seeding, planting area preparation, topsoil, soil amendments, grading, cultivating, planting, wood chip mulch, cleanup, and water necessary to complete the site restoration, as specified.

“Root Barrier”, per linear foot.

The unit Contract price per linear foot for “Root Barrier” shall be full pay for all labor, materials, and equipment necessary or incidental to procuring and installing Root Barrier.

END OF SECTION

8-03 IRRIGATION SYSTEM
(April 1, 2018 Tacoma GSP)

8-03.3 Construction Requirements

The third paragraph is supplemented with the following:

All electrical work from the electrical source to the controller junction box must be completed by a licensed electrical contractor

8-03.3(5) Installation

The first sentence of the second paragraph is revised to read:

Final position of turf heads shall be level or ½ inch below finished grade measured from the top of the sprinkler.

The fourth paragraph is revised to read:

Final position of valve boxes, capped sleeves, and quick coupler valves shall be level with the finished grade or mulch.

This section is supplemented with the following:

The Contractor shall advise the Engineer at least 24 hours before pressure tests are to be conducted.

A zone diagram shall be posted in the controller to facilitate the selection of the valves to be operated.

END OF SECTION

8-04 CURBS, GUTTERS, AND SPILLWAYS
(April 1, 2018 Tacoma GSP)

8-04.3(1) Cement Concrete Curbs, Gutters, and Spillways

The first paragraph is revised to read:

Cement concrete curb, curb and gutters, gutters, and spillways shall be constructed with air entrained concrete Class 3000 conforming to the requirements of Section 6-02.

Section 8-04.3(1) Cement Concrete Curbs, Gutters, and Spillways is supplemented with the following:

8-04.3(1)C Integral Cement Concrete Curb

When integral curb is being constructed with the pavement, fresh concrete for the integral curb shall be placed at such time as will enable the top section of the curb to be consolidated, finished, and bonded to the pavement slab while the concrete is plastic.

Where curb is not being placed integral with the pavement slab, reinforcing steel dowels shall be placed in the base section for the curb in accordance with the standard drawing.

Section 8-04.3 Construction Requirements is supplemented with the following:

8-04.3(6) Cold Weather Work

The following additional requirements for placing concrete shall be in effect from November 1 to April 1:

- The Engineer shall be notified at least 24 hours prior to placement of concrete.
- All concrete placement shall be completed no later than 2:00 p.m. each day.
- Where forms have been placed and the subgrade has been subjected to frost, no concrete shall be placed until the ground is completely thawed. At that time, the forms shall be adjusted and subgrade repaired as determined by the Engineer.

8-04.5 Payment

(******)

This section is supplemented with the following:

“Integral Cement Conc. Traffic Curb”, per linear foot
“Cement Conc. Valley Gutter”, per linear foot.

END OF SECTION

8-06 CEMENT CONCRETE DRIVEWAY ENTRANCES (******)

8-06.2 Materials

This section is supplemented with the following:

Finishing Aid

Finishing aid shall be a liquid reactive colloidal silica which is intended to be worked into the surface of plastic concrete. Evaporation retarders will not be allowed as a substitute.

8-06.3 Construction Requirements

The first paragraph is revised to read:

Cement concrete driveway approaches shall be constructed with air entrained concrete Class 3000 conforming to the requirements of Section 6-02 or Portland Cement Concrete Pavement conforming to the requirements of Section 5-05.

This section is supplemented with the following:

The Contractor shall provide a Temporary Driveway Access for a minimum driveway width of 10 feet for residential driveways, 12 feet for commercial driveways. Use steel trench cover plates to provide a traffic access as directed by the Engineer. The edges of the access shall be sloped with CSTC where abrupt edges create a potential hazard for cars or pedestrians. Specification sections 1-07.23, and 1-10 shall also apply. The contractor shall maintain the Temporary Driveway Access in functional order until the permanent construction of the road and concrete driveway is finished at each respective location.

All cement concrete placed in accordance with Section 8-06 shall be treated with finishing aid which is worked into the surface of the plastic concrete during the finishing process. Finishing aid shall be applied at a rate of no less than 500 square feet per gallon. All work shall be done in accordance with the manufacturer's recommendations.

This section is supplemented with the following sub-section:

8-06.3(1) Cold Weather Work

The following additional requirements for placing concrete shall be in effect from November 1 to April 1:

- The Engineer shall be notified at least 24 hours prior to placement of concrete.
- All concrete placement shall be completed no later than 2:00 p.m. each day.
- Where forms have been placed and the subgrade has been subjected to frost, no concrete shall be placed until the ground is completely thawed. At that time, the forms shall be adjusted and subgrade repaired as determined by the Engineer.

8-06.5 Payment

The pay item "Cement Conc. Driveway Entrance Type __" is revised to read:

"Cement Conc. Driveway Entrance", per square yard.

The unit contract price per square yard for “Cement Conc. Driveway Entrance” shall be full pay for all labor, tools, equipment, and materials required to construct concrete driveways at a single time or in segments, and installing and removing a Temporary Driveway Access shall be included. All costs for finishing aid shall be included in the unit contract price. All types of concrete driveway entrances are included in this bid item.

The Contractor shall include all costs associated with excavating, including haul and disposal, regardless of the depth in the unit contract price for “Cement Conc. Driveway Entrance”.

END OF SECTION

8-12 CHAIN LINK FENCE AND WIRE FENCE

8-12.1 Description

This section is supplemented with the following:

This work shall also include constructing cedar fence at the height specified, consisting of posts, stringers, and cedar fence boards, to the lines and grades shown on the plans.

8-12.2 Materials

The first paragraph is supplemented with the following:

Sawed Fence Posts	9-09.2(3)
Preservative Treatment	9-09.3
Nails	9-06.22

8-12.3 Construction Requirements

8-12.3(1)C Tension Wire

This section is supplemented with the following:

In lieu of a tension wire supporting the top of the chain link fabric the Contractor shall install a top rail with a minimum diameter of 1 1/4-inch and fasten the chain link fabric to the rail in the same manner used to secure the fabric to posts, with a maximum distance between fasteners of 24-inches.

Add this new section:

8-12.3(3) Cedar Fence

8-12.3(3)A Posts

Posts shall be square 4-inch by 4-inch, treated with preservative for exterior use.

Posts shall be a minimum of 2 feet longer than the fence height to be built for embedment. Posts shall be placed vertical and plumb, with a maximum spacing of 8 feet between posts and minimum spacing of 4 feet between posts.

All corner and gate posts shall be set in concrete to the dimensions shown in WSDOT Standard Plan L-20.10-03. All other posts may be set in thoroughly compacted backfill material.

8-12.3(3)B Stringers

Stringers shall be 2-inch by 4-inch, and either by treated with preservative for exterior use or be made of Western Red Cedar. Stringers shall be long enough to completely span the space between posts, and shall be attached to the posts such that the largest dimension is vertical and the stringer is level.

Stringers may be attached to posts with either 4-inch hot dipped galvanized nails, or 4-inch screws coated for exterior use.

4-foot height cedar fences shall be constructed using 2 stringers. 6-foot height cedar fences shall be constructed using 3 stringers.

8-12.3(3)C Pickets

Pickets shall be 5/8-inch by 5 1/2-inch and sufficient height for the height of fence being constructed, and shall be made of Western Red Cedar. Pickets shall be flat toped.

Pickets shall be attached to stringers with 1 1/2-inch hot dipped galvanized nails. A minimum of 2 nails shall be used to attach a picket to each stringer. A space of 1/16th inch to 1/8th inch shall be placed between each picket. Pickets shall be ripped to a reduced width as necessary to completely close the space between posts.

8-12.3(3)D Gates

Gates for cedar fence shall be constructed in a manner as to give a continuous appearance from the outside of the fence. Gates shall be constructed to a quality that prevents sagging and dragging, with support posts with sufficient strength and embedment to support the gate when open. Gate hinges shall be of sufficient strength and number to support the gate, and allow the gate to be opened in the direction of the property; gates for a 6-foot high fences shall have a minimum of 3 hinges, gates for 4-foot high fences shall have a minimum of 2 hinges. Latches for the gates shall be designed to allow use from either side of the gate, and to allow a lock to be placed on the inside of the gate.

Gates exceeding a width of 6 feet shall be chain link in accordance with WSDOT Standard Plan L-30.10-02.

8-12.4 Measurement

The first paragraph is revised to read:

Chain link fence, wire fence, and cedar fence will be measured by the linear foot of completed fence along the ground line, inclusive of gates, but exclusive of openings.

The second and third paragraphs are deleted.

8-12.5 Payment

The pay items "End, Gate, Corner, and Pull Post for Chain Link Fence", "Double 14 Ft. Chain Link Gate", "Double 20 Ft. Chain Link Gate", "Single 6 Ft. Chain Link Gate", "Single Wire Gate 14 Ft. Wide", and "Double Wire Gate 20 Ft. Wide" are deleted, and included in the unit payment for "Chain Link Fence Type ___" or "Wire Fence Type ___" as is applicable for the type of fence being constructed.

This section is supplemented with the following:

"Cedar Fence, ___ Foot Height", per linear foot.

The unit contract price per linear foot for "Cedar Fence, ___ Foot Height" shall be full pay for all labor, materials, and equipment to construct the fence called for on the Plans as specified, including but not limited to all posts, stringers, pickets, gates, hinges, latches, and footings.

END OF SECTION

8-13 MONUMENT CASES
(******)

This section is revised to read:

8-13.1 Description

This work shall consist of constructing monuments in accordance with the Standard Plan and these Specifications, in conformity with the lines and locations shown in the Plans or as staked by Contractor provided survey.

8-13.2 Materials

Concrete shall be Class 3000 in accordance with the requirements of Section 6-02. 'Ready Mix' bag concrete shall not be used.

Bronze markers will be supplied by the Contractor.

8-13.3 Construction Requirements

The Contractor shall construct the poured monument in accordance with the City of Tacoma Standard Plan SU-01.

The Contractor shall apply and obtain a permit from the Department of Natural Resources in accordance with WAC 332-120 prior to removing or destroying the existing monument.

8-13.4 Measurement

Measurement of the poured monument will be per each.

8-13.5 Payment

Payment will be made in accordance with Section 1-04.1.

"Poured Monument", per each.

The unit contract price per each for "Poured Monument" shall be full pay for all labor, equipment, and materials required to furnish and install the monument, including the removal of existing monuments and necessary pavement removal to accommodate the installation in accordance with the standard plan and specifications.

END OF SECTION

8-14 CEMENT CONCRETE SIDEWALKS (******)

8-14.1 Description

This section is supplemented with the following:

This Work shall also consist of installing decorative colored stamped cement concrete sidewalk, scored cement concrete sidewalks, bus pads and wheelchair curb ramps including detectable warning surface mats in locations as shown on Plans, in conformity with lines, grades, thicknesses, and typical cross-sections shown on the Plans.

Stamping of house numbers at private walks and stair cases is also included in the Work described by this section.

8-14.2 Materials

This section is supplemented with the following:

Materials shall meet the requirements of the following sections as applicable unless noted:

Concrete	6-02
Steel Structures	6-03
Structural Steel and related materials	9-06
Reinforcing Steel	9-07

Concrete

Concrete shall be Class 3000 unless noted otherwise on the Plans.

Reinforcing Steel

Reinforcing steel shall conform to ASTM A615, Grade 60.

Decorative Colored Stamped Cement Concrete Sidewalk

Decorative Sidewalk Stamp shall be a custom pattern as detailed in the Plans and specified herein. Two stamps will be provided by the Contracting Agency; the Contractor may choose to have additional stamps of the same pattern produced at the Contractor's expense.

Contractor shall return the stamped pattern form to the City of Tacoma (City).
Concrete Color shall be integral and shall be Solomon Colors "5092 Sage" or engineer approved equal.

Detectable Warning Surface

Detectable warning surface material shall be per City of Tacoma standard plans.

Finishing Aid

Finishing aid shall be a liquid reactive colloidal silica which is intended to be worked into the surface of plastic concrete. Evaporation retarders will not be allowed as a substitute.

House Number Stamps

Stamps for house numbers shall be capable of imprinting the house number for that property at a depth of between 3/16-inch to 1/4-inch and a text height of 2-inch. The stamps shall also be capable of placing all the digits of the house number in a single

straight line without any skewing of the digits or offsetting of the bottom edge of the digits.

8-14.3 Construction Requirements

This section is supplemented with the following:

Decorative Colored Stamped Cement Concrete Sidewalk

Decorative sidewalk shall receive a light broom finish. The stamped concrete pattern shall be as shown in the plans and specifications.

Contractor shall return all stamped pattern forms to the City upon completion of work.

Cement Concrete Finishes

The finish requirements include:

- Sidewalk edges tooled with a ½" radius edger
- Light broom finish (perpendicular to the direction of travel orientation) on all sidewalk

When replacing sections of existing sidewalk or when new sidewalk adjoins existing, new concrete shall be finished to match the existing concrete or as directed by the City Engineer.

Longitude slope shall be no less than ¼" for every 10 feet.

Full depth expansion joints shall be constructed with a minimum spacing of 10 feet on center and maximum spacing of 16 feet on center, align with control joints, and as detailed on the Plans. Expansion joints shall be placed between pedestrian ramps, driveways and match curb and gutter expansion joint spacing. The Contractor shall also place expansion joints as indicated on the Plans and in details.

Job Conditions

- Hot weather: Comply with the recommended practice of ACI 305R and the requirements specified herein.
- Cold Weather: Comply with the recommended practice of ACI 306R and the requirements specified herein.

All concrete and pavements shall be free of depressions; puddling shall not be allowed to occur.

8-14.3(3) Placing and Finishing Concrete

The fourth paragraph is revised to read:

Curb ramps shall be of the type specified in the Plans. The detectable/tactile warning mat shall be installed per City of Tacoma Standard Plan No. SU-05G.

This section is supplemented with the following:

Cement Concrete Sidewalks shall receive light broom finish.

All cement concrete placed in accordance with Section 8-14 shall be treated with finishing aid which is worked into the surface of the plastic concrete during the finishing process. Finishing aid shall be applied at a rate of no less than 500 square feet per gallon. All work shall be done in accordance with the manufacturer's recommendations.

8-14.3(4) Curing

The second sentence is revised to read:

Curing shall be in accordance with Section 5-05.3(13).

8-14.3(6) Cold Weather Work

The following additional requirements for placing concrete shall be in effect from November 1 to April 1:

- The Engineer shall be notified at least 24 hours prior to placement of concrete.
- All concrete placement shall be completed no later than 2:00 p.m. each day.
- Where forms have been placed and the subgrade has been subjected to frost, no concrete shall be placed until the ground is completely thawed. At the time, the forms shall be adjusted and subgrade repaired as determined by the Engineer.

8-14.3(7) Thickened Edge for Sidewalk

Thickened edge shall be constructed in accordance with the standard plan.

8-14.3(8) Detectable Directional Tile

The detectable directional tile shall be located as shown in the Plans. Placement of the detectable directional tile shall be in accordance with the manufacturer's recommendations for placement in plastic concrete, or on hardened cement concrete surface or asphalt pavement surface, as is applicable for the location.

Vertical edges of the detectable directional tile shall be flush with the adjoining surface to the extent possible (not more than ¼ inch above the surface of the pavement) after installation.

Detectable directional tiles shall be produced by a manufacturer approved by the City of Tacoma of Detectable Warning Surface, or as otherwise approved by the Engineer.

The detectable directional tile shall be made of a polymer composite which is color stable when exposed to ultraviolet light 6 inches wide with two parallel rows of raised bars each 1.28 inches wide and 11.28 inches long. The detectable directional tile shall be the color indicated in the Plans.

8-14.3(9) House Number Stamp

At each newly constructed staircase and private walk the Contractor shall stamp the house number for that property 6-inches, on center, from the edge of the public sidewalk and parallel with the new public sidewalk, as shown in the detail on the plans. Digits for each house number shall be placed in a single straight line, no skewing or offsets in the bottom edges of the stamps, to a depth of no more than 1/4-inch and no less than 3/16-inch.

8-14.5 Measurement

This section is supplemented with the following:

Cement Concrete Sidewalk will be measured by the square yard of installed cement concrete sidewalk with scoring and finished surface(s).

Decorative Colored Stamped Cement Concrete Sidewalk will be measured by the square yard of installed and finished decorative sidewalk band, including stamp, as detailed on the Plans.

Construction of expansion joints and score joints as shown on the Plans, shall be **included** in the unit contract price per square yard for Cement Concrete Sidewalk.

Detectable directional tile will be paid by the linear foot of tile installed as measured along the centerline of the length of the tile.

House number stamps will be measured per each house number set completely imprinted. House number sets are typically 3 digits long.

8-14.5 Payment

This section is supplemented with the following:

"Cement Conc. Sidewalk", per square yard.
The unit contract bid price for Cement Conc. Sidewalk shall be full compensation for all finishes, labor, tools, and equipment necessary to satisfactorily complete the work as detailed on the Plans, defined in the Standard Specifications and these Special Provisions.

Cement concrete portions of the bike lanes shall be paid for as "Cement Conc. Sidewalk", except when already included in other pay items such as "Cement Conc. Curb Ramp" and "Cement Conc. Driveway Entrance".

"Decorative Colored Stamped Cement Conc. Sidewalk", per square yard.
The unit contract bid price for Decorative Colored Stamped Cement Concrete Sidewalk shall be full compensation for all labor, tools, and equipment necessary to satisfactorily complete the work as detailed on the Plans, defined in the Standard Specifications and these Special Provisions, including application of finishing aid.

"Detectable Directional Tile", per linear foot

The unit contract price per linear foot for "Detectable Directional Tile" shall be full pay for all labor, materials, and equipment to install the detectable direction tiles where shown in the Plans, including, but not limited to procuring the tiles, fasteners, adhesive, and calking, drilling anchor holes, and placing the tile in accordance with the manufacturer's recommendations where shown on the plans.

"House Number Stamp", per each.

The unit contract price per each for "House Number Stamp" shall be full pay for all labor, materials, and equipment necessary to place the stamp as described in the Specification

and as shown in the Plans including, but not limited to procuring stamps, marking out the location, stamping, and additional finishing,

The pay item "Cement Conc. Sidewalk" is supplemented with the following:

All additional costs related to the construction of thickened edges, thickened sections for Residential Storm Drains, cement concrete base, scoring and finishes shall be included in the unit contract cost for "Cement Conc. Sidewalk".

The unit contract bid price above, including all incidental work, shall be full compensation for all labor, materials, tools and equipment necessary to satisfactorily complete the work including different scoring and application of finishing aid as defined in the Standard Specifications and these Special Provisions.

Construction of expansion joints and score joints as shown on the Plans shall be incidental to and included in the unit contract price per square yard for Cement Concrete Sidewalk.

The sixth paragraph is revised to read:

The Contractor shall include all costs associated with excavating, including haul and disposal, regardless of the depth in the unit contract price for "Cement Conc. Sidewalk" and/or "Cement Conc. Curb Ramp Type __".

END OF SECTION

8-20 ILLUMINATION, TRAFFIC SIGNAL SYSTEMS, AND ELECTRICAL (March 31, 2018 Tacoma GSP)

8-20.1 Description

(Special Provision)
This section is to be supplemented with the following:

Work includes furnishing and installing all materials necessary to provide:

- Replacement of existing Traffic signal at the intersection of S 64th St & Pacific Ave.
- Replacement of existing Traffic signal at the intersection of E 64th St & McKinley Ave.
- Installation of a corridor illumination system along S/E 64th St.
- Installation of fiber optic interconnect along S/E 64th St.
- Installation of Rectangular Rapid Flashing Beacons (RRFB) at the intersection of E 64th St and A St
- Installation of School Zone Beacons along E 64th St

The work involves, but shall not be limited to, the supply, testing and installation of the following:

- Signal Poles and Foundations
- Signal Controller and Electrical Service Cabinets and Foundations
- Signal and Pedestrian Heads
- Pedestrian Push Buttons
- Emergency Vehicle Preemption
- Junction Boxes
- Cable Vaults
- Conduit and Wire
- Fiber Optic Cable
- Signs
- Rectangular Rapid Flashing Beacons
- School Zone Beacons
- Luminaire poles and foundations
- Luminaires

8-20.1(1) Regulations and Code

(Special Provision)
This section is modified as follows:

All electrical equipment shall conform to the Standards of the National Electrical Manufacturer's Association (NEMA). In addition to the requirements of these Specifications, all materials and methods required under this section, unless otherwise superseded herein, shall conform to the 2018 edition of the Washington State Department of Transportation *Standard Specifications for Road, Bridge, and Municipal Construction* (herein referred to as Standard Specifications); to all current amendments to the Standard Specifications; to the State of Washington Standard Plans; to the State of Washington Sign Fabrication Manual; the American Standards Association (ASA); American National Standards Institute (ANSI); to the City of Tacoma Right-of-Way Design Manual; to the current National Electric Code (NEC), Laws, Rules & Regulations for Installing Electrical Wires & Equipment, of the Department of Labor and Industries,

State of Washington; and to the current Manual on Uniform Traffic Control Devices (MUTCD) as adopted by the State of Washington.

Safe wiring labels required by the Department of Labor and Industries shall be required for this project. Persons performing electrical work shall be certified in accordance with RCW 19.28.161. Proof of certification shall be supplied to the Engineer prior to the performance of the work.

8-20.1(2) Industry Codes and Standards
(Special Provision)
This section is supplemented with the following:

National Electrical Safety Code (NESC)
PO Box 1331, 445 Hoes Lane
Piscataway, New Jersey

8-20.1(3) Permitting and Inspections
(March 31, 2018 Tacoma GSP)
The third paragraph is revised to read:

All new services require a Tacoma Public Utilities Permit and inspection by Tacoma Power. All work on the load side of the service will be inspected by the Signal and Streetlight Shop Inspector.

8-20.2 Materials
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

The Contractor shall warranty all electrical and mechanical equipment described in this section for satisfactory in service operation for one year following project acceptance. Warranty shall include troubleshooting, labor, materials and all other costs to bring the equipment to a satisfactory level of service. Normal maintenance is not included in the warranty.

8-20.2(1) Equipment List and Drawings
(March 31, 2018 Tacoma GSP)
This section is revised to read:

Within 20 days following execution of the Contract, the Contractor shall submit to the Engineer a completed “Request for Approval of Material” that describes the material proposed for use to fulfill the Plans and Specifications.

The Contractor shall submit Type 2 Working Drawings consisting of supplemental data, sample articles, or both, of the material proposed for use. Supplemental data includes such items as catalog cuts, product Specifications, shop drawings, wiring diagrams, etc.

The Contractor shall submit Type 2 Working Drawings consisting of the following information for each different type of luminaire required on the Contract:

1. Isocandela diagrams showing vertical light distribution, vertical control limits, and lateral light distribution classification.
2. Details showing the lamp socket positions with respect to lamp and refractor for each light distribution type. This requires that the Contracting Agency know what the light pattern available are and the light distribution.

Additional submittals for proposed alternate LED Roadway Luminaires shall be in conformance with section 9-29.10.

The Contractor shall submit for approval Type 3E Working Drawings in accordance with Section 1-05.3 for each type of light standard and each type of signal standard called for on this project.

The Engineer's acceptance of any submitted documentation shall in no way relieve the Contractor from compliance with the safety and performance requirements as specified herein.

Submittals required shall include but not be limited to the following:

1. A Type 2 Working Drawing consisting of a material staging plan, should the Contractor propose Contracting Agency-owned property for staging areas.
2. A Type 2 Working Drawing consisting of a cable vault installation plan showing the exact proposed installation location by Roadway station, offset and the scheduled sequence for each cable vault installation.
3. A Type 2E Working Drawing consisting of a pit plan, for each boring pit, depicting the protection of traffic and pedestrians, pit dimensions, shoring, bracing, struts, walers, sheet piles, conduit skids, and means of attachment, casing type, and casing size.
4. A Type 2E Working Drawing consisting of a boring plan depicting the boring system and entire support system.

(Special Provision)
This section is to be supplemented with the following:
Manufacturer's data for all materials proposed for use in the contract which require approval shall be submitted in one complete package.

8-20.3 Construction Requirements

8-20.3(1) General
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

The Contractor shall call 24 hours' prior for inspection before covering any underground conduit, prior to installing any detection loops, or placing concrete for foundations. For inspections, notify Traffic Signal/Streetlighting at (253) 591-5287.

Work shall be sequenced such that after the new signal is placed in operation, the Contractor shall remove any equipment not required for the operation of the new signal. The Contractor shall remove the old vehicle and pedestrian signal heads immediately after the new system is operational.

For new signals, the contractor shall provide a Portable Message Change Sign in each direction and operate the PMCS for one week before, and one week after activating the new signal. This work shall be paid for in accordance with Section 1-10.

Uniformed police officers shall be provided by the Contractor to direct traffic at any time the signal is not in normal operation. This work shall be paid for in accordance with Section 1-10.

The following existing and temporary equipment shall be deconstructed/removed by the Contractor and delivered to the City of Tacoma Signal/Streetlight Shop located at 3401A South Orchard Street. Care shall be exercised in removing and salvaging the equipment. Any equipment damaged during removal, hauling, and stockpiling shall be repaired or replaced by the Contractor at no expense to the City.

- All signal heads and mounting hardware
- Flashing beacons, and flasher control panel
- Steel poles, mast arms, and hardware
- Aluminum poles, mast arms, and hardware
- Controller cabinets and all internal hardware and wiring
- Vehicle detection systems, including video, microwave, and infrared systems, and associated hardware
- All Opticom equipment or other preemption and priority equipment.
- LED luminaries, LED retrofit kits, and LED lamps
- Ornamental/Decorative fixtures and poles/posts
- Pedestrian signals, poles, and pushbuttons.
- Signs, brackets, and hardware
- Locking junction box security lids, security bolts, and all other wire theft deterrent security hardware

All other equipment shall be removed of and disposed of by the Contractor, including but not limited to the following:

- Wood poles
- All wiring outside of the controller cabinet
- Loops
- Non-LED cobra-head fixtures

Add the following new Section:

8-20.3(1)A Temporary Vehicle Detection

(Special Provision)

The Contractor shall provide temporary vehicle detection during construction operations at any point where the existing loop detectors are disconnected. Detection system shall be installed and functional five (5) working days prior to disconnection of existing loop detectors.

Detection method shall be at the discretion of the Contractor, but shall be approved by the City prior to installation. Using the permanent Gridsmart vehicle detection system during construction is acceptable, however the Contractor shall be responsible for all costs associated with configuring and installing the system both in the temporary and permeant configurations.

The Contractor shall be responsible for the maintenance of the temporary vehicle detection system throughout the duration of the Work.

8-20.3(4) Foundations

(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

Anchor bolts for streetlight standards and for strain poles shall extend a minimum of two threads and a maximum of six threads above the top heavy-hex-nut. A minimum of three threads shall remain between bottom of the leveling hex-nut and the top of the foundation.

Foundations shall be excavated using an auger and poured against undisturbed material unless otherwise approved by the Engineer. Vacuum excavation should be used where there is a possibility of conflict with utilities or other facilities.

Forming the foundation with galvanized culvert pipe or similar forming methods will only be allowed when soil conditions or other factors make this method of construction necessary and is approved by the Engineer. Biodegradable forming tubes shall be fully removed from the cured concrete prior to backfilling. When using culvert or tubes, the following backfill requirements will apply. The area between the form and undisturbed material shall be filled with CDF. For lightly loaded installations and only with the approval of the Engineer, Crushed Surfacing Top Course meeting the requirements of Section 9-03.9(3) may be used. Placement shall be in accordance with Section 2-09.3(1)E and shall be backfilled and compacted in the presence of the Engineer.

(Special Provision)
This section is supplemented with the following:

Where foundations for the signal and street light poles are located within the new sidewalk area, each foundation shall be constructed in a single pour to the bottom of the new sidewalk elevation. The sidewalk shall be constructed in a separate pour. Where no sidewalk is present, the foundation elevation shall be set in the field by the Engineer.

Location of all concrete foundations shall be approved by the Engineer prior to excavation.

8-20.3(5) Conduit

8-20.3(5)A General

(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

As soon as the mandrel has been pulled through, both ends of the conduit shall be sealed in an approved manner. Location wire, in conformance with 9-29, shall be installed in <u>all</u> empty conduits. At least three (3) feet of the location wire shall be neatly coiled and secured to the conduit in the same manner as is shown in Washington State Department of Transportation Standard Plan J-28.70-01, Details A and B.

(Special Provision)
This section is supplemented with the following:

All conduit installed underground shall have polyethylene Underground Hazard Marking Tape meeting the requirements of Section 9-29.1(6) of these Special Provisions placed approximately 12 inches above the conduit.

8-20.3(5)A1 Fiber Optic Conduit
(Special Provision)
This section is supplemented with the following:

All sweeps for conduit containing fiber optic cable shall have a minimum bend radius of 36 inches. The Contractor shall be aware that this will require deeper trenching adjacent to junction boxes containing fiber optic cable.

8-20.3(5)B Conduit Type
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

Pole riser conduit material types shall be in accordance with applicable City of Tacoma standard plans.

8-20.3(5)D Conduit Placement
(March 31, 2018 Tacoma GSP)
This Section is supplemented with the following:

Conduit terminating in pole foundations shall extend to 3 inches below the handhole.

Conduit terminating in controller foundations shall terminate 1 inch above the foundation.

8-20.3(5)E1 Open Trenching
(March 31, 2018 Tacoma GSP)
Subsection 5 is revised to read:

5. Trenches located within the paved roadway shall be backfilled with 3 inches of sand over the conduit, followed by material meeting the requirements of Section 9-03.12(3). Compaction shall be in conformance with Section 2-09.3(1)E. All street cuts shall be repaired in accordance with the standard plans.

This section is supplemented with the following new Subsections:

7. Where multiple conduit are installed in the same trench, the trench shall be of sufficient width to accommodate all conduit, with a minimum 3-inch separation between each conduit, and a minimum clearance of 1-inch on the sides of the trench. When conduit is laid horizontal to one another, the conduit shall be laid at the same elevation, parallel with one another. When conduit is laid vertically in the same trench, conduit spacers shall be used to maintain the 3-inch separation. Spacers shall be installed in accordance with the manufacturer's recommendations for conduit of that size and type. Additional spacers shall be required where the supported conduit is sagging more than 20% of the nominal diameter of the conduit.

8. In all conduit trenches, metallic, detectible, utility warning tape shall be placed at twelve (12) inches below final grade.

8-20.3(5)E3 Boring

(Special Provision)

This section is to be supplemented with the following:

A complete set of as-built plans showing all bores (successful and failed) within 10 calendar days of completing the boring shall be submitted to the Engineer. The plans shall be copies of the Contract Plans and include roadway profile, cross-section, boring location and subsurface conditions. The plans must include elevations of the installation.

8-20.3(6) Junction Boxes, Cable Vaults, and Pull boxes

(March 31, 2018 Tacoma GSP)

This section is supplemented with the following:

Unless otherwise specified in the plans, or as otherwise directed by the engineer, all junction boxes exposed to vehicular traffic shall be Heavy-Duty. Field adjustment of junction boxes, which cause junction boxes to be installed within an intersection radius and within four feet of the curb face may be required to be Heavy-Duty. Final placement and type of all junction boxes within an intersection shall be as directed by the Engineer.

Adjacent junction boxes shall be separated by a minimum of three-inches.

Concrete meeting the requirements of 6-02.3(2)B shall be placed surrounding all junction boxes except as otherwise provided for below. Concrete shall be flush with the top of the junction box and the adjacent improvements. Concrete shall be cast in place. Junction boxes shall be secured with the concrete border as follows:

1. When the junction box is located within a concrete or asphalt section and is located a minimum of 12-inches from the edge of the section, a concrete border will not be required.

2. Where junction boxes are located within 12-inches from the edge of the concrete or asphalt section, the junction box shall secured on all sides with a minimum 12-inch wide, 6-inch deep concrete section. Concrete shall be finished in the same manner as the adjacent concrete where applicable.

3. Where junction boxes are located within a planter strip, a landscaped area, or other non-hardened surface, the junction box shall be bordered on all sides with a minimum 6-inch wide, 12-inch deep concrete section flush with the top of the junction box.

(Special Provision)

This section is to be supplemented with the following:

All junction boxes shall have slip resistant lids which meet the requirements of Americans with Disabilities Act (ADA) and Public Right-of-Way Accessibility Guideline (PROWAG) and comply with Section 9-29.2(1)A of these Special Provisions.

Wiring shall not be pulled into any conduit until all associated junction boxes have been adjusted to, or installed in, their final grade and location, unless installation is necessary to maintain system operation. If wire is installed for this reason, sufficient slack shall be left to allow for future adjustment junction boxes are installed or adjusted prior to

construction of finished grade, pre-molded joint filler for expansion joints may be placed around the junction boxes. The joint filler shall be removed prior to adjustment to finished grade.

8-20.3(8) Wiring

(March 31, 2018 Tacoma GSP)

The third paragraph is revised to read:

All splices in underground illumination circuits, induction loop circuits, and magnetometer circuits shall be installed at junction boxes. The only splice allowed in an induction loop circuit shall be the shielded cable to loop wire splice. The only splice allowed in a magnetometer circuit shall be the probe lead-in cable to the magnetometer cable splice.

Induction loop splices and magnetometer splices shall be heat shrink type with moisture blocking material, sized for the conductors. Magnetometer and induction loop splices shall be soldered. The end of the sheathing shall be sealed with a heat shrink insulator.

The fourth paragraph is revised to read:

Signal wiring shall be in conformance with the following:

1. All termination for traffic signal control systems shall be in accordance with City of Tacoma Standard Plan TS-15.

2. All signal wiring shall be 5-conductor or 2-conductor 14 gauge stranded copper wire unless otherwise shown in the plans.

3. For 5-section and bimodal heads, 2-5c-14 gauge conductors shall be utilized.

4. 5c wire shall not be split between high voltage and low voltage. Where a pedestrian head and a pedestrian push button share a common pole, a separate 2c shall be pulled in for the push button.

5. A single 5c may be split between two pedestrian heads on a common pole with a jumper across the neutral.

6. Opticom and detection wiring shall be per manufacturer's recommendations.

Field wiring of the cabinet shall be done by City of Tacoma Signal Electricians after all wiring has been pulled into the cabinet and properly labeled with a temporary label consisting of white electrician's tape with permanent marker. The Contractor shall provide a detailed description/key of all temporary labeling. The cabinet and labeling shall be inspected by the Signal/Streetlight inspector prior to cabinet wiring. The Contractor shall allow five working days for City Electricians to field wire the cabinet after the inspection is complete. Improper or incorrect labeling requiring additional effort by the City may result in additional time required by City forces to wire the cabinet.

The fifth paragraph is revised to read:

Splices and taps on underground and overhead circuits shall be made with solderless crimp connectors, installed with an approved tool designed for the purpose, to securely

join the wires both mechanically and electrically. Splices and taps will be sealed in accordance with this section.

The eighth paragraph is revised to read:

All splices in junction boxes and handholes shall be taped and sealed with an electrical coating. Tape splice insulation shall consist of thermoplastic electrical insulating tape equivalent to the original wire insulation rating and thickness. It shall be well lapped over the original insulation and moisture resistant electrical coating shall be applied and allowed to dry. Two layers of thermoplastic tape will then be applied, followed by a second layer of moisture resistant electrical coating.

The ninth paragraph is revised to read:

Illumination cable in light standards shall be #10 AWG USE or “Pole and Bracket” cable, as specified in Section 9-29.3(2)D of the Standard Specifications.

The tenth paragraph is revised to read:

Fifteen (15) feet of slack cable shall be provided at the controller end of all cables terminating in the controller cabinet. A minimum of three (3) feet of slack cable shall be left at all signal poles and junction boxes.

Add the following new Section:
(Special Provision)

8-20.3(8)A Fiber Optic Cable Installation

8-20.3(8)A1 Fiber Optic Cable Submittals

The Engineer’s approval of any submitted documentation shall in no way relieve the Contractor from compliance with the safety and performance requirements as specified herein.

Submittals required by this item shall include, but not be limited to, the following:

1. A material staging plan, should the Contractor propose City owned property as a staging area.

2. Manufacturer’s complete specifications for all communication system cables and associated electronics and hardware components.

3. Manufacturer’s complete specifications for optical fiber and twisted-pair cable splice enclosures.

4. A detailed fiber optic installation procedure including the following:
    a. Fiber optic cable cutting lengths reflecting the cable order and reel allocations.
    b. Cable pulling plan which shall state the exact operational procedures to be utilized and which identifies the physical locations for equipment placement, proposed equipment setup at each location, pulling tension on all cables for each pull, staffing, and the pulling methodology for each type of cable.
    c. Exact splice points as provided for herein.

d. Workforce proposed for all equipment, safety, and manual assist operations.

5. Factory test data sheets for each reel of cable delivered.

8-20.3(8)A2 Fiber Optic Cable Installation

The Contractor shall determine a suitable cable installation method to ensure that all cable installation requirements shall be met in all conduit sections. All work shall be carried out in accordance and consistent with the highest standards of quality and craftsmanship in the communication industry with regard to the electrical and mechanical integrity of the connections; the finished appearance of the installation; as well as the accuracy and completeness of the documentation.

The Contractor shall make a physical survey of the project site for the purpose of establishing the exact cable routing and cutting lengths prior to the commencement of any fiber optic work or committing any fiber optic materials. Unless otherwise directed by the Engineer, underground splicing of fiber optic cable in junction boxes or vaults will not be permitted. All termination splicing will take place in the traffic signal controller cabinets.

All work areas shall be clean and orderly at the completion of work and at times required by the Engineer during the progress of work.

Fiber Optic Cables shall be installed in continuous lengths without intermediate splices throughout the project, except at the location(s) specified in the Plans.

The Contractor shall comply with the cable manufacturer's specifications and recommended procedures including, but not limited to the following:

1. Installation.

2. Proper attachment to the cable strength elements for pulling during installation.

3. Bi-directional pulling.

4. Cable tensile limitations and the tension monitoring procedure.

5. Cable bending radius limitations.

The Contractor shall protect the loops from tangling or kinking. At no time during the length of the project shall the cable's minimum bending radius specifications be violated.

In all cable vaults and/or junction boxes designated in the plans, minimum cable slack of 15 yards shall be left by the Contractor, unless otherwise specified in the plans. The cable slack length of fiber optic cable shall be coiled and secured with tie wraps to racking hardware or as specified in the plans.

The pulling eye/ sheath termination hardware on the fiber optic cables shall not be pulled over any sheave blocks.

When power equipment is used to install fiber optic cabling, the pulling speed shall not exceed 30 yards per minute. The pulling tension limitation for fiber optic cables shall not be exceeded under any circumstances.

Large diameter wheels, pulling sheaves and cable guides shall be used to maintain the appropriate bending radius. Tension monitoring shall be accomplished using commercial dynamometers or load-cell instruments.

Patch cords placed between pad mounted cabinets shall be protected by plastic spiral wrapping. Spiral wrap shall cover the entire length of the patch cord(s) to within 12 inches of end. The spiral wrap shall be installed before the patch cords are pulled into the conduit(s) and be rated for use in electrical installations.

8-20.3(8)A3 Fiber Optic Cable Splicing

This section describes the minimum requirements for splicing and connecting of the specified fiber optic cables.

Unless otherwise directed by the Engineer, underground splicing of fiber optic cable in junction boxes or vaults will not be permitted. All termination splicing will take place in the traffic signal controller cabinets.

The Contractor shall provide all required brackets and other racking hardware required for the fiber optic cable racking operations as specified.

All fusion splicing equipment shall be in good working order, properly calibrated, and meeting all industry standards and safety regulations. Splices shall utilize two half shells bolted together with stainless steel bolts and be fitted neoprene gasket. Selected splices shall not require a re-entry kit. Cable preparation, closure installation and splicing shall be accomplished in accordance with accepted and approved industry standards.

Upon completion of the splicing operation, all waste material shall be deposited in suitable containers for fiber optic disposal, removed from the job site, and disposed of in an environmentally acceptable manner.

The Contractor shall use the fusion method with local injection and detection for all fiber optic splicing.

The average splice loss of each fiber shall be 0.15 dB or less per splice. The average splice loss is defined as the summation of the attenuation as measured in both directions through the fusion splice, divided in half.

No individual splice loss measured in a single direction shall exceed 0.20 dB.
The Contractor shall seal all cables where the cable jacket is removed. The cable shall be sealed per the cable manufacturer’s recommendation with an approved blocking material.

If approved, all below ground splices shall be contained in waterproof splice enclosures. All splices shall be contained in splice trays utilizing strain relief, such as heatshrink wraps, as recommended by the splice tray manufacturer. Upon sealing the splice closure, the Contractor shall show that the closure maintains 68.4 kPa of pressure for a 24-hour period.

8-20.3(8)A4 Fiber Optic Cable Terminations

Fiber optic cable shall be terminated utilizing factory manufactured pigtails with LC type connectors and UPC type polishing. Pigtails shall be fusion spliced to fiber optic cable.

8-20.3(8)A5 Fiber Optic Cable Labeling

Permanent cable labels shall be used to identify fibers and patch cords at each termination point. The cable labels shall consist of white colored heat shrink wraps with identification.

8-20.3(8)A6 Fiber Optic As-Built Records

The Contractor shall provide the Engineer with a cable route diagram indicating the actual cable route and “meter marks” for all intersections, directional change points in the cable mounting, and all termination points. The Contractor shall record these points during cable installation. The Contractor shall provide Cable system “as-built” drawings showing the exact cable route to the Engineer. Information such as the location of slack cable and its quantity shall also be recorded in the cable route diagram.

8-20.3(8)A7 Fiber Optic Cable Testing

The installed optical fiber cable shall be tested for compliance with the transmission requirements of this specification, the cable and hardware manufacturer’s specifications, and prescribed industry standards and practices.

8-20.3(8)A8 Type of Testing

The types or acceptance testing for optical fiber cable system certification are:

1. Attenuation testing
2. Optical Time Domain Reflectometer (OTDR) testing

8-20.3(8)A9 Attenuation Testing

Insertion loss testing shall be used to measure end-to-end attenuation on each new fiber installed between a field device and a fiber termination cabinet. Insertion loss testing shall be performed at the 1310 nanometer wavelength in both directions.

Prior to commencing testing, the Contractor shall submit the manufacturer and model number of the test equipment along with certification that is has been calibrated within 6 months of the proposed test dates.

The following information shall be documented for each fiber test measurement:

1. Wavelength
2. Fiber type
3. Cable, tube and fiber IDs

4. Near end and far end test locations
5. End-to-end attenuation
6. Date, time and operator

8-20.3(8)A10 Optical Time Domain Reflectometer (OTDR Testing)

An optical time domain reflectometer (OTDR) with recording capability shall be utilized to test the end-to-end transmission quality of each optical fiber. Quality tests shall consider both attenuation and discontinuities. The OTDR shall be equipped with 1310 nanometer and 1550 nanometer light sources for singlemode optical fibers.

The OTDR shall be capable of providing electronic and hard copy records of each test measurement.

The OTDR shall be equipped with sufficient internal masking to allow the entire cable section to be tested. This may be achieved by using an optical fiber pigtail of sufficient length to display the required cable section or by using an ODTR with sufficient normalization to display the required cable section.

Prior to commencing testing, the Contractor shall submit the manufacturer and model number of the OTDR test unit along with certification that it has been calibrated within the 6 months of the proposed test dates.

Each new mainline and lateral fiber shall be tested in both directions at the 1310 and 1550 nanometer wavelengths. Existing mainline and lateral fibers that are spliced to or re-spliced as part of this contract shall also be tested in both directions and at both wavelengths.

The following information shall be documented for each fiber test measurement:

1. X-Y scatter plot for fiber length
2. Wavelength
3. Refraction index
4. Fiber type
5. Averaging time
6. Pulse width
7. Cable and fiber IDs
8. Near end and far end test locations
9. Date, time, and operator
10. Event table that includes: event ID, type, location, loss and reflection

8-20.3(8)A11 Fiber Optic Cable Testing Documentation

The Contractor shall submit on hard copy and one electronic copy of the fiber test results to the Engineer for approval. The Contractor shall take corrective actions on portions of the fiber installation determined to be out of compliance with these specifications.

Upon acceptance of the cable installation and test results, the Contractor shall submit three (3) hard copies and one electronic copy of the fiber test results to the Engineer. Hard copy submittals shall be bound in 3-ring binders. The electronic submittal shall be on a compact disk and include one licensed copy of the applicable OTDR reader program.

The following information shall be included in each test result submittal:

1. Contract number, contract name, Contractor name and address.
2. Dates of cable manufacture, installation and testing.
3. Cable specifications.
4. Locations of all splices.
5. OTDR test results.
6. Attenuation test results.

8-20.3(8)A12 Racking in Fiber Vaults

The Contractor shall rack the cable in vertical figure eight loops, which shall permit pulling slack from the vault without introducing twist to the cable. The splice closures shall also be racked.

Cables shall be racked and secured with nylon ties. Nylon ties shall not be over-tightened. Identification or warning tags shall be securely attached to the cables in at least two locations in each fiber vault.

All coiled cable shall be protected to prevent damage to the cable and fibers. Racking shall include securing cables to brackets (racking hardware) that extend from the sidewalls of the fiber vault.

8-20.3(8)A13 Documentation

Documentation for each system element shall consist of the manufacturer's name and model number, serial number when available, materials and operating specifications, wiring schematic and parts list, owner's manuals, factory service manuals, and procedures for factory testing and system acceptance testing specified elsewhere herein. The Contractor shall submit three (3) copies of the documentation specified above prior to installation of the cable or components described in the submittal. In addition, the Contractor shall submit three (3) copies of an overall system wiring schematic and termination chart for the installed elements (operation and maintenance manuals). All documentation for each individual element shall be neatly bound in a way for the information is secured together and is totally legible without removing the information from the binding. This documentation shall be in addition to any other data, shop drawings, etc. required to be submitted as specified in these Special Provisions.

8-20.3(10) Service, Transformer, and Intelligent Transportation System (ITS) Cabinets

(March 31, 2018 Tacoma GSP)

The second, third, and fifth paragraphs are deleted.

8-20.3(13) Illumination Systems

8-20.3(13)A Light Standards

(March 31, 2018 Tacoma GSP)

The sixth, seventh, and eighth paragraphs (regarding pole identification numbers) are deleted.

This section is supplemented with the following:

Conventional Base installation shall conform to the following:

The light standards shall be assembled and mounted complete on foundations perfectly straight and in good alignment. Proper leveling of the standards shall be accomplished by means of four leveling nuts that are to be employed with the anchor bolts. Standards shall be plumb within 1/50-inch per foot.

Luminaires shall be securely attached to the mast arm in a straight and level position. The luminaires shall be installed at a specified number of degrees from level if directed by the Engineer. After the poles are plumbed, grout shall be neatly placed between the pole base and the concrete. The Contractor shall form a 1/2-inch diameter weep hole in the grout. The nuts and bolts required for this foundation shall be furnished by the Contractor.

All above grade signal and streetlight infrastructure, including streetlight standards, traffic signal poles, push-button poles, cabinets, and enclosures, shall not be installed closer than three (3) feet from face of curb to the nearest part of the pole or structure and no closer than five (5) feet from fire hydrants and utility poles.

8-20.3(13)C Luminaires
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

All luminaires supplied by the project shall be identified with a green “H-1” label on the bottom of the luminaire. H-1 labels can be obtained at the Signal and Streetlight shop or through the Signal and Streetlight Inspector.

8-20.3(14) Signal Systems

8-20.3(14)A Signal Controllers
(March 31, 2018 Tacoma GSP)
This section is revised to read:

The fully wired control cabinet, the controller, the MMU, and detection hardware for the cabinet shall be delivered to the City of Tacoma Traffic Signal Shop for configuration, programming, testing, and certification prior to installation. At the Contractor’s request, the City will off load the equipment. The Contractor shall notify the City 24 hours in advance of the equipment delivery.

A minimum of two weeks shall be required for the City to configure and test the cabinet and controller for each intersection. If multiple cabinets and controllers are delivered, the Contractor shall identify the sequence for configuration and allow one additional week for each additional cabinet and controller delivered.

The Contractor shall be responsible for transporting the controller cabinet from the Signal/Streetlight Shop site to the jobsite, and for installation of the cabinet and all field wiring. Field wiring shall be performed in accordance with 8-20.3(8) and as directed by City of Tacoma Signal and Streetlight personnel in the field.

(Special Provisions)

This section is supplemented with the following:
Each signal cabinet shall include all of the auxiliary equipment as specified in Section 9-29 of these Special Provisions.

The signal cabinet for the intersection of 64th & Pacific shall include two (2) Ethernet switches and two (2) patch panels.

The Contractor shall coordinate signal cabinet delivery with:

City of Tacoma Signal Shop
Phone: (253) 591-5495

8-20.3(14)C Induction Loop Vehicle Detectors
(March 31, 2018 Tacoma GSP)
Subsections 2, 4, 9, and 10 are deleted.

Section 8-20.3(14) is supplemented with the following new section:
8-20.3(14)F Thermal, Microwave, and LED Optical Vehicle Detection

A representative from the City of Tacoma Signal and Streetlight operations shop shall be on site during all work within the signal cabinet. The Contractor shall notify the Engineer two working days in advance of work within the cabinet.

The Contractor shall install and test the detection system in accordance with the manufacturer's recommendations and these special provisions. Detection units shall be mounted and all cabling shall be in accordance with the manufacture's recommendations. The installation shall include all field equipment as well as all equipment required in the controller cabinet.

Detection unit locations as shown on the plans are approximate. Detection units shall be mounted at a sufficient height to prevent occlusion from cross traffic. Detection units shall be field adjusted as directed by the Engineer and equipment manufacturer for maximum coverage. A factory-certified representative of the equipment manufacturer shall inspect and provide a written verification that the installation has been performed in accordance with the manufacturers requirements.

The factory-certified representative of the equipment manufacturer shall supervise all testing of the equipment and shall provide written documentation showing acceptance of the testing and verification that the system is a complete, fully functional system.

All equipment shall be warranted against manufacturing defects in materials and workmanship for a period of 3 years from the date of signal turn-on.

8-20.3(17) "As Built" Plans
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

These drawings shall show the routing of all underground conduits. The locations of the conduit shall be dimensioned with a precision and accuracy of 1 foot.

8-20.4 Measurement

This section is revised to read:

When shown as lump sum in the Plans or in the proposal as "Traffic Signal System @ _____, Complete;" "Illumination System, Complete", "Rectangular Rapid Flashing Beacon System, Complete", or "School Zone Beacons, Complete" no specific unit of measurement will apply, but measurement will be for the sum total of all items for a complete system to be furnished and installed.

Surface restoration (regardless of surfacing type) for areas disturbed by activities associated with installing Traffic Signal and Illumination System equipment per this Section and not otherwise called out for replacement or in excess of the limits shown in the Site Preparation, Roadway and/or Intersection Plans, shall be included in the respective lump sum price and no additional measurement shall be made.

Shared junction boxes and conduit for illumination and traffic signal system shall be paid under "Traffic Signal System @ ____, Complete".

For locations where the Illumination System conduit is installed parallel to the Interconnect System conduit, they shall be installed in the same trench and all trenching, borings, potholing, conduit bedding, trench backfill and disposal of excavated materials shall be paid for per the "Illumination System, Complete" bid item and no separate measurement will be made.

All potholing associated with the bid items herein shall be considered included in the bid items included in this section and no additional compensation will be made.

Restoration of facilities destroyed or damaged during construction shall be considered incidental to the bid items included in this section and no additional compensation will be made.

Coordination of service connections with Tacoma Power and any necessary permits and fees associated with the service connections shall be considered incidental to the bid items included herein and no additional compensation will be made.

Use of a vacuum truck for excavation, including potholing associated with installation of equipment specified herein, shall be considered included in the bid items included herein and no additional compensation will be made.

Concrete 'collars' around junction boxes and luminaire foundations shall be shall be considered incidental to the bid items included herein and no additional compensation will be made.

8-20.5 Payment

(Special Provision)

This section is supplemented with the following:

"Traffic Signal System @ S 64th St & Pacific Ave, Complete", lump sum.

"Traffic Signal System @ E 64th St & McKinley Ave, Complete", lump sum.

The lump sum bid price for “Traffic Signal System @ _____, Complete” in the Proposal shall be full compensation for the costs of all labor, tools, equipment, and materials necessary or incidental to the complete installation of the signal system including but not limited to poles, mast arms, foundations, intersection illumination, traffic signal controller and cabinet, service cabinet, power service connection, video detection system, emergency pre-emption system, mast arm and signal pole signage, pedestrian pushbutton systems, excavation, conduit bedding, trench backfill, disposal of excavated materials, conduit, junction boxes, cable vaults, wiring, , surface restoration, and restoring all facilities damaged or destroyed during construction, and for all required tests, inspections and permits. All additional materials and labor, not shown on the plans or called for herein and which are required to provide a complete and functional systems called for in the plans, shall be included in the lump sum bid price in the Proposal.

“Illumination System, Complete”, lump sum.

The lump sum bid price for “Illumination System, Complete” in the Proposal shall be full compensation for the costs of all labor, tools, equipment, and materials necessary or incidental to the complete installation of the illumination system including but not limited to luminaire poles and arms, LED luminaires, foundations, concrete junction box/foundation collars, conduit, junction boxes, adjusting junction boxes to grade, excavation, backfilling, directional boring, restoring facilities destroyed or damaged during construction, removing existing luminaire poles, luminaires, foundations and associated equipment, salvaging existing materials, removal of existing conduit, testing, as-built plans and all other components necessary to make a complete system shall be included within the lump sum measurement. All painting of components shall be considered incidental to the lump sum measurement.

LED luminaires on signal poles will be paid for under the respective intersection Traffic Signal System bid item.

“Interconnect System, Complete”, lump sum.

The lump sum price for "Interconnect System, Complete" in the Proposal shall be full compensation for the costs of all labor, tools, equipment, and materials necessary or incidental to the complete installation of the interconnect system including but not limited to conduit, singlemode fiber optic cable, fiber splices, fiber termination panels, junction boxes, connections with signal controllers, connections with existing conduit, junction boxes, pull boxes, small cable vaults, connections with existing interconnect systems, pull rope, plugs, restoring facilities destroyed or damaged during construction, salvaging existing materials, as-built plans and all other components necessary to make a complete interconnect communication system shall be included within the lump sum measurement.

Conduit for the Interconnect System shall be installed in the Illumination System Trench and no additional payment will be made for excavation or backfill associated with the interconnect system.

“Rectangular Rapid Flashing Beacon System, Complete”

“School Zone Beacons, Complete”

The lump sum bid price for “Rectangular Rapid Flashing Beacon System, Complete”, or “School Zone Beacons, Complete” in the Proposal shall be full compensation for the costs of all labor, tools, equipment, and materials necessary or incidental to the complete installation of the respective system including but not limited to poles, foundations, flashing beacon systems, signage, pedestrian pushbutton systems, excavation, conduit bedding, trench backfill, disposal of excavated materials, conduit, junction boxes, wiring, surface restoration, and restoring all facilities damaged or destroyed during construction, and for all required tests, inspections and permits. All additional materials and labor, not shown on the plans or called for herein and which are required to provide a complete and functional systems called for in the plans, shall be included in the lump sum bid price in the Proposal.

END OF SECTION

8-22 PAVEMENT MARKING
(******)

8-22.1 Description
This Section is supplemented with the following:

Chevrons
A "Chevron" shall be provided on speed humps for each approach. For a street width less than 28 feet, the "Chevron" shall start at the edge of roadway (gutter line). For a street width greater than 28 feet, the "Chevron" shall start at the center of the roadway. Refer to details specified within the plans. Chevrons shall be provided along bike lane buffers at locations specified on the plans or as directed by the Engineer.

Green Durable Product
Green Durable Product shall be provided at locations identified on the plans such as "Bike Box" and "Bike Transition Lane" locations and as directed by the Engineer. Refer to details specified within these plans and specifications. The product shall be a durable, color stable, non-slip surface.

Sharrow Pavement Marking
Sharrow pavement marking shall be provided at locations identified in the plans. Refer to City of Tacoma Standard Plan CH-11 and/or other details specified within these plans and specifications. The product shall be a durable, color stable, non-slip surface.

Bicycle Detection Symbol:
Bicycle detection symbols shall be provided at the locations identified in the Plans. Refer to the Plans for symbol details and design. The product shall be a durable, color stable, non-slip surface.

8-22.2 Materials
The Section is supplemented with the following:

All legends and arrows including "Plastic Traffic Arrow", "Plastic Sharrow Symbol", and "Plastic Letter" markings shall be a Preformed retro-reflective thermoplastic pavement marking material incorporating a pre-applied bead coating that can be adhered to asphalt, concrete and Portland Cement Concrete pavements by means of heat fusion. All "Plastic Chevron", "Plastic Crosswalk Line", and "Plastic Stop Line" shall be hot applied thermoplastic. The applied markings shall be very durable, oil and grease impervious, and provide immediate and continuing retro-reflectivity meeting the requirements of Section 9-34.3(2).

"Green Durable Product" materials shall meet the requirements of section 9-34.3(4) for MMA.

Materials used for curb paint shall be the same as for pavement marking paint per Section 9-34.2.

8-22.3 Construction Requirements

8-22.3(3)E Installation
The Section is supplemented with the following for applying Type B material:

Effective Performance Life: When properly applied, in accordance with manufacturer's instructions, the preformed marking materials shall be neat and durable. The markings shall remain skid resistant and show no lifting, shrinkage, tearing, roll back, or other signs of poor adhesion.

Packaging: The flexible preformed marking material, for use as transverse or bike symbols as well as legends, shall be available in flat form material up to a maximum of 2 foot width by 4 foot length. The material shall be packed in suitable cartons clearly labeled for ease of identifying the contents. Packaging shall not use plastic liners within to separate material from itself. Product packaging shall identify part number and mil thickness.

Material Replacement Provisions: Any properly applied preformed marking materials that shall smear or soften independent of pavement movement or condition within a period of one year from date of application shall be replaced by the supplier.

Installation: The preformed marking materials shall be applied in accordance with the manufacturer's recommendations on clean and dry surfaces. New Portland concrete cement surfaces must be sandblasted to entirely remove curing compound. Marking configuration shall be in accordance with the "Manual on Uniform Traffic Control Devices," where applicable.

New Surfaces: Preformed marking materials specified for newly paved asphalt road surfaces shall be capable of being applied as the original permanent marking on the day the surface is paved.

Fusion: The preformed marking materials shall be fusible to the pavement by means of a propane torch recommended by the manufacturer.

Technical Services: The supplier shall provide technical services as may be required.

8-22.3(3)F Application Thickness
The Section is supplemented with the following:

Green Durable Product: Approximately 4.2 Gallon mixture of Green colored MMA, hardwearing aggregate, and catalyst should cover 70-75 SF at 90 mils thickness.

8-22.3(4) Tolerances for Lines
The allowable tolerance for "Length of Line" is revised to read:

Length of Line: The longitudinal accumulative error within a 32-foot length of skip stripe shall not exceed plus or minus 1 inch.

8-22.4 Measurement
The last sentence of the sixth paragraph is revised to read:

Crosswalk lines will be measured by the linear foot of marking installed.

The section is supplemented with the following:

Green Durable Products will be measured by the square foot of marking area installed.

Painted curb will be measured by the linear foot of curb line as “Painted Curb.”

Plastic Sharrow Symbols and Plastic Bicycle Detection Symbol will be measured by each symbol installed.

8-22.5 Payment

The pay item “Plastic Wide Lane Line” is supplemented with the following:

“Plastic Wide Lane Line” shall include shall also include all lines with are 6-inches wide.

This section is supplemented with the following:

“Painted Crosswalk Line”, per linear foot.

“Plastic Crosswalk Line”, per linear foot.

“Painted Curb”, per linear foot.

“Green Durable Product”, per square foot.

“Plastic Sharrow Symbol”, per each.

“Remove Paint Line”, per linear foot.

“Remove Traffic Marking,” per each.

“Plastic Bicycle Detection Symbol”, per each.

END OF SECTION

8-24 ROCK AND GRAVITY BLOCK WALL AND GABION CRIBBING (******)

8-24.1 Description

This section is supplemented with the following:

Boulders will be used as landscaping and placed as shown in the plans or directed by the Engineer. This work will consist of all work necessary to supply all materials, construct, and place the boulders as described in these specifications and as shown in the plans.

8-24.2 Materials

This section is supplemented with the following:

The landscape boulders shall be Bandera granite with a salt and pepper color. It shall be free from segregation, seams, cracks, and other defects tending to destroy its resistance to weather. All stone and rock material shall be washed and free from all objectionable coating as determined by the Engineer. The Bandera granite stone shall be pre-selected by the Engineer. The stone shall be the size indicated on the plans.

Add the following new section:

8-24.3(4) Boulders

Boulders shall meet the size requirements for rock for rock wall and be placed as shown on the plans.

8-24.4 Measurement

This section is supplemented with the following:

Boulders will be measured by the unit for each boulder placed.

8-24.5 Payment

This section is supplemented with the following:

“Boulder, ___-Man”, per each.

The unit contract price per each for “Boulder, ___-Man” shall be full pay for all labor, materials, and equipment required to acquire, transport, and place the boulders as shown on the Plans and as described in the Special Provisions.

END OF SECTION

8-30 COORDINATION AND STORAGE OF PUBLIC ART

8-30.1 Description

As a part of the project the Contractor will install public art that has already been designed and made. This Work shall also consist of coordinating receipt of the art, layout of certain items, and storage of the art once the art has been received by the Contractor until the time that the art is installed.

8-30.2 Materials

Materials shall meet the requirements of the following sections:

Grout	9-20.3

The two public art elements are:

1. 18” diameter tile medallions that will be installed at specific intersections. A total of 22 pieces.
2. Historic granite curb with sand blasted poetry on them. A total of 5 pieces, each piece varies in size and weight.

8-30.3 Construction

At the Preconstruction meeting the Contractor shall designate a date to receive delivery of the public art elements, to be agreed upon by the artist; at the date designated the Contractor shall receive and become fully responsible for the art pieces, including but not limited to storage and transportation. Tile medallions may be delivered at a different time than the granite curb if the Contractor requests, with the consent of the artist. After receipt of the pieces the Contractor shall protect all pieces from damage; any pieces that are damaged while in possession of the Contractor shall be repaired or replaced to the satisfaction of the Engineer, and all costs will be borne by the Contractor. All costs for contractor provided storage and transportation shall be included in other work.

Additionally, prior to permanent installation of the art pieces the Contractor shall coordinate time to meet the artists on the project site and layout the specific location for each piece. All costs for this coordination shall be included in the lump sum for this work.

8-30.3(1) Tile Medallions

During construction of the Decorative Colored Stamped Cement Concrete Sidewalk, as described in Section 8-14 and shown on the Plans, the Contractor shall provide knockouts, where shown on the Plans, with in the concrete for later installation of the Tile Medallion.

After the Decorative Colored Stamped Cement Concrete Sidewalk has cured the minimum time, the Tile Medallion will be placed in the location the knockout was provided. Grout Type 2 Shall be used for embedment of the medallion.

8-30.3(2) Historic Granite Curb

Where shown on the Plans and as shown by the Engineer, the Contractor shall place each piece of granite curb within the planting areas such that all words sandblasted into the curb are visible to pedestrian traffic.

8-30.4 Measurement

No specific unit of measure will apply to the bid item for public art.

8-30.5 Payment

Payment will be made for each of the following listed Bid items that are included in the Proposal:

“Public Art”, lump sum.

The lump sum contract price for “Public Art” shall be full pay for all labor, materials, and equipment to perform the work as specified, including all coordination, storage, knockouts, grouting, and final installation.

END OF SECTION

8-31 CEMENT CONCRETE STAIRWAY, HAND RAILING AND GUARD RAIL (******)

8-31.1 Description

This work shall consist of constructing cement concrete stairways, hand railings, and guard rails in accordance with details shown in the Standard Plans and these Specifications and in conformity to lines and grades shown in the Plans or as established by the Engineer.

8-31.2 Materials

Materials shall meet the requirements of the following sections:

Portland Cement	9-01
Aggregates	9-03
Premolded Joint Filler	9-04.1
Concrete Curing Materials and Admixtures	9-23
Reinforcing Bars	9-07
Paint	9-08

The concrete shall be air-entrained concrete Class 3000 in accordance with the requirements of Section 6-02.

Steel pipe hand railing shall be fabricated from standard weight steel pipe conforming to ASTM Designation A 120.

Wrought iron hand railing shall be fabricated from material conforming to ASTM A207-63T.

8-31.3 Construction Requirements

8-31.3(1) Excavation

Excavation shall be made to the required depth and to a width that will permit the installation and bracing of the forms. The foundation shall be shaped and compacted to a firm even surface conforming to the section shown in the Standard Plan. All soft and yielding material shall be removed and replaced with acceptable material.

8-31.3(2) Forms

Forms shall be of wood or metal and shall extend for the full depth of the concrete. All forms shall be straight, free from warp, and of sufficient strength to resist the pressure of the concrete without warping. Bracing and staking of forms shall be such that the forms remain in both horizontal and vertical alignment until their removal. After the forms have been set to line and grade, the foundation shall be brought to the required grade and thoroughly wetted approximately 12 hours before placing the concrete.

8-31.3(3) Placing and Finishing of Concrete

Front and side edging of stair treads shall be to a radius of 1/2 inch.

Landings for stairways shall be marked as specified for concrete sidewalks except that transverse and longitudinal markings shall be modified as necessary to result in uniform size of squares in each landing. Where gutters are along the side of stairways, the gutter portion of stairway landings shall be smooth finished without markings to conform with the stairway gutter.

8-31.3(4) Cold Weather Work

The following additional requirements for placing concrete shall be in effect from November 1 to April 1:

- The Engineer shall be notified at least 24 hours prior to placement of concrete.
- All concrete placement shall be completed no later than 2:00 p.m. each day.
- Where forms have been placed and the subgrade has been subjected to frost, no concrete shall be placed until the ground is completely thawed. At the time, the forms shall be adjusted and subgrade repaired as determined by the Engineer.

8-31.3(5) Curing

Cement concrete stairways shall be cured for a minimum of 72 hours in accordance with Section 5-05.3(13).

8-31.3(6) Hand Rail

Hand rails for cement concrete stairways and guard rails shall be constructed at the locations shown on the Plans. The hand railing may be placed either completely assembled at the time when concrete is placed, or recesses may be provided in the concrete for grouting in the railing posts after the concrete has been placed, finished and cured.

The installed railing shall be in true alignment, proper grade, and all posts plumb.

Welds shall be made by experienced welders and each weld shall be ground and buffed to a smooth surface.

8-31.4 Measurement

Measurement of cement concrete stairway will be in accordance with City of Tacoma Standard Plan SU-10.

Measurement for hand rail will be by the linear foot as measured along the top surface of the hand grip as defined in City of Tacoma Standard Plan SU-11. No consideration will be made for vertical handgrip at the ends of the railing.

8-31.5 Payment

"Cement Conc. Stairway", per step.

The unit contract price per linear foot for "Cement Conc. Stairway" shall be full pay for all labor, equipment, and materials required for clearing and grubbing; excavation; subgrade preparation; construction of forms; furnishing and placing reinforcing steel; furnishing and placing of concrete in accordance with the plans and these specifications.

"____Hand Rail," per linear foot.

The unit contract price per linear foot for "____Hand Rail" shall be full pay for all labor, equipment, and materials, required to construct and complete the railing in accordance with the plans and these specifications.

END OF SECTION

8-32 SEGMENTAL CONCRETE RETAINING WALL
(September 20, 2018 Tacoma GSP)

8-32.1 Description

Work shall consist of furnishing all materials, labor, equipment, and supervision necessary to install a segmental retaining wall system in accordance with these specifications and in with the lines, grades, design and dimensions shown on the plans.

8-32.1(1) Certification

A. Contractor shall submit a notarized Manufacturer's certification, prior to start of work, that the segmental concrete units meet the requirements of section 8-32.2 of these Special Provisions.

B. Contractor shall submit a notarized certification, prior to start of work, that the segmental concrete units have been successfully utilized on a minimum of five (5) similar projects, i.e., height, soil fill types, erection tolerances, etc.

8-32.1(2) Delivery, Storage, and Handling

A. The Contractor shall inspect the materials. upon delivery to assure that proper type and grade material has been received.

B. The Contractor shall store and handle materials in accordance with manufacturer's recommendations.

C. The Contractor shall protect the materials from damage. Damaged material shall not be incorporated into the segmental retaining wall.

8-32.2 Material

8-32.2(1) Segmental Concrete Retaining Wall Units

A. Segmental concrete units shall conform to the following architectural requirements:

* Unit height of 7.75-8.0-inches;
* Unit width to height ratio shall be equal to 2.25-2.50, nominal;
* Unit depth > 11-inches;
* Face area per unit = 0.95-1.0 square foot, nominal;
* Face color - Grey;
* Face finish - Beveled Sculptured Rock face;
* Bond configuration - running with bonds nominally located at midpoint of vertically adjacent units, in both straight and curved alignments.

B. Segmental concrete cap units shall conform to the following architectural requirements:

* Cap Unit Heights shall be 4 inches
* Face Color - Grey
* Face Finish - Beveled Sculptured Rock face

C. Segmental concrete units shall conform to the following constructability requirements:

* vertical setback = ½" minimum;
* alignment mechanism -pins, alignment plugs, two per unit minimum; or shear connectors (for built-in mechanical concrete interlocking segmental units)
* curves - minimum concave and convex radius of 4.0 feet.

D. Segmental concrete units shall conform to the following material requirements.

1. Cementatious Materials - Materials shall conform to ASTM C 150 - Portland Cement.

2. Aggregates - Aggregates shall conform to the following specifications, as applicable.

3. Normal Weight Aggregates - ASTM C 33

4. Lightweight Aggregates - ASTM C 331

5. Other Constituents - Air-entraining agents, coloring pigments, integral water repellents, finely ground silica, and other constituents shall be previously established as suitable for use in segmental concrete retaining wall units and shall conform to applicable ASTM Standards or, shall be shown by test or experience to be not detrimental to the durability of the segmental concrete units or any material customarily used in retaining wall construction.

8-32.2(2) Cap Adhesive

Cap adhesive shall meet the requirements of the segmental unit manufacture.

8-32.2(3) Perforated Drain Pipe

Perforated pipe shall be perforated PVC meeting AASHTO M 278, 4-inch to 8-inch diameter.

8-32.2(4) Base Leveling Pad Material

Base material for the leveling pad shall be crushed surfacing top course.

8-32.2(5) Geogrid Reinforcement

Geogrid reinforcement shall be Synteen SF55 or engineered approved equal. The engineer anticipates the need for Geogrid.

The length of geogrid reinforcement, as measured from the point of connection at the wall to the edge of excavation, shall be as follows:

Total Wall Height (does not include cap unit)	**Length of Geogrid**
0 to 4-ft	Not Required
Over 4-ft to less than 5-ft	3 ½-ft
5-ft to less than 6-ft	4-ft
6-ft to 7-ft	5-ft

The bottom layer of georid shall be placed between the bottom layer of wall block units and second layer. Each successive layer of geogrid shall be spaced no more than 24 inches vertically from the previous layer. The uppermost layer shall be within the top 3 layers of wall block units and have a minimum cover of 16 inches.

Crushed surfacing top course shall be used as backfill where geogrid is placed, except where drainage zone backfill is shown to be placed in the plans.

All other work for geogrid for block wall not covered in these specifications shall done in accordance with the block wall manufacturer's recommendations.

8-32.2(6) Backfill for over-excavation class A

Backfill material shall be suitable excavated native soil, except when the Engineer determines it to be unsuitable it shall be replaced with Gravel Borrow.

8-32.2(7) Drainage Zone Wall Backfil**l**

Backfill in the 12-inch width drainage zone behind blocks and in concrete block cavities shall be "Gravel Backfill for Drywells" according to Section 9-03.12(5). Additional backfill can consist of suitable native material and Gravel Borrow.

8-32.3 Construction Requirements

8-32.3(1) Subgrade Preparation

A. Fill zone area shall be cleared and grubbed, removing top soils, brush, sod, or other organic or deleterious materials.

B. Contractor shall excavate to the lines and grades shown on the construction drawings.

C. Subgrade shall be approved by Project Engineer.

D. Subgrade soils shall be proof rolled or probe rod before construction proceeds. Subgrade materials not meeting Engineers approval shall be

removed and replaced. Replacement material shall meet the criteria of Section 9-03.14(1) of Standard Specifications.

E. Excavation required for the wall footing shall be paid at unit contract price for “Structure Excavation Cl. A Incl. Haul”, per cubic yard.

8-32.3(2) Base Leveling Pad

A. Leveling pad material shall be placed to the lines and grades and thickness as shown on the construction drawings.

B. Base leveling pad material shall be Crushed Surfacing Top Course and compacted to a minimum of 95% standard or 90% modified Proctor.

C. Leveling pad shall be prepared to insure full contact to the base surface of the segmental concrete units.

8-32.3(3) Segmental Concrete Unit Installation

A. First course of units shall be placed on the leveling pad, and alignment and level checked. Pins, plastic clips or molded surfaces of segmental concrete units shall be used for alignment control.

B. Connecting pins or shear connectors shall be installed and voids in and/or around block units shall be filled with compacted Gravel Backfill for Drywells or Crushed Surfacing Top Course.

C. Excessive material shall be swept from top of units before installing next horizontal row of concrete blocks. Each horizontal block row shall be completely filled before proceeding to next level.

D. Units shall be laid in straight, convex, or concave manner so adjoining unit pin holes or shear connectors are 12-inches or less on center. Units shall be installed so only front face of units shall be visible upon completion of wall.

E. Maximum stacked vertical height of wall units, prior to wall drain fill and backfill placement and compaction, shall not exceed the unit depth dimension.

F. Cap units shall be glued to underlying units with an adhesive recommended by the segmental unit manufacturer.

8-32.3(4) Structural Geogrid Installation

A. Geogrid material shall be as specified in the plans and specifications, and oriented with the highest strength axis perpendicular to the wall alignment.

B. Geogrid reinforcement shall be placed at elevations(s) and to the extent(s) indicated in the contract drawings, and as specified in section 8-32.2(5) of these specifications.

C. Geogrid reinforcement shall be attached firmly between units over the connecting pins or shear connectors and laid horizontally on compacted backfill. Place next course of segmental concrete wall units over geogrid. Geogrid shall be pulled taut, and anchored before backfill placement on geogrid.

D. Geogrid reinforcement shall be continuous throughout their embedment length(s). Geogrid shall not be spliced.

E. Geogrid overlaps shall be in accordance with manufacture's recommendations.

8-32.3(5) Wall Backfill Placement

A. Wall backfill shall be placed, spread, and compacted so development of slack in any geogrid is minimized.

B. Wall backfill shall be placed and compacted in lifts not to exceed 6-inches where hand compaction is used, or 12-inches where heavy compaction equipment is used.

C. Wall backfill shall be compacted to 95 percent of maximum dry density (MDD) as determined by ASTM-1557. Moisture content of backfill material before and during compaction shall be uniformly distributed throughout each layer and shall be within 2 percentage points of optimum.

D. Only lightweight hand-operated compaction equipment shall be allowed within 2-feet of tail of concrete units.

E. Tracked construction equipment shall not be operated directly upon any geogrid reinforcement or within 3-feet of concrete units. Minimum fill thickness of 6-inches is required before operation of tracked vehicles over any geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing fill and damaging geogrid.

F. Rubber-tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.

G. At the end of each day's operation, last lift of wall backfill shall be sloped away from wall units to direct surface runoff away from wall face. Surface runoff from adjacent areas shall not be allowed to enter wall construction site.

8-32.3(6) Perforated Drain Pipe Placement

Drainage collection pipes shall be installed to maintain gravity flow of water as shown on the plans. The drainage collection pipe shall tie into a nearby catch basin or curb drain if possible or daylight along a slope at an elevation lower than the lowest point of the pipe within the aggregate drain. The drain pipe shall not shed water across any nearby sidewalk.

8-32.3(7) Cap Block Placement

A. The cap block unit shall be bonded to the SRW units below using cap adhesive described in Section 8-27.2(3).

B. Straight and angled sided caps shall be utilized to eliminate the gap between units.

8-32.3(8) Fence Installation Top of Wall

All fences indicated on plans to be installed on top of the wall shall be installed in the center void of the segmental retaining wall unit. Embedment shall be a minimum of 24-inches in depth. Embedment depth shall be measured from the top of the top unit not including the cap unit. The voids of the units for which the posts pass through and the voids of the adjacent units shall be filled with class 3000 concrete. The contractor shall provide a separation membrane during construction to insure that backfill material does not enter the area to be filled with concrete.

8-32.3(9) Structure Excavation

Structure Excavation for the wall footing shall be according to Structure Excavation Class A, Section 2-09.3(3).

8-32.3(10) Shoring or Extra Excavation

Shoring or Extra Excavation shall be according to Shoring or Extra Excavation Class A, Section 2-09.3(3).

8-32.4 Measurement

“Shoring or Extra Excavation Cl. A,” per lump sum shall be measured in accordance with Section 2-09.4 of the Standard Specifications.

“Structure Excavation Class A Incl. Haul,” per cubic yard shall be measured in accordance with Section 2-09.4.

Measurement of “Segmental Concrete Block Wall”, per square foot, shall be total square footage of wall face area measured from the top of the base leveling pad to the top of the wall.

8-32.5 Payment

Payment will be made in accordance with section 1-04.1, for each of the following bid items that are included in the proposal.

"Segmental Concrete Retaining Wall", per square foot

The unit contract price for "Segmental Concrete Block Wall", per square foot, shall be full pay for all labor, equipment, and materials required to furnish and install all wall blocks in accordance with contract plans and specifications, including perforated drain pipe and filter fabric, Drainage Zone Wall Backfill, and Base Leveling Pad constructed in place according to the plans and these specifications.

"Shoring or Extra Excavation Cl. A," per lump sum shall be paid in accordance with Section 2-09.5.

"Structure Excavation Class A Incl. Haul", per cubic yard shall be paid in accordance with Section 2-09.5.

"Gravel Borrow Incl. Haul", per ton shall be paid in accordance with Section 2-03.5.

Any Geogrid installation will be included in the unit price per square foot for "Segmental Concrete Block Wall."

END OF SECTION

8-33 CEMENT CONCRETE RETAINING WALL

8-33.1 Description

This Work shall consist of constructing unreinforced cement concrete retaining wall to the lines, grades, and dimensions shown on the plans.

8-33.2 Materials

Materials shall meet the requirements of the following sections:

Portland Cement	9-01
Aggregates	9-03
Concrete Curing Materials and Admixtures	9-23

The concrete shall be air-entrained concrete Class 3000 in accordance with the requirements of Section 6-02.

8-33.3 Construction

The Contractor shall excavate the subgrade to the elevations shown on the plans, and compact the subgrade to a firm and unyielding condition. All organic and vegetative matter shall be cleared and grubbed prior to constructing the retaining wall. Low areas of the subgrade shall be filled and compacted with crushed surfacing top course prior to constructing the wall.

The Contractor shall construct the cement concrete retaining wall to dimensions shown on the Plans and in the details. Wall heights shown on the Plans are as measured from the top of subgrade to the top of the wall.

Backfill for the wall shall be native material or, if the Engineer determines the native material to be unsuitable, topsoil type A meeting the requirements of section 8-02.

8-33.4 Measurement

Cement concrete retaining wall be measured by the linear foot along the face of the wall.

Crushed surfacing top course will be measured in accordance with section 4-04.

Topsoil will be measured in accordance with section 8-02.

8-33.4 Payment

Payment will be made for each of the following listed Bid items that are included in the Proposal:

“Cement Conc. Wall”, per linear foot.

The unit contract price per linear foot for “Cement Conc. Wall” shall be full pay for all labor, materials, and equipment necessary to construct the wall as specified, including but not limited to, all excavation, grading, forming, pouring, finishing, and curing, unless payment for an item is provided elsewhere in the Specifications.

END OF SECTION

8-34 RAILROAD SAFETY

8-34.1 Railroad Coordination and Safety Program

A. This Section describes the requirements for rail coordination and rail safety.

B. Tacoma Rail operates the railroad tracks within the limits of this project to support freight rail service to various Tidelands area customers. There are no published schedules for freight rail service on this railroad. The Rail Roadmaster, who will be identified at the preconstruction conference, can provide general information about freight rail movements on the tracks. The Railroads do not guarantee the accuracy or completeness of any published or unpublished schedules and reserve the right to add, change or otherwise modify the level of activity across the tracks.

C. Contractor shall ensure that, at a minimum, its on-site Project Supervisor(s) have completed a Safety Orientation through ContractorOrientation.com and that each of its employees, subcontractors, agents or invitees has received the same Safety Orientation through sessions conducted by or through the Contractor Safety Officer before the individual performs any work on the Project.

D. Contractor shall comply with all requirements of Federal Railroad Administration (FRA) regulations regarding railroad workplace safety included in Title 49, Part 214 and 219 (Alcohol/Drug Program) of the Code of Federal Regulations.

E. Tacoma Rail requires that approved railroad flagger(s) or appropriate methods to establish inaccessible track to establish the work zone occupied by the contractor's men, materials, and equipment shall be used whenever work is being conducted on or within 15 feet of an adjacent yard track or whenever Tacoma Rail makes a determination that a qualified railroad flagger is required. The Contractor will be required to notify Tacoma Rail 72 hours in advance whenever work needs to be done within railroad rights-of-way or within 15 feet of any tracks. The final decision as to the number and location of qualified railroad flagger(s), or adequacy of inaccessible track work limits that will be required for the work will be made by Tacoma Rail. Repeated instances where the railroad flaggers are scheduled and no effective work occurs will be considered when reviewing change order requests.

F. Tacoma Rail requires that the Contractor incorporate Tacoma Rail specific "Safety Action Plans" into its safety program, provide a copy of the "Safety Action Plan" to the Tacoma Rail Roadmaster prior to commencement of any work on Railway Property, and shall periodically audit the plans. Contractor shall adhere to and comply with Tacoma Rail "Basic Contractor Safety and Operating Requirements" and shall contact and adhere to any other requirements from the other partner railroads.

G. Operations of trains and rail facilities:

Railroad operating personnel will be responsible for operating the existing facilities throughout the performance of the work. Existing railroad track and signals must be available to Rail personnel at all times for use, maintenance and repair. If the Railroad instructs the Contractor to move the Contractor's equipment, materials or any installed material, which is located within a railroad right-of-way, the Contractor shall do so promptly. The Contractor shall not adjust or operate serviceable or functioning

railroad track or signal systems without prior written authorization from the appropriate rail authority.

The Contractor must coordinate its Work so that there will be no delays to trains or interference in any manner with the operation of trains without prior written authorization from the affected railroads.

The Contractor shall not take any rail facility or equipment out of service without prior written approval from a rail representative and the confirmation from the contracting agency as appropriate. Any requests by the Contractor to take rail facilities or equipment out of service shall be made to the affected railroad no less than one week prior to the time it is necessary to take the facility or equipment out of service.

H. The Contractor shall protect all railroad track and signals from exposure to concrete, debris, dirt and water during the Work.

I. The Contractor shall be responsible for providing their own On Track Safety. The Contractor shall ensure that railroad flagging and/or protective services are established prior to commencement of any work within a railroad right-of-way. The Contractor shall comply with the instructions of the rail work forces.

J. If damage is sustained to any of the existing signal and communication equipment, underground or above ground, as a result of the Contractor's operations, whether the damage sustained was intentional or not, the Contractor shall immediately inform the affected railroad and the contracting agency.

The Contractor will be responsible for paying for the costs of repair or replacement, including, but not limited to, the following charges:

1. Replacement of the damaged equipment.

2. Any necessary inspection and testing of the system, before and after repair or replacement of the damaged equipment.

8-34.1(1) General Work Requirements
(May, 17 2019)

Relations With Railroad

Railroad Company, as used in these specifications, shall be the railroad company or companies, or railway company or companies specified in these Special Provisions. The following provisions, though referring to a single Railroad Company, shall be applicable to each of the following railroad companies or railway companies:

Tacoma Rail

Protection of Railroad Property

The Contractor shall exercise care in all operations and shall, at the Contractor's expense, protect the property of the Railroad Company and the Company’s appurtenances, property in its custody, or persons lawfully upon its right of way, from damage, destruction, interference or injury caused by the Contractor’s operations. The Contractor shall prosecute the work to not interfere with the Railroad Company or its appurtenances, or any of the Railroad Company's trains or

facilities, and shall complete the work to a condition that shall not interfere with or menace the integrity or safe and successful operations of the Railroad Company or its appurtenances, or any of the Railroad Company's trains or facilities.

The Contractor shall not transport equipment, machinery, or materials across the Railroad Company's tracks, except at a public crossing, without the written consent of the Railroad Company.

The Contractor shall keep the right of way and ditches of the Railroad Company open and clean from any deposits or debris resulting from its operations. The Contractor shall be responsible for the cost to clean and restore ballast of the Railroad Company which is disturbed or becomes fouled with dirt or materials when such deposits or damage result from the Contractor’s operations, except as provided elsewhere.

The Contractor's work shall be conducted in such a manner that there will be a minimum of interference with the operation of railroad traffic. The Railroad Company will specify what periods will be allowed the Contractor for executing any part of the work in which the Railroad Company's tracks will be obstructed or made unsafe for operation of railroad traffic.

In the event that an emergency occurs in connection with the work specified, the Railroad Company reserves the right to do any and all work that may be necessary to maintain railroad traffic. If the emergency is caused by the Contractor, the Contractor shall pay the Railroad Company for the cost of such emergency work.

Protective services to protect the Railroad Company's facilities, property, and movement of its trains or engines, including railroad flagging and other devices, may be required by the Railroad Company as a result of the Contractor's operations.

The nature and extent of protective services, personnel and other measures required will in all cases be determined by the Railroad Company. Nothing in these specifications will limit the Railroad Company's right to determine and assign the number of personnel, the classes of personnel for protective services, nor other protective measures it deems necessary.

When, in the opinion of the Railroad Company, the services of qualified railroad flaggers or security personnel are necessary for the protection of the Railroad Company's facilities by reason of the Contractor's operations, the Contractor will furnish such qualified railroad flaggers or security personnel as may be required.

The Railroad Company’s contact is:

Kyle Kellem: Roadmaster, Tacoma Rail: 253-377-3554

No act of the Railroad Company in supervising or approving any work shall reduce or in any way affect the liability of the Contractor for damages, expense, or cost which may result to the Railroad Company from the construction of this Contract.

8-34.2 Materials

This Section left vacant intentionally.

8-34.3 Construction Requirements

A. There shall be no storage of material or equipment within 20-feet of the centerline of any railroad track without prior written approval of Tacoma Rail. Where work is required within 20-feet of the track centerline, it shall be coordinated daily with Tacoma Rail's representative.

B. The contractor shall notify the railroad prior to each day of work to confirm track accessibility and determine the need for track safety and protection measures provided by any rail operators.

Contact Kyle Kellem: Roadmaster, Tacoma Rail: 253-377-3554

The work window will most likely be between the hours of 8 am and 5 pm, Monday through Friday but may be subject to change depending on Tacoma Rail's operational needs.

Tacoma Rail has routine train movements along this section of track and anticipates being able to provide a one-week outage (Monday through Friday) to remove and replace the rail crossing at the eastern end of the project.

The contractor can expect at least several freight train movements per day through the work zone during the rest of the project.

C. The contractor shall relocate the railroad crossing signals in coordination with Tacoma Rails signal maintainer. The contractor shall build new footings for the railroad signals and move the signals to the new location once approved by Tacoma Rail representatives. All other electrical work and conduit placement shall be done by the signal maintainer.

8-34.4 Measurement

"Relocate Railroad Signals", shall be measured per lump sum.

8-34.5 Payment

"Relocate Railroad Signals", per lump sum shall be full pay to construct the new concrete footings and relocate the signals to the new location and coordinate the work with Tacoma Rail forces.

The contract prices shall be full compensation for furnishing all labor, equipment, and incidentals required to accomplish the submittal work.

END OF SECTION

9-03 AGGREGATES

9-03.1 Aggregates for Portland Cement Concrete

9-03.1(1) General Requirements
(June 16, 2016 Tacoma GSP)
The seventh paragraph is deleted

9-03.6 Vacant
(Jun 16, 2016 Tacoma GSP)
This section, including the title, is revised to read:

9-03.6 Aggregates for Asphalt Treated Base (ATB)

9-03.6(1) General Requirements

Aggregates for asphalt treated base shall be manufactured from ledge rock, talus, or gravel, in accordance with the provisions of Section 3-01 that meet the following test requirements:

Los Angeles Wear, 500 Rev.	30% max.
Degradation Factor	15 min.

9-03.6(2) Grading

Aggregates for asphalt treated base shall meet the following requirements for grading:

Sieve Size	Percent Passing
2″	100
½″	56-100
No. 4	32-72
No. 10	22-57
No. 40	8-32
No. 200	2.0-9.0

All percentages are by weight.

9-03.6(3) Test Requirements

When the aggregates are combined within the limits set forth in Section 9-03.6(2) and mixed in the laboratory with the designated grade of asphalt, the mixture shall be capable of meeting the following test values:

% of Theoretical Maximum Specific Gravity (GMM) (approximate)	93@ 100 gyrations
AASHTO T324, WSDOT TM T718 or ASTM D3625 (Acceptable anti-strip evaluation tests)	Pass

The sand equivalent value of the mineral aggregate for asphalt treated base (ATB) shall not be less than 35.

9-03.8 Aggregates for Hot Mix Asphalt
(March 9, 2016 APWA GSP)
Supplement section 9-03.8 with the following:

Aggregates for Porous Hot Mix Asphalt/Porous Warm Mix Asphalt (PHMA/PWMA)
General Requirements

Aggregates for Porous Hot Mix Asphalt (PHMA) or Porous Warm Mix Asphalt (PWMA) shall be manufactured from ledge rock, talus, or gravel, in accordance with the provisions of Section 3-01 that meet the following test requirements:

Los Angeles Wear, 500 Rev. 30% max.
Degradation Factor 15 min.

Grading
Aggregates for PHMA/PWMA shall meet the following requirements for grading:

Sieve Size	Percent Passing*
¾" square	100
½" square	900 - 100
⅜" square	55 - 90
U.S. No. 4	10 - 40
U.S. No. 8	0 - 20
U.S No. 40	0 - 13
U.S. No. 200	0 - 5

* All percentages are by weight.

The aggregate for PHMA/PWMA shall consist of crushed stone with a percent fracture greater than 90% on two faces on the No. 4 sieve and above, and shall be tested in accordance with the field operating procedures for AASHTO T 335.

9-03.12 Gravel Backfill

9-03.12(3) Gravel Backfill for Pipe Zone Bedding
(Jun 16, 2016 Tacoma GSP)
The grading requirements included in this section are revised to read:

Sieve Size	Percent Passing*
¾" square	100
⅜" square	95-100
U.S. No. 8	0 - 10
U.S. No. 200	0 - 3

Sand Equivalent 35 Minimum
* All percentages are by weight

9-03.21 Recycled Material

9-03.21(1) General Requirements
(Jun 16, 2016 Tacoma GSP)

This section is supplemented with the following:

Recycled materials will only be permitted upon approval of the Engineer. Recycled concrete shall not be permitted for use as pipe zone backfill, backfill above pipe zone, and extra excavation area backfill material.

END OF SECTION

9-08 PAINTS AND RELATED MATERIALS
(March 23, 2010 Tacoma GSP)

The following section is added:

9-08.20 Painting Surfaces Systems

The surfaces shall be painted in accordance with the type materials and exposures as identified in this section. The Contractor shall provide the Engineer with a paint mil.

9-08.20(1) Steel

A. Exposed/outside exposure(non-galvanized)

1. Primer Coat	Section 9-08.1(2)C	(2.5-mils)
2. Intermediate Coat	Section 9-08.1(2)G	(3.5-mils)
3. Top Coat:	Section 9-08.1(2)H	(1.0-mils)

B. Exposed/Interior exposure(non-galvanized)

1. Primer Coat:	Section 9-08.1(2)C	(2.5-mils)
2. Intermediate Coat:	Section 9-08.1(2)G	(3.5-mils)
3. Top Coat:	Section 9-08.1(2)H	(1.0-mils)

C. Unexposed/interior & exterior (non-galvanized)

1. Primer Coat:	Section 9-08.1(2)C	(2.5-mils)

D. Exposed/interior & outside exposure(galvanized)

1. Primer Coat:	Section 9-08.1(2)E	(2.5-mils)
2. Top Coat:	Section 9-08.1(2)H	(1.0-mils)

E. Powder Coating and Galvanize Coating shall be applied where indicated in the contract documents. All other surfaces to be coated per Section 6-07.3.

F. Painting shall be applied in accordance with Section 6-07.3.

9-08.20(2) Concrete

A. Exposed/outside exposure

1. 1st Cost:	Section 9-08.3	(3.0-mils)

B. Exposed/Interior exposure

1. 1st Cost:	Section 9-08.1(3)	(2.0-mils)
2. 2nd Cost:	Section 9-08.1(3)	(1.0-mils)

C. Surface to be painted where indicated on contract plans

D. Colors to be selected by the Project Engineer

9-08.20(3) Wood

All surfaces to be coated where and in accordance with contract documents as indicated.

END OF SECTION

9-28 SIGNING MATERIALS AND FABRICATION
(April 1, 2012 Tacoma GSP)

9-28.1 General
The second sentence of the first paragraph is hereby revised to read:

Permanent signs which measure 36 inches or less on a side and are to be mounted on a single post shall be constructed of single 0.080-inch aluminum panels.

The third sentence of the first paragraph is hereby revised to read:

Sign overlay panels shall be 0.050-inch aluminum panels.

9-28.9 Fiberglass Reinforced Plastic Signs
This section is deleted in its entirety.

END OF SECTION

9-29 ILLUMINATION, SIGNALS, ELECTRICAL
(March 31, 2018 Tacoma GSP)

9-29.1(6) Detectable Underground Warning Tape
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

For electrical circuits detectable underground warning tape shall be high visibility red, with continuous legend of “Caution Electric Line Buried Below” or equal. The warning tape shall be polyethylene with a metallic backing. The polyethylene shall be a minimum 3 inches wide, 4 mils thick.

9-29.2 Junction Boxes, Cable Vaults and Pull Boxes
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

Unless otherwise specified, all junction boxes containing illumination and signal control cable shall be Type 1, Standard Duty with alternate 2 locking lid per state standard plan J-40.10-02.

Unless otherwise specified, all junction boxes containing interconnect cabling shall be Type 2, Standard Duty with alternate 2 locking lid per state standard plan J-40.10-02.

9-29.2(1)A Standard Duty Junction Boxes
(August 1, 2016 WSDOT GSP)
Section 9-29.2(1)A is supplemented with the following:

Concrete Junction Boxes

Both the slip-resistant lid and slip-resistant frame shall be treated with Mebac#1 as manufactured by IKG industries, or SlipNOT Grade 3-coarse as manufactured by W.S. Molnar Co. Where the exposed portion of the frame is ½ inch wide or less the slip-resistant treatment may be omitted on that portion of the frame. The slip-resistant lid shall be identified with permanent marking on the underside indicating the type of surface treatment (“M1” for Mebac#1; or “S3” for SlipNOT Grade 3-coarse) and the year manufactured. The permanent marking shall be 1⁄8-inch line thickness formed with a mild steel weld bead.

9-29.2(2) Cable Vaults and Pull Boxes

9-29.2(2)A Standard Duty Junction Boxes
(August 1, 2016 WSDOT GSP)
Section 9-29.2(2)A is supplemented with the following:

Both the slip-resistant lid and slip-resistant frame shall be treated with Mebac#1 as manufactured by IKG industries, or SlipNOT Grade 3-coarse as manufactured by W.S. Molnar Co. Where the exposed portion of the frame is ½ inch wide or less the slip-resistant treatment may be omitted on that portion of the frame. The slip-resistant lid shall be identified with permanent marking on the underside indicating the type of surface treatment (“M1” for Mebac#1; or “S3” for SlipNOT Grade 3-coarse) and the year manufactured. The permanent marking shall be 1⁄8-inch line thickness formed with a mild steel weld bead.

9-29.2(4) Cover Markings
(March 31, 2018 Tacoma GSP)
The second paragraph of this section is revised to read:

Covers shall be marked or embossed with “LT” for boxes containing illumination circuits. Covers shall be marked or embossed with “TS” for boxes containing traffic signal circuits

(Special Provision)
Covers shall be marked or embossed with “COMM” for boxes containing traffic signal interconnect.

9-29.3 Fiber Optic Cable, Electrical Conductors, and Cable
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

Where not otherwise specified, all wiring shall meet standard of the industry for the application employed. Wiring shall be consistent with manufacturers’ recommendations and meet all applicable codes.

9-29.3(1) Fiber Optic Cable
9-29.3(1)A Singlemode Fiber Optic Cable
(Special Provision)
This section is supplementing with the following:
Fiber Optic Cable shall be Corning ALTOS All-Dielectric Cable or approved equal.

9-29.3(2) Electrical Conductors and Cable

9-29.3(2)A Single Conductor

9-29.3(2)A1 Single Conductor Current Carrying
(March 31, 2018 Tacoma GSP)
This section is supplementing with the following:

Service connections shall be stranded copper size AWG #6 USE unless otherwise shown in the plans. Black conductor insulation shall be used for the service and the neutral conductor shall be white. Color tape marking shall not be acceptable for the neutral conductor.

9-29.3(2)A2 Grounding Electrode Conductor
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

Grounding electrode conductor shall be minimum #8 AWG unless otherwise shown in the plans. When the ground is pulled through a conduit, the wire shall be insulated. Color tape marking shall not be acceptable for marking the ground.

9-29.3(2)A3 Equipment Grounding and Bonding Conductors
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

Equipment grounding shall be minimum #8 AWG unless otherwise shown in the plans. When the ground is pulled through a conduit, the wire shall be insulated. Color tape marking shall not be acceptable for marking the ground.

9-29.3(2)B Multi-Conductor Cable

(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

Two-conductor through 10-conductor unshielded signal control cable, shall have stranded copper conductors, size AWG 14, and shall conform to International Municipal Signal Association (IMSA) signal cable 20-1.

9-29.3(2)I Twisted Pair Communication Cable

(March 31, 2018 Tacoma GSP)
This section is revised to read:

The cable for interconnect for underground installation shall be IMSA 40-2 #19 AWG 6 twisted pair, shielded, PE outer jacket or IMSA 40-4 #19 AWG 6 twisted pair, figure 8, shielded, PE outer jacket for overhead installation.

9-29.6 Light and Signal Standards

(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

All light and signal standards shall be fixed base.

The head of the handhold security bolt shall be flush with the face of plate. The face plate of the handhole shall be flush with pole.

(April 1, 2019 WSDOT GSP)
Section 9-29.6 is supplemented with the following:

Traffic Signal Standards

Traffic signal standards shall be furnished and installed in accordance with the methods and materials noted in the applicable Standard Plans, pre-approved plans, or special design plans.

All welds shall comply with the latest AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Welding inspection shall comply with Section 6-03.3(25)A Welding Inspection.

Hardened washers shall be used with all signal arm connecting bolts instead of lockwashers. All signal arm ASTM F 3125 Grade A325 connecting bolts tightening shall comply with Section 6-03.3(33).

Traffic signal standard types and applicable characteristics are as follows:

Type PPB Pedestrian push button posts shall conform to Standard Plan J-20.10 or to one of the following pre-approved plans:

Fabricator	Drawing No.

	Valmont Ind. Inc.	DB01165 Rev. A Sheet's 1, 2, 3 & 4 of 4
	Ameron Pole Prod. Div.	WA15TR10-1 Rev. C and WA15TR10-3 Rev. B

Type PS — Pedestrian signal standards shall conform to Standard Plan J-20.16 or to one of the following pre-approved plans:

Fabricator	Drawing No.
Valmont Ind. Inc.	DB01165 Rev. B Sht. 1, 2, 3 & 4 of 4
Ameron Pole Prod. Div.	WA15TR10-1 Rev. C and WA15TR10-2 Rev. C

Type I — Type I vehicle signal standards shall conform to Standard Plan J-21.15 or to one of the following pre-approved plans:

Fabricator	Drawing No.
Valmont Ind. Inc.	DB01165 Rev. B Sht. 1 2, 3 & 4 of 4
Ameron Pole Prod. Div	WA15TR10-1 Rev. C and WA15TR10-2 Rev. C

Type FB — Type FB flashing beacon standard shall conform to Standard Plan J-21.16 or the following pre-approved plan:

Fabricator	Drawing No.
Valmont Ind. Inc.	DB01165 Rev. B Sht. 1 2, 3 & 4 of 4
Ameron Pole Prod. Div.	WA15TR10-1 Rev. C and WA15TR10-2 Rev. C

Type RM — Type RM ramp meter standard shall conform to Standard Plan J-22.15 or the following pre-approved plan:

Fabricator	Drawing No.
Valmont Ind. Inc.	DB01165 Rev. B Sht. 1, 2, 3 & 4 of 4
Ameron Pole Prod. Div.	WA15TR10-1 Rev. C and WA15TR10-2 Rev. C

Type CCTV — Type CCTV camera pole standards shall conform to one of the following pre-approved Plans:

Fabricator	Drawing No.
Valmont Industries, Inc.	DB 01166 Rev. B

		Sheet 1, 2, 3 and 4 of 4
	Ameron Pole Product Div.	WA15CCTV01 Rev. B Sheet 1 and 2 of 2

Type II Characteristics:

Luminaire mounting height	N.A.
Luminaire arms	N.A.
Luminaire arm length	N.A.
Signal arms	One Only

Type II standards shall conform to one of the following pre-approved plans, provided all other requirements noted herein have been satisfied. Maximum (x) (y) (z) signal arm loadings in cubic feet are noted after fabricator.

Signal Arm Length (max)	Fabricator-(x) (y) (z)	Drawing No.
65 ft.	Valmont Ind. Inc.-(2894)	DB01162 Rev. B, Shts. 1, 2,3, 4 & 5 of 5
65 ft.	Ameron Pole-(2900) Prod. Div.	WA15TR3724-1 Rev. C and WA15TR3724-2 Rev. D Sheet 1 and 2 of 2

Type III Characteristics:

Luminaire mounting height	30 ft., 35 ft., 40 ft., or 50 ft.
Luminaire arms	One Only
Luminaire arm type	Type 1
Luminaire arm length (max.)	16 ft.
Signal arms	One Only

Type III standards shall conform to one of the following pre-approved plans, provided all other requirements noted herein have been satisfied. Maximum (x) (y) (z) signal arm loadings in cubic feet are noted after fabricator.

Signal Arm Length (max)	Fabricator-(x) (y) (z)	Drawing No.
65 ft.	Valmont Ind. Inc.-(2947)	DB01162 Rev. B, Shts. 1, 2, 3, 4 & 5 of 5 and "J" luminaire arm
65 ft.	Ameron Pole-(2900)	WA3724-1 Rev. C and

Prod. Div.	WA3724-2 Rev. D and "J" luminaire arm

Type IV — Type IV strain pole standards shall be consistent with details in the plans and Standard Plan J-27.15 or one of the following pre-approved plans:

Fabricator	Drawing No.
Valmont Industries, Inc.	DB01167, Rev. B Sheets 1 and 2
Ameron Pole Prod. Div.	WA15TR15 Rev. A Sheet 1 and 2 of 2

Type V — Type V combination strain pole and lighting standards shall be consistent with details in the plans and Standard Plan J-27.15 or one of the following pre-approved plans:

Fabricator	Drawing No.
Valmont Industries, Inc.	DB01167, Rev. B Sheets 1 and 2
Ameron Pole Prod. Div.	WA 15TR15 Rev. A Sheet 1 and 2 of 2

The luminaire arm shall be Type 1, 16-foot maximum and the luminaire mounting height shall be 40 feet or 50 feet as noted in the plans.

Type SD — Type SD standards require special design. All special design shall be based on the latest AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and pre-approved plans and as follows:

1. A 115 mph wind loading shall be used.
2. The Mean Recurrence Interval shall be 1700 years.
3. Fatigue category shall be III.

Complete calculations for structural design, including anchor bolt details, shall be prepared by a Professional Engineer, licensed under Title 18 RCW, State of Washington, in the branch of Civil or Structural Engineering or by an individual holding valid registration in another state as a civil or structural Engineer.

All shop drawings and the cover page of all calculation submittals shall carry the Professional Engineer's original signature, date of signature, original seal, registration number, and date of expiration. The cover page shall include the

contract number, contract title, and sequential index to calculation page numbers. Two copies of the associated design calculations shall be submitted for approval along with shop drawings.

Details for handholes and luminaire arm connections are available from the Bridges and Structures Office.

Foundations for various types of standards shall be as follows:

Type PPB	As noted on Standard Plan J-20.10
Type PS	As noted on Standard Plan J-21.10
Type I	As noted on Standard Plan J-21.10
Type FB	As noted on Standard Plan J-21.10
Type RM	As noted on Standard Plan J-21.10
Type CCTV	As noted on Standard Plan J-29.15
Type II	As noted in the Plans.
Type III	As noted in the Plans.
Type IV	As noted in the Plans and Standard Plan J-27.10
Type V	As noted in the Plans and Standard Plan J-27.10
Type SD	As noted in the Plans.

(March 31, 2018 Tacoma GSP)
Section 9-29.6 is supplemented with the following new section:

9-29.6(6) City of Tacoma Universal Pole

Unless otherwise specified, light standards and strain poles shall be in conformance with the following City of Tacoma standard design.

Strength
Each pole and mast arm shall have adequate strength for the designated luminaire with 1.8 safety factor for maximum combined stresses using 90 mph isotach (117 mph gusts) per AASHTO specifications for structure supports for highway luminaires. Design shall be based on total loading of 50 pounds and EPA of 2.0 square feet.

Standard Bolt Spacing
30 Foot poles -- Baseplate shall accommodate 1-inch anchor bolts. The bolt circle shall be between 11 inches and 13 inches.
40 Foot Poles -- Baseplate shall accommodate 1-inch anchor bolts. The bolt circle shall be between 12.5 inches and 14.5 inches.

9-29.6(6)A Steel Strain Poles

Each pole shall be of tapered round or octagonal construction.

CLASS 1 POLE: Design for dead load tensions up to 1500 pounds
CLASS 2 POLE: Design for dead load tensions up to 2600 pounds

Class 1 poles shall have a minimum base diameter of 12-inches for octagonal poles and 12-1/4-inches for round poles. Poles shall have a minimum wall thickness of 0.3125-inches. Anchor bolts shall be 1-1/2-inch by 60-inches and shall have a spacing of 11-5/16-inches on center, on the square. It is the responsibility of the pole manufacturer to maintain proper clearance between the pole shaft and nuts for the anchor bolts.

Class 2 poles shall have a minimum base diameter of 13-1/2-inches for octagonal poles and 14-inches for round poles. Poles shall have a minimum wall thickness of 0.375-inches. Anchor bolts shall be 2-inch by 66-inches and shall have a spacing of 12-3/4-inches on center, on the square. It is the responsibility of the pole manufacturer to maintain proper clearance between the pole shaft and nuts for the anchor bolts

Poles shall be of single-ply construction. Multiple-ply poles shall not be allowed.

Each pole shall be of tapered round or octagonal construction. Pole taper shall be in the range of 0.13 to 0.14 in/ft.

A base plate and top casting shall be securely attached to each pole. The attachment of the base plate to the pole shall be a welded connection sufficient to develop the full strength of the pole. The base plate shall have four (4) holes which will sufficiently accommodate the specified anchor bolts for the pole class.

Pole shall be of sufficient strength to allow for the span wire to be installed to sag an amount equal to 5% of the span length.

The maximum acceptable deflection, at 30 feet above the base, is 5 inches. The specified deflection shall be at a loading condition of 1,500 pounds horizontal pull at 30 feet above the base for Class 1 Poles. For Class 2 Poles, the loading condition shall be 2,600 pounds horizontal pull at 30 feet above the base.

Structural material shall be zinc-coated by a “hot-dip” process in accordance with ASTM A123 and the final coating shall measure 0.0039 inch or more in thickness as determined by a magnetic thickness gauge. All tapped holes shall be chased after galvanizing. Hardware shall be coated in accordance with ASTM A307.

The finished pole shall be reasonably straight and free from injurious defects. If galvanizing is damaged, the maximum area to be repaired is defined in accordance with ASTM A123 Section 4.6. The maximum area to be repaired in the field shall be determined in advance by the Engineer. Repair areas damaged during construction, handling, transport or installation by one of the approved methods in accordance with ASTM A780 whenever damage exceeds 3/16 inches in width. Minimum thickness for repair shall measure 0.0039 inches.

The company shall furnish the purchaser with template prints showing spacing and size of holes in base for the anchor rods.

The material shall carry the manufacturer’s standard guarantee against any defect in material or workmanship for a minimum period of one year following the date of installation. The Contractor shall submit mil test reports for all steel used in the manufacturing of strain poles and pedestals.

The Contractor shall submit a Certificate of Compliance with ASTM Standards and Specifications for galvanizing. The certificate, signed by the galvanizer, shall detail galvanizing process and testing procedure to determine that galvanizing meets minimum thickness specified.

The contractor shall submit welder certification. Welders must be certified to AWS standards.

Each pole shall include the following:

1. One (1) rain-tight pole cap.
2. One (1) 4-inch by 6-1/2-inch handhole at base end with cover plate opposite to mast arm.
3. Anchor bolts shall be hot dipped galvanized steel with two (2) galvanized nuts and two (2) washers for each bolt. Only 12-inches of threaded end of the bolts must be galvanized. 1-1/2-inch diameter bolts shall have 8-inches of top thread and 2-inch diameter bolts shall have 10-inches of top thread.
4. Anchor bolts shall have threaded bottom ends to receive an anchor plate and nut. The nut shall be tack-welded to the anchor plate. Anchor plates for 1-1/2-inch diameter anchor bolts shall be 4-inch square by 1-inch thick. Anchor plates for 2-inch diameter anchor bolts shall be 6-inch square by 1-inch thick
5. One (1) adjustable strain clamp to be mountable between 26 to 28 feet above the base. Clamp shall provide facility to attach span wire at four-quarter points.
6. Provisions for mounting a mast arm of specified length. All poles shall be supplied with one mast arm mounting flange. The centerline of the flange shall be approximately 6 inches below the top of 38-foot poles and 24 inches below the top of 30-foot poles. The flanges shall conform with the detail drawing included in the Special Provisions. Poles ordered without mast arms but with provisions for a later addition of a mast arm shall be provided with a metal cover and gasket to protect the opening being provided. The cover shall be bolted to the pole using the holes provided for fastening the mast arm.
7. One (1) two-inch coupling to receive clamp-on type aluminum weatherhead positioned at 27 feet, and no more than 45° from the location of the mast arm, unless otherwise specified.
8. One (1) 1-1/4-inch coupling for wire inlet located directly opposite the mast arm.
9. One (1) grounding lug-hole in lip of handhole for 1/2-NC brass bolt.

9-29.6(6)B Luminaire Mast Arms

Each mast arm shall have sufficient strength with a 1.8 safety factor to support a 70-pound luminaire on an 18-foot mast arm per the latest AASHTO Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

Material and workmanship shall conform to the best commercial standards of the industry.

The mast arm and its fastening shall be constructed of steel conforming to Section 9-29.6

Each mast arm shall support a ballast-in-head luminaire and shall provide a luminaire mounting height of approximately two (2) feet above the strain pole mounting flange.

The mast arm shall provide a horizontal extension from the center of the pole to the center of the luminaire as shown in the Plans.

The mast arm shall be of tapered construction. The luminaire end of the mast arm shall not exceed 2.375 inches O.D. for a minimum distance of 8 inches. The outside arm diameter at the pole flange shall not exceed 5.88 inches.

The mast arm shall be capable of being fastened to the mast arm mounting flange dimensioned in the detail drawing. All mounting bolt heads shall clear the weld.

9-29.10 Luminaires

(Special Provision)

This section is supplemented with the following:

Luminaires shall be the following cobra style fixtures as specified on the Plans:

Cobrahead 40 LED 134W – Leotek GreenCobra GCM2-40H-MV-NW-2R-GY-1A-4B-WL-PCR7

Luminaires shall be LED with anti-glare optics recessed in the fixture and a system rating of L85 at 50,000 hours. Each fixture shall be equipped with a 7-pin photocell receptacle.

Each luminaire shall have LED compatible fuses (in conformance with the manufacturer's recommendations) and fuseholders for each power conductor above ground potential. Fuses shall be located in the fixture head. Fuses shall be 10.3mm x 38.1 mm (13/32" x 1.5"). Fuses shall be slow blow type (carry 110%, open at 135% within 1 hour, carry 200% for minimum of 10 seconds). Luminaires 250 Watts and below shall have 5 amp fuses. Luminaires above 250 watts shall have 10 amp fuses.

LED Roadway Luminaire housings shall be grey/silver and fabricated of aluminum. The power-door shall be fabricated from either aluminum or a UV resistant polymer. Power-door access shall be tool-less.

9-29.11 Control Equipment

9-29.11(2) Photoelectric Controls

This section is revised to read:

The photoelectric control shall be the twistlock type and the light sensitive element shall be a solid state photo diode. The control shall be designed to turn on at 2.6 foot-candles (+/- 20%) and turn off at 2.6 foot-candles (+/- 20%). The lighting control shall not drift by more than 1 per cent over a 10-year period.

The output control relay shall be electro-mechanical. The time delay for both turn on and turn off shall be a minimum of one second and maximum of 5 seconds. The output relay shall be rated 1000 watts incandescent or 15 amps inductive load. The contacts shall be normally closed.

The lighting control shall have a built in metal oxide varistor (MOV) rated a minimum of 160 joules for lightning and transient protection. The control shall also have secondary zener diode and transient filter. The relay shall be suitable for operation on 240 volt, 60 hertz electrical circuits.

Dimensions shall conform to ANSI specifications for twistlock photocells.

9-29.12 Electrical Splice Materials

9-29.12(1) Illumination Circuit Splices
(March 31, 2018 Tacoma GSP)
This section is revised to read:

Splices and taps shall be made with solderless crimp connectors on underground and overhead circuits to securely join the wires both mechanically and electrically. Splices shall be sealed in accordance with 8-20.3(8).

Thermoplastic Electrical Insulating Tape
Electrical tape shall be made by the same manufacturer and compatible with the electrical coating utilized to form a complete system that both insulates and protects the splice. Electrical tape shall be based on polyvinyl chloride (PVC) and/or its copolymers and have a rubber–based, pressure–sensitive adhesive. The tape shall have a voltage rating of 600V (UL510). The tape shall be 7 mils thick, and be UL Listed and marked per UL Standard 510 as “Flame Retardant, Cold and Weather Resistant.” The tape shall be resistant to abrasion, moisture, alkalies, acids, corrosion, and varying weather conditions, including ultraviolet exposure. The tape must be applicable at temperatures ranging from 0°F through 100°F (–18°C through 38°C) without loss of physical properties. The tape shall have an operating temperature up to 220°F (105°C). The tape shall be classified for use in outdoor environments. The tape shall be compatible with synthetic cable insulations, jackets and splicing compounds. The tape will remain stable and will not telescope more than 0.1 inches when maintained at temperatures below 120°F (50°C).

Moisture Resistant Electrical Coating
Electrical Coating shall be made by the same manufacturer and compatible with the vinyl electrical tape utilized to form a complete system that both insulates and protects the splice. Electrical Coating shall seal and bond the tape and be suitable for direct burial, direct water immersion, and above ground applications. Electrical coating shall be flexible when dry. Electrical coating shall consist of the solvents Acetone, Methyl Ethyl Ketone and Toluene and shall contain synthetic rubber and resin solids.

9-29.12(2) Traffic Signal Splice Material
(March 31, 2018 Tacoma GSP)
This section is revised to read:

Induction loop splices and magnetometer splices shall include an uninsulated barrel-type crimped connector capable of being soldered. The insulating material shall be a heat shrink type meeting requirements of 9-29.12(1)A.

9-29.13 Control Cabinet Assemblies

(March 31, 2018 Tacoma GSP)
This section and its subsections are deleted and replaced with the following:

The Traffic Controller Cabinet Assembly shall be completely wired and tested to the 2003 NEMA TS2 Traffic Controller Assemblies Specification with NTCIP Requirements Version 02.06, as amended by these specifications.

Cabinets shall be compatible with both Siemens M50 and M60 series controllers.

The following submittals will be required for the review and approval by the City prior to fabrication and wiring:

1. Proposed cabinet layout diagram including shelving/rack locations. In addition, detailed diagrams shall be provided for the left side, right side, and back panels. Drawings shall be clearly labeled and dimensioned.
2. Proposed cabinet wiring diagram shall be submitted for the review and approval by the City. Wiring of cabinets shall not commence prior to City approval of the cabinet wiring plan.

All submittal comments shall be incorporated into a final set of prints and each cabinet shall be furnished to three (3) complete sets of cabinet prints. All cabinet wiring, and layout shall come on (1) E1 size sheet, multiple pages shall not be allowed. Upon request (1) CDROM or USB flash drive with AutoCAD v2008 cabinet drawing for the cabinet wiring.

9-29.13(1) Traffic Control Cabinets

Each Traffic Controller Cabinet shall meet the following general operating requirements:

1. The wired cabinet facility shall use the latest technology applicable meeting the requirements identified by these specifications.
2. The cabinet shall be designed for 16 channel operation. Load switch(s) 1-8 shall be vehicle phases 1-8; load switch(s) 9-12 shall be pedestrian phases 2, 4, 6, 8; load switch(s) 13-16 shall be overlaps A, B, C, & D; these load switch sockets shall be configured in this manor without rewiring the back side of the load-bay. BIU load switch drivers 1-16 shall be wired to appropriate load switch socket.
3. The cabinet shall be wired for (32) channels of detection and (4) channels of Opticom™ preemption.
4. The use of PC boards shall not be allowed except in detector racks and SDLC interface panels. With the exception of detection racks, the use of plug and play modules shall not be allowed
5. All cabinet 120VAC wires shall be 18AWG or greater, including controller “A” and MMU “A & B” cables.
6. All welds shall be free from burrs, cracks, blowholes or other irregularities.
7. The cabinet shall be UL listed.

9-29.13(1)A Cabinet Enclosures

All Cabinet enclosures shall meet the following requirements:

1. Controller cabinets that are not designated in the project plans and specifications as UPS Controller Cabinets shall be sized in accordance with NEMA P44 Controller Cabinet standards.
2. The cabinet shall meet NEMA 3R rating for enclosures.
3. The cabinet shall be fabricated from 0.125” minimum thickness 5052 H32 ASTM B209 aluminum alloy and be of clean cut design and appearance. The Cabinet shall be supplied with a natural mill finish inside and out, unless otherwise specified.
4. All exterior seams shall be manufactured with a neatly formed continuous weld construction.
5. All external fasteners shall be stainless steel. Interior cabinet welds shall be continuous for all lap and butt welds. Intermittent welds or silicone adhesive shall not be accepted in place of a weld for weather-tight penetrations. Pop rivets shall not be allowed on any external surface.
6. The cabinet shall be designed for mounting on a concrete pad with anchor bolts and typical flanges inside the cabinet. The cabinet base shall have continuously welded interior mounting reinforcement plates with the same anchor bolt-hole pattern as the footprint dimensions.
7. Unless otherwise approved by the Engineer, there shall be a minimum ten (10) inch vertical clearance above the front half portion of the base area to provide a clearance for conduit and cable entering the cabinet.
8. The cabinet shall be double-flanged where it contacts cabinet doors.
9. The top of the cabinet shall be sloped down 1” towards the rear to facilitate water runoff. The roof shall be sloped at a 90° angle at the front of the cabinet. Lesser slope angles are not allowed.
10. The cabinet shall be equipped with “C” channel rails welded to the interior of the cabinet such that panels may be mounted to the interior of the cabinet without drilling through the outer cabinet. The “C” channel rails shall be sufficient in strength to accommodate planned and reasonably anticipated future equipment needs. At a minimum, the cabinet shall have (2) welded on the back wall, and (4) welded on each side wall with (2) pairs on 8-inch centers. The side and back wall C channel rails shall run the entire usable height of the cabinet walls.
11. The cabinet shall come with lifting ears affixed to the upper exterior of the cabinet. The lifting ears shall utilize only one bolt such that the ears can be reoriented.

9-29.13(1)A1 Cabinet Enclosures for UPS Systems

Controller cabinets that are designated in the project plans and specifications as UPS Controller Cabinets shall be 70” high x 44” width x 25.5” depth (nominal dimensions) and meet the footprint dimensions as specified in Section 7.3, table 7-1 of NEMA TS2 standards for a Type P cabinet.

UPS Controller Cabinet enclosures shall meet all applicable requirements of Section 9-29.13(1)A and shall meet the following additional requirements:

1. The controller cabinet shall have (2) separate compartments. A Main compartment and a Battery Backup System (BBS) compartment.
2. The main compartment shall be accessible from the front door and shall house the cabinet load facilities and electronics. The Battery Backup System (BBS) compartment shall be accessible from the side door and shall contain the UPS system batteries.
3. The cabinet shall be designed such that when the UPS system inverter and ATS assembly are mounted in the BBS compartment, they shall be fully accessible when the front door is open.

9-29.13(1)B Cabinet Doors and Locks

Cabinet Doors and Locks shall conform to the following:

1. A hinged door shall be provided on the front of the cabinet permitting complete access to the cabinet and the equipment to be contained therein.
2. Cabinet doors shall be mounted with single continuous stainless steel piano hinges that run the length of the door. The hinges shall be attached via stainless steel tamper resistant bolts.
3. Closed-cell, neoprene gaskets shall be bonded to the inside of cabinet doors. The gaskets shall cover all areas where the doors contact the double flanged cabinet housing exterior and be thick enough to provide a watertight seal.
4. Bearing rollers shall be applied to ends of door latches to discourage metal-on-metal surfaces from rubbing.
5. All lock assemblies shall be positioned such that the door handle does not cause interference with the key when opening the door.
6. A complete set of keys shall be supplied providing access to all doors, including the front cabinet door, the cabinet side door (where applicable), the police door and the generator receptacle door.

The front cabinet door shall meet the following additional requirements:

1. The front door of the cabinet shall be equipped with a universal lock bracket and lock that operates with a traffic industry conventional #2 key.
2. A stiffener plate shall be welded to the inside of the front door to prevent flexing.
3. The front door shall have a two-position, three-point door stop that accommodates open-angles at 90°, 125°, and 150°.
4. The front door handle shall be ¾” round stock stainless steel bar. Door handle mechanisms shall be interchangeable and field replaceable.

A side door on UPS Controller Cabinets shall be provided for accessing the BBS compartment. The cabinet side door shall meet the following additional requirements:

1. The side door shall be one-piece construction without any recessed compartments.
2. The side door shall have a three-position, two-point door stop that accommodates open-angles at roughly 80°, 100°, and 120°.
3. The side door shall use a recessed hexagonal socket in lieu of a door handle.

9-29.13(1)C Recessed Compartments

The front door shall contain (2) flush mount locking recessed compartments. The upper compartment shall house a police door and the lower compartment shall house a generator bypass receptacle.

1. The welds for the police compartment and the generator receptacle compartment shall be done on the outside of the front door.
2. The police door compartment shall come with a conventional police lock.
3. The generator bypass receptacle compartment shall have an integrated door slide mechanism that allows the door to be closed and locked after a generator has been connected to the internal receptacle.
4. The generator bypass receptacle compartment shall be equipped with a universal lock bracket and a standard traffic signal Corbin #2 tumbler series lock.
5. The locking generator bypass compartment will be used to connect a generator for operating the cabinet during loss of service line power. The generator compartment shall be capable of being closed and locked while a generator is connected. The mechanism for allowing generator cable access, while the compartment is closed, shall be an integral part of the generator bypass door, via a sliding panel that will normally be in the closed position.

9-29.13(1)D Cabinet Ventilation

Cabinet ventilation shall be provided as follows:

1. A louvered air entrance shall be located at the bottom of the front cabinet door.
2. For UPS Cabinets, a louvered air entrance shall also be provided at the bottom of the side cabinet door.
3. Louvered air entrances shall satisfy NEMA rod entry test requirements for 3R ventilated enclosures. The baffle panel that holds the fan assemblies shall be sealed on the interior of the cabinet.
4. The cabinet shall come with (2) three-stage, multi-ply progressive density polyester, disposable air filter; and the filter performance shall conform to listed UL 900 Class 2 and shall conform to ASHRAE Standard 52.1. The filter shall be secured to entrance on main door by two (2) horizontally-mounted restraints.
5. The cabinet shall be provided with two (2) finger safe fans mounted on the right and left sides of the cabinet plenum, and shall be thermostatically controlled. Fans shall have a rating of 100 CFM and the thermostat setting to allow variable turn-on between 90 degrees and 140 degrees Fahrenheit. The fan motor shall use ball-bearings. This unit shall be fitted with an electrical noise suppressor. The safe touch thermostat and power terminal block(s) shall be din rail mounted on the cabinet plenum.

9-29.13(1)E Cabinet Shelving

Cabinet Shelving shall be provided as follows:

1. The cabinet shall have two (2) aluminum 0.75-inch shelves that span the width of the cabinet. Shelves shall be double beveled 10” deep and reinforced with welded V channel, fabricated from 5052-H32 0.125-inch thick aluminum with

double flanged edges rolled front to back. Slotted holes shall be inserted every 7" for the purpose of tying off wire bundles.

2. A slide-out computer shelf 16" length by 12" width by 2" depth shall be installed underneath the bottom equipment shelf. The shelf shall be mounted just left of center so that controller cables will not interfere with the operation of the shelf when equipment is installed. The computer shelf shall have a hinged cover that opens from the front and shall be powder-coated black. The computer shelf shall be fully retractable under the bottom equipment shelf. When fully extended, the computer shelf shall hold a minimum of 50lbs and shall automatically secure in place, mechanically, with a tool-less release mechanism.

3. For UPS Controller Cabinets, the BBS compartment shall come with (1) 14.25" x 7.75" flanged shelf designed to hold the batteries. In the UPS configuration, the main cabinet shall come with a third shelf that runs the entire width of the cabinet above the BBS compartment.

9-29.13(2) Wiring

All wiring within the cabinet shall be neat and firm. All cabinet wire shall be amply rated for the function intended and shall include the use of terminal and suitable identification labels.

Connectors and harnesses shall be provided as defined in the latest NEMA TS 2 standard. Connector A & B shall be supplied for the monitor unit. In addition to the TS 2 10-pin connector, the cabinet shall also be wired with a standard 55-pin NEMA TS 1 Connector A.

Wire for harnesses shall conform to MIL-W-16878E Type B, and shall be rated to 600 volt, 105 degree Celsius. Wire shall be 22 gage, 19 strand. Wires shall be connected to the heads in the form of crimp-pinned connections. Solder lugs shall not be allowed. Connectors shall conform to MIL-C-26482 Series 1. Cables shall be covered with nylon expandable sleeving. Spiral wrap shall not be used. Termination points of the harnesses shall be accessible to the technician without requiring the back panel to be dropped. Unused harness wires shall be tied to the furthest location on the front of the back panel and shall be capped off.

Wires other than harnesses for the monitor and controller shall be THHN, rated at 600 volt, 105 degree Celsius, and shall be a minimum of 22 AWG.

Non insulated connectors shall be utilized for all connections to the Detector Input Terminal Strip.

9-29.13(3) Electrical Design

9-29.13(3)A Load Bay

The design of the load-bay shall conform to NEMA TS2 Section 5, Terminals and Facilities, unless modified herein. The load bay shall be the termination point for the controller unit (CU) 10-pin TS2 MSA cable, The CU 55-pin TS1 MSA cable, and the (MMU) MSA & B cables. The terminal facilities layout shall be arranged in a manner that allows all equipment in the cabinet and all screw terminals to be readily accessible by maintenance personnel.

The load bay shall be fully wired and meet the following requirements:

1. The load bay assembly shall be constructed of smooth finished aluminum, sufficient in size for the intended purpose, and with a minimum nominal thickness of 0.125 inches (1/8 inch). The load bay assembly shall be mounted between 7-inches and 9-inches above the bottom of the cabinet.
2. The load bay assembly (panel) shall be hinged and capable of folding down to allow full access to all wiring and connectors on the back side of the load bay. The panel shall be constructed, and wiring shall have sufficient slack, such that folding down the back panel shall not interfere with the operation of the traffic signal while in service.
    (1) All wire shall enter the lower edge of the panel to facilitate folding down back panel. The controller (CU) and malfunction management (MMU) cables shall be routed through the back of the load-bay so that they will not be subject to damage during load-bay roll down.
    (2) All solder terminals shall be accessible when the load-bay is folded down.
    (3) The assembly shall be able to fold down without requiring other components, cables or switches to be removed.
    (4) The load bay shall be designed so that all other cabinet screw terminals are accessible without removing cabinet electronics.
    (5) The panel shall be able to be fully secured when in its upright position.
    (6) The top of the load-bay panel shall attach directly to “C” channel spring nuts without the use of standoffs and spacers.
    (7) The load bay shall be balanced such that it will not roll down when the spring nuts are removed, even when fully loaded with load switches, flashers and flash transfer relays.
3. The load-bay facility shall be wired for 16 channels.
    (1) Load switch(s) 1-8 shall be vehicle phases 1-8
    (2) Load switch(s) 9-12 shall be pedestrian phases 2, 4, 6, & 8
    (3) Load switches 13-16 shall be overlaps A, B, C & D
    (4) Load switches 1-8 & 13-16 shall be routed through a flash transfer relay.
4. The following sockets will be provided:
    (1) Minimum sixteen (16) load switch sockets for NEMA load switches.
    (2) Six (6) flash transfer relay sockets.
    (3) One (1) flasher socket.
5. Install 2K-ohm, 12-watt load resistors as indicated below. The resistors should be installed to allow good air circulation. All load resistors shall be easily accessible from the back of the load bay.
    (1) Install on green and yellow outputs of sockets 1, 3, 5, and 7
    (2) Install on yellow outputs of sockets 9, 10, 11, and 12

(3) Install on green and yellow outputs of sockets 13, 14, 15, and 16

6. All load switches and flasher shall be supported by a bracket extending at least ½ the length of the load switch.

7. Controller Unit (CU) Wiring: Wiring for the 10-pin TS2 MSA cable and the 55-pin TS1 MSA cable shall be soldered to backside of a load bay screw-type terminal strip. All controller pins functions shall be terminated.

8. Malfunction Monitoring Unit (MMU) Wiring: MMU MSA & B cables shall be soldered to backside of a screw-type terminal strip. All MMU pin functions shall be terminated.

9. Relays:

   (1) All 24 VDC relays shall have the same base socket, but it shall be different from the 115VAC relays.

   (2) All 115VAC relays shall have the same base socket, but it shall be different from the 24VDC relays. (not applicable to flash transfer relays)

   (3) The load bay shall have a relay that drops +24VDC to load switches when the cabinet is in flash.

10. The load bay shall have terminals to access the flash circuits 1 and 2.

11. There shall be a wire between the pedestrian yellow field terminals and another terminal on the load bay. The MMU channel 9-12 yellows shall terminate next to said pedestrian yellows terminal.

12. The load-bay shall be silkscreened on both sides. Silkscreen shall be numbers and functions on the front side, and numbers only on the back side.

13. Field wiring terminations shall be per channel across the bottom of the load-bay. Each channel shall have 3 terminations corresponding to the appropriate vehicle phase Green, Yellow and Red. Default wiring shall be left to right vehicle phases 1-8, pedestrian phases 2, 4, 6, 8 and overlap channels A, B, C, and D following the order of the load switches. Field terminals shall be #10 screw terminal and be rated for 600V.

14. System shall be wired to flash all vehicle channels. Flash programming shall be either red, yellow or no flash simply by changing wires on the front of the load-bay. WIG/WAG flashing operation shall alternate between the used vehicle phases as follows:

   (1) WIG: Phases 1, 4, 5, 8, OLA, & OLD

   (2) WAG: Phases 2, 3, 6, 7, OLB, & OLC

15. The intersection shall be capable of being placed on flashing operation by the conflict monitor, remote input, internal controller time clock and door switch. Remote and internal controller time clock flash shall be in accordance with MUTCD flash. Conflict flash shall be all-red.

16. All spare circuits shall be wired and terminated on a terminal strip and shown on the wiring diagram.

17. All cable wires shall be terminated. No tie-off of unused terminals will be allowed.

All wiring shall conform to NEMA TS2 Standards. Load bay wiring shall conform to the following colors and minimum wire sizes:

Vehicle green load switch output	14 gauge brown
Vehicle yellow load switch output	14 gauge yellow
Vehicle red load switch output	14 gauge red
Pedestrian Don't Walk switch	14 gauge orange
Pedestrian Walk switch	14 gauge blue
Pedestrian Clearance load switch	14 gauge yellow
Vehicle green load switch input	22 gauge brown
Vehicle yellow load switch input	22 gauge yellow
Vehicle red load switch input	22 gauge red
Pedestrian Don't Walk input	22 gauge orange
Pedestrian Walk input	22 gauge blue
Pedestrian Clearance input	22 gauge yellow
Logic Ground	18 gauge white with red tracer
+24V DC	18 gauge red with white tracer
+12V DC	18 gauge pink
AC+ Line	14 gauge black
AC- Line	14 gauge white
Earth Ground	16 gauge green
AC line (load bay)	12/14 gauge black
AC neutral (load bay)	12/14 gauge white
Controller A Cables – AC+	18 gauge black
Controller A Cables – AC-	18 gauge white
Controller A Cables – Earth Ground	18 gauge green
Controller A Cables – All other cables	22 gauge blue
MMU A & B Cables – AC+	18 gauge black
MMU A & B Cables – AC-	18 gauge white
MMU A & B Cables – Earth Ground	18 gauge green
MMU A & B Cables – Start Delay Relay	
Common	18 gauge black
Normally Open	18 gauge black
Normally Closed	18 gauge black
MMU A & B Cables – All other cables	22 gauge orange

The field terminal blocks shall have a screw Type No. 10 post capable of accepting no less than 3 No. 12 AWG wires fitted with spade connectors. Four (4) 12-position terminal blocks shall be provided in a single row across the bottom of the main panel. Spade lugs from internal cabinet wiring are not allowed on field terminal screws. There shall be a second row of four (4) 12-position terminal blocks with screw type #10 above the field terminal blocks. These blocks shall operate the flash program. It shall be changeable from the front of the load-bay. All load switches, flasher, and flash transfer relay sockets shall be marked and mounted with screws. Rivets and clip-mounting is unacceptable.

The terminal block above the Pedestrian field blocks shall be tied to the Don't Walks and Walks with orange and blue 14AWG wire. This shall provide termination for pushbutton control wires without utilizing field terminals.

The power terminal blocks shall have a screw Type No. 10 post capable of accepting no less than 3 No. 12 AWG wires fitted with spade connectors. One (1) 12-position terminal blocks shall be provided vertically on the right side of the load bay. The placement of the power terminal block on any other panel shall not be allowed.

Wire size 16 AWG or smaller at solder joints shall be hooked or looped around the eyelet or terminal block post prior to soldering to ensure circuit integrity. All wires shall have lugs or terminal fittings when not soldered. Lap joint/tack on soldering is not acceptable. All soldered connections shall be made with 60/40 solder and non-corrosive, non-conductive flux. All wiring shall be run neatly and shall use mechanical clamps and conductors shall not be spliced between terminations. Cables shall be sleeved in braided nylon mesh and wires shall not be exposed.

All wires terminated behind the main panel or on the back side of other panels shall be SOLDERED. No pressure or solder-less connectors shall be used. Printed circuit boards shall not be allowed.

9-29.13(3)B Side Panels

Side panels shall be mounted on "C" channels as specified herein. All panels shall be smooth finished aluminum sufficient in size and thickness for the intended purpose and anticipated equipment required. Side panels shall be no smaller than 16 gauge and no larger than 12 gauge. Side panels shall be mounted no closer than 13" from the rear of the cabinet and no closer than 2" from bottom of cabinet.

The Back Left (BKLT) side panel(s) shall contain the following:

1. BKLT/PSIP – Power Supply Interface Panel
    a. 12-position, double row, high barrier block with #8/32 slotted brass screws
    b. See Section 9-29.13(3)B1 for additional requirements
2. BKLT/SDLC – SDLC Interface Panel
    a. 10-port SDLC terminal
    b. See Section 9-29.13(3)B2 for additional requirements
3. Additional blank panels are not required for vacant space in the back left of the cabinet.

The Front Left (FRLT) side panel(s) shall contain the following:

1. FRLT/VDIP – Video Detection Interface Panel
    a. See Section 9-29.13(3)B3 for requirements
2. FRLT/DP – Detection Panel
    a. Vehicle Detection: 64-position, double row, high barrier block with #8/32 slotted brass screws
    b. Emergency Vehicle Preemption: 8-position, double row, high barrier block with #8/32 slotted brass screws
    c. Pedestrian Detection: 8-position, double row, high barrier block with #8/32 slotted brass screws
    d. Pedestrian Returns: Two (2) 8-position, single row, high barrier block, with #8/32 slotted brass screws

e. Isolated Neutral Buss: 24-position, solid copper bar with #10/32 slotted brass screws.
f. Ground Buss: 16-position (minimum), standard copper grounding buss bar suitable for #14 through #4 cu.
g. See Section 9-29.13(3)B4 for additional requirements

3. Blank aluminum spare panels shall be installed in the available space on the front left side of the cabinet.

The Back Right (BKRT) side panel(s) shall contain the following:

1. BKRT/PS - Power strip convenience outlets as identified by these specifications. Reference 9-29.13(3)C and 9-29.13(3)B5.
2. Additional blank panels are not required for vacant space in the back right side of the cabinet.

The Front Right (FRRT) side panel(s) shall contain the following:

1. FRRT/PP - Power Panel
   a. See Section 9-29.13(3)B5 for additional requirements
2. FRRT/CIP - Communication Interface Panel
   a. See Section 9-29.13(3)B6 for additional requirements
3. Blank aluminum spare panels shall be installed in the available space on the front right side of the cabinet.

9-29.13(3)B1 Power Supply Interface Panel

The power supply interface panel shall be mounted on the upper back left wall of the cabinet above the top shelf. The power supply interface panel shall include terminations for all the cabinet power supply inputs and outputs. It shall have a protective plastic cover.

9-29.13(3)B2 SDLC Interface Panel

All SDLC cables shall be terminated on both ends, securely terminated to the SDLC interface panel with screw type connection and professionally routed in the cabinet interior to easily reach the controller, malfunction management unit, BIUs. All SDLC connectors shall be fully populated with 15 pins each. SDLC cables shall be tie wrapped in a neat and orderly way.

9-29.13(3)B3 Video Detection Interface Panel

The video detection interface panel shall be the single point interface for video power and coax cabling. The panel shall have (6) individual 1-amp circuit breakers so that individual cameras can be replaced in the field without disrupting the entire video detection system, a (10) position terminal block with #8/32 screws to provide termination for 120VAC and camera 120AC line and copper neutral and ground buss bars with raised slotted & torque style screws.

A coax surge arrestor shall be installed for each coax based video detection camera identified in the project plans and specifications. The coax surge arrestor shall meet or exceed the manufacturer's recommendations for the cameras installed. Surge arrestors are not required to be installed in the cabinet when a coax based detection system is not identified in the plans and specifications.

9-29.13(3)B4 Detection Panel

The detection panel shall be mounted on the left side of the main cabinet compartment below the bottom shelf. The detection panel shall support (32) channels of vehicle detection, (4) channels of emergency vehicle preemption, (4) channels or pedestrian detection with (2) terminal screws per channel and (8) pedestrian returns on a single panel. The pedestrian call terminal block shall be (2) single row terminals. They shall be connected by removable buss bars. The loop wires shall be a 22AWG twisted pair. One of the twisted pair wires of all colors shall have a white tracer and land on the second position terminal of each loop. The emergency preempt wires shall be color coded as follows. +24VDC orange, preempt inputs yellow and ground blue. The auxiliary vehicle preemption shall be white with a yellow tracer.

The panel shall also include a (24) position solid copper neutral buss bar with pan head slotted screws and a (16) position minimum solid copper ground buss bar with raised slotted & torque style screws. They shall be mounted horizontally at the bottom of the panel.

9-29.13(3)B5 Power Panel

The power panel shall handle all the power distribution and protection for the cabinet and shall be mounted in the bottom right side of the cabinet. All equipment shall be mounted on an appropriately sized silkscreened aluminum panel and include at a minimum the following equipment:

1. A 30-amp main breaker shall be supplied. This breaker shall supply power to the load bay, load switches, controller, MMU, power supply, detector racks, power strip and auxiliary panels.
2. A 15-amp auxiliary breaker shall supply power to the fan, cabinet lights and GFI.
3. A 60-amp, 125 VAC radio interference line filter.
4. Power panel shall include a two-stage, electrically isolated transient voltage suppressor capable of dissipating a high energy surge of 20KA (8x20 microsecond pulses) while clamping the output voltage to 340 volts or less. Isolation shall be provided between the neutral and ground connections. Power to all cabinet electronics equipment and power strip shall come through this surge suppression circuit. There shall be a 2-position terminal block with slotted #10/32 slotted brass screws on the power panel, between the power strip mounted in the cabinet and the transient voltage suppressor for easy replacement.
5. A normally open, solid state relay rated for 50-amp minimum for the load switch power. (No Mercury Contactors shall be allowed.)
6. One see-through Plexiglas cover on stand-offs to protect maintenance personnel from AC line voltages. This shall be removable by loosening screws but without removing screws.
7. One (1) 24-position solid copper neutral buss bar with slotted #10/32 slotted brass screws
8. Minimum 24-position, standard solid copper ground buss bars with raised slotted & torque style screw heads suitable for #14 through #4 cu.
9. Two MOVs shall be terminated on the 120AC in field terminal. One tied between line and ground, the other between neutral and ground.

10. Line side AC Power Terminal, 3-position, double row. Power Terminal shall be a dead-front type rated at a minimum of 300V, 50 amp and suitable for #6 cu.
11. The neutral buss bar, the ground buss bar, and the line side power terminal shall be installed at the bottom of the power panel. The buss bars shall be installed horizontally and the terminal shall be installed with the same orientation such that the wires coming into the cabinet can be easily connected from the bottom of the cabinet.

All circuit breakers shall be Siemens, Square D, GE, Eaton/Cutler Hammer, or Engineer approved equal.

9-29.13(3)B6 Communication Interface Panel

There shall be (2) 12-position, double row, high barrier terminal blocks, with #6/32 slotted brass screws on the left bottom side of the spare panel on the right side wall of the cabinet.

9-29.13(3)B7 Fiberoptic Termination Panel

The cabinet shall come with a 12 port wall mounted fiberoptic termination panel suitable for an outdoor enclosure. Dimensions shall be 10-inches wide, 5.12-inches high and 3.25-inches deep. Capacity shall be two plates, up to 48 fibers. Material shall be heavy gauge steel.

Two coupler plate connectors shall be provided meeting the following requirements:

- Connector family shall be single-mode SC
- Fibers per connector shall be Duplex
- Connector Type/Polish shall be APC
- Material shall be Metal
- Number of Couplers shall be 6 each.

Panel shall come with appropriate compatible splice trays, and cable clamps.

9-29.13(3)C Convenience Outlets

The cabinet shall be wired with (1) 120 VAC convenience outlet with a ground fault interrupter (GFI) and (1) 120 VAC power strip without ground fault interrupters. The ground fault outlet (GFI) shall be mounted on the right side of the main compartment on or near the power panel. The power strip shall be near the top shelf of the main compartment in the upper left corner of the cabinet and the wiring shall be neatly secured. No outlets shall be mounted on the door. The non-GFI power strip shall be on a separate circuit from the GFI outlet, and provide a minimum of six (6) outlets. The power strip shall be fed through the transient voltage suppressor located on the cabinet power panel. There shall be a 2-position terminal block on the power panel, between the power strip and the transient voltage suppressor for easy replacement.

9-29.13(3)D Cabinet Illumination

Two LED light strips shall be provided for cabinet illumination. One shall be mounted to the top front of the cabinet interior, and shall be rated at a minimum of 475 lumens. A second LED light to illuminate the load bay area and shall be mounted below the rollout drawer (computer shelf), and shall be rated at a minimum of 240 lumens. The light shall

be attached so that it remains stationary when the drawer is extended. A door switch shall be wired so as to allow both lights to operate only when the door is open.

9-29.13(3)E Generator Bypass Compartment and Cable

Inside the generator compartment there shall be a silkscreened panel housing:

1. 30A / 125V flanged inlet receptacle capable of accepting a standard 30-amp generator plug. The receptacle shall be appropriate for an extra heavy duty industrial application meeting the following requirements:
    a. Backwired terminations for ease of installation
    b. NEMA L5-30P
    c. Listed to UL 498
    d. Fed Spec: W-C-596
    e. Certified to CSA C22.2 No. 42
    f. Housing/Flange: Nylon
    g. Terminal Retainer: Clear Polycarbonate
    h. Blades: Brass
    i. Terminal Screws: #10-32 Brass (Phillips / Slotted / Robertson)
    j. Terminal Clamp: Cold Rolled Steel – nickel plated
    k. Assembly Screws: Steel - nickel plated
    l. Mounting Screw: Nickel plated brass
    m. Electrical: Current Interrupting Certified for current interrupting at full rated current
    n. Dielectric Voltage: Withstands 2,000V minimum
    o. Mechanical: Cord Grip Accomodation #16 AWG - #8 AWG solid or stranded copper wire only.
    p. Terminal Identification: In accordance with UL 498
    q. Flammability: HB or better per UL94/CSA 22.2 No.0.17
    r. Moisture Resistance: IP20 Suitability
    s. Operating Temperatures: Maximum Continuous 75°C. Minimum -40°C (w/o impact)

2. A 50A, 2 pole, 4 contact cam switch with split 120VAC line and neutral feeds. The switch shall be a break before make type.
3. (2) LED lamps with sockets. One LED shall be illuminated when the cabinet has service line power available and the other when the cabinet has generator power available. All LED's shall be field replaceable without putting the intersection in flash and shall carry a 5-year manufacturer warranty.

All wiring to the generator bypass compartment shall be contained in a single cable bundle. The cable shall connect to the backside of the electrical components and shall only be accessible from the inside of the cabinet front door. All electrical components on the inside of the front door that carry AC voltage shall be covered by a see-through plexi-glass cover. The generator bypass cable shall terminate at the same power panel location as service line voltage.

9-29.13(3)F Police Panel

Behind the police panel door there shall be switches for use by emergency personnel. The wiring for these switches shall be accessible when the auxiliary panel is open.

The following switches shall be included:

1. **Flash Switch:** There shall be a switch for the police that puts the cabinet into flashing operations. The switch shall have two positions, “Auto” (up) and “Flash” (down). The “Auto” position shall allow normal signal operation. The “Flash” position shall immediately cause all signal displays to flash as programmed for emergency flash and apply stop time to the controller. When the police flash switch is returned to “Auto”, the controller shall restart except when the MMU has commanded flash operation. The effect shall be to disable the police panel switch when the MMU has detected a malfunction and all controller and MMU indications shall be available to the technician regardless of the position of the police flash switch. The switch shall be a general-purpose bat style toggle switch with 0.688-inch long bat.
2. **Signals On/Off Switch:** There shall be a switch that renders the field signal displays electrically dead while maintaining controller operation for purpose of monitoring controller operations. The switch shall be a general-purpose bat style toggle switch with 0.688-inch long bat.

9-29.13(3)G Auxiliary Switch Panel

The cabinet shall include an auxiliary switch panel mounted to the interior side of the police panel compartment on the cabinet front door. The panel shall be secured to the police panel compartment by (2) Philips head screws and shall be hinged at the bottom to allow access to the soldered side of the switches. Both sides of the panel shall be silkscreened. All of the switches shall be protected by a hinged see-through Plexiglas cover.

The following switches shall be included:

1. **Controller ON/OFF Switch**: There shall be a switch that renders the controller and load-switching devices electrically dead while maintaining flashing operations for purpose of changing the controller or load-switching devices. The switch shall be a general-purpose bat style toggle switch with 0.688-inch long bat.
2. **Signals ON/OFF Switch**: There shall be a switch that renders the field signal displays electrically dead while maintaining controller operation for purpose of monitoring controller operations. The switch shall be a general-purpose bat style toggle switch with 0.688-inch long bat.
3. **Stop Time Switch**: There shall be a 3-position switch labeled “Normal” (up), “Off” (center), and “On” (down). With the switch in the “Normal” position, a stop timing command shall be applied to the controller by the police flash switch or the MMU (Malfunction Management Unit). When the switch is in its “Off” position, stop timing commands shall be removed from the controller. The “On” position shall cause the controller to stop time. The switch shall be a general-purpose bat style toggle switch with 0.688-inch long bat.
4. **Technician Flash Switch**: There shall be a switch that places the field signal displays in flashing operation while the controller continues to operate. This flash shall have no effect on the operation of the controller or MMU. The switch shall be a general-purpose bat style toggle switch with 0.688-inch long bat.

5. **Light Switch**: There shall be a switch that turns cabinet lighting off with the main door open. The switch shall be a general-purpose bat style toggle switch with 0.688-inch long bat.

9-29.13(4) Auxiliary Equipment

9-29.13(4)A Traffic Signal Controller

Traffic Signal Controller shall be a Siemens Controller, EPAC M62 with an ATC Communications Module. The CPU operating system shall be Linux. The Contractor shall contact the City of Tacoma Traffic Signal Shop at 253-491-5287 to obtain the current firmware version to be utilized.

9-29.13(4)B Malfunction Management Unit (MMU)

The cabinet shall come with a Malfunction Management Unit (MMU). The cabinet shall come with a (MMU) that meets all the requirements of NEMA TS2-2003 while remaining downward compatible with NEMA TS1. It shall have (2) high contrast LCD displays and an internal diagnostic wizard. It shall come with a 10/100 Ethernet port. It shall come with software to run flashing yellow arrow operation. The MMU shall be an Eberle Design, Inc. (EDI) model MMU2-16LEip. Contractor shall provide a compatible TS2 program card onboard memory.

9-29.13(4)C Load Switches

Modular solid state relay cube-type load switching assemblies, in accordance with the latest NEMA TS 2 Standards, shall be used for opening and closing signal light circuits and shall be jack-mounted external to the controller unit. Indicator lights shall be connected to input circuits. Load switches shall be rated at fifteen (15) amps per circuit. Each cabinet shall contain twelve (12) load switches.

9-29.13(4)D NEMA Flasher

The flasher shall be solid state, two circuit with a minimum current rating of fifteen (15) amps per circuit. The flasher shall be cube type and have LED indications.

9-29.13(4)E Flasher Transfer Relay

The cabinet shall come with (6) 120V NEMA heavy duty flash transfer relays designed for use in traffic signal cabinets. Flash transfer relays shall meet the following requirements:

- Contacts
  - Configuration: DPDT
  - Materials: 3/8” Silver Cadmium Oxide
  - Contact Ratings: Tungsten Load Rating 20 Amps at 120 VAC (2.4 KW)
- Coils
  - Nominal Input Voltage: 110/120 VAC 50/60 Hz
  - Nominal Coil Power: 7.0 VA
  - Coil Resistance: 970 Ohms +/-10%
  - Coil Insulation: Molded class F
  - Insulation Resistance: 100 Megaohms minimum
- Operation:
  - Pull-In voltage: ≤ 75% of nominal voltage
  - Drop-Out voltage: ≥ 30% of nominal voltage
  - Operate Time: 20 ms. approx.

- Release Time: 20 ms. approx.
- Operating Temperature: Ambient: -40°C to +65°C
- Expected Life:
  - Electrical: 200,000 operations min. @ rated load
  - Mechanical: 5,000,000 operations min. @ no load
- Dielectric Strength:
  - Across Open Contacts: 1200 VRMS
  - Contacts to Coil: 2200 VRMS
  - Contacts to Frame: 2200 VRMS
  - Pole to Pole: 2200 VRMS

- Mechanical Data:
  - Operating Position: Any
  - Mounting: NEMA 8 pin socket
  - Terminals: 0.250” x 0.055” (6.35 mm x 1.40 mm)
  - Insulation Material: Thermoplastic 94V-2 rating
  - Cover Material: Clear Polycarbonate 94V-2 Rating
  - Cover Protection Category: 40 IP rating
  - Expected Life:
    - Electrical at Rated Load (Min.) 100,000 Operations
    - Mechanical Life 10,000,000 Operations
  - Dielectric Strength:
    - Between Contacts: 1200 VRMS, 60 Hz
    - Between Other Elements 2200 VRMS, 60 Hz

9-29.13(4)F Loop Detector Card Rack

Two (2) fully wired 8-position card racks, shall be installed. Detector racks shall be capable of using both two channel and four channel detection devices. One of the card racks shall also have the additional capacity and be fully wired for an Opticom Model 760 Card. Racks shall be secured to the detector shelf as far to the right as possible within the cabinet in such a manner as to afford easy access for maintenance, without interfering with access to any of the ports. The racks shall accommodate 4.5-inch-high, 6.875-inch-long, 1.12-inch-wide two channel, two output per channel detector modules. Connectors shall be 44 contacts (22 each side) spaced on 0.156” centers. Each rack shall be provided with a bus interface unit (BIU). These shall meet all the requirements of NEMA TS-2 1988 standards. In addition, all BIUs shall provide separate front panel indicator LED’s for DC power status and SDLC Port 1 transmit and receive status.

The (BIU)’s shall be Eberle Design, Inc. model BIU-700, Econolite model BIU-64, Reno A&E model BIU/2, or Engineer approved equal.

The loop cabling shall be connected via a 37 pin DB connector using spring clips. The Opticom cable shall be connected via a 24 pin connector using locking latches. The power cable shall be a 6 pin connector. All power wires shall be 18AWG. The addressing of detector racks shall be accomplished via dipswitches mounted to the PCB. There shall be the capability to turn off the TS2 status to the BIU for the uses of TS1 detector equipment via dipswitches mounted to the PCB. There shall be a 34 pin connector using locking latches that breaks the output from the detector to the input of the BIU, there shall also be +24VDC and logic ground on this connector. All racks shall have space at the bottom front for labeling. All racks shall be designed for horizontal stacking. Separate racks for detection and preemption are not allowed.

9-29.13(4)G Detector Power Supply

The cabinet shall come with a shelf mounted cabinet power supply meeting at minimum NEMA TS 2-2003 (R2008) standards. It shall be a heavy duty device that provides +12VDC at 5 Amps / +24VDC at 3 Amps / 12VAC at 0.25 Amp, and line frequency reference at 50 mA. The power supply shall provide a separate front panel indicator LED for each of the four outputs. Front panel banana jack test points for 12VDC, 24VDC, and logic ground shall also be provided. The power supply shall provide 5A of power and be able to cover the load of four (4) complete detector racks.

9-29.13(4)H Ethernet Switch

Ethernet over Copper Switch shall be Actelis ML 684D with two SFP-LC ports, unless otherwise specified. A standard 110 VAC power adapter, a DSL-Octal Cable 2xRJ45, and a minimum 6' Ethernet patch cable shall be provided with each. Two (2) SFP Optics 100Base-FX SM, 1310NM, 15KM, LC fiber optic units shall be provided with each Switch.

9-29.13(4)I Uninteruptable Power System (UPS)

The cabinet shall come with a complete uninterruptable power system (UPS), also referred to as a Batter Backup System (BBS). The UPS shall include at a minimum a UPS module with SNMP, ATS assembly, batteries, battery heater mats, battery cables and a battery management system. All other ancillary equipment for a complete functioning UPS system shall be included.

The key UPS system components are identified in the subsection below.

9-29.13(4)I1 UPS Module

The cabinet shall come with (1) FXM 1100W uninterruptible power supply or approved equivalent that supplies clean reliable power control and management. It shall have Automatic Voltage Regulation (AVR), an Ethernet SNMP interface and a control and power connection panel that is rotatable for viewing in any vertical or horizontal orientation. It shall have nominal dimensions of 5.22" x 15.5" x 8.75" and come with mounting brackets. The UPS module shall be an Alpha model 017-201-23 or approved equivalent.

9-29.13(4)I2 UATS/UGTS Assembly

The cabinet shall come with (1) universal automatic transfer switch and universal generator transfer switch connected between the UPS module and the batteries. It shall have surge protection, have dimensions of 3.25" x 15.5" x 6.00" and come with mounting brackets. The ATS module shall be an Alpha model 020-168-25 or approved equivalent.

9-29.13(4)I3 UPS Batteries

The cabinet shall come with (4) high performance Abosrbed Glass Mat (AGM) AlphaCell™ batteries with 112Ah runtime. The BBS batteries shall be Alpha model 240XTV or equivalent.

9-29.13(4)I4 UPS Battery Harness

The cabinet shall come with (1) battery cable (10) foot long wired for (4) batteries. The battery harness shall be Alpha model 740-678-27 or equivalent.

9-29.13(4)I5 Battery Management System
The cabinet shall come with AlphaGuard™ battery charge management system Alpha model 012-306-21 or approved equivalent.

9-29.13(4)J Preemption/Priority Equipment
The cabinet shall come with (1) 4-channel rack mounted Opticom™ phase selector. This device shall be capable of receiving encoded signals from Opticom series 700 emitters and detectors. The Opticom™ phase selectors shall be Global Traffic Technologies model 764 or equivalent.

9-29.13(4)K Fiber Optic Patch Panel
(Special Provision)
Terminated fiber optic cable shall be installed in the signal controller cabinet utilizing patch panels. Patch panel(s) shall be Corning model Single-Panel Housing (SPH-01P) or approved equal with Corning CCH 12 adapter, LC duplex (24 fiber) ceramic panel (CCH-CP24-A9) or approved equal. Housing(s) shall be wall mountable. Mounting location shall be as directed by the Engineer. A sufficient number of patch cables shall be provided to complete a fully functional system.

9-29.13(5) Manufacturer Testing and Certification
The complete cabinet assembly with electronics shall undergo complete input/output function testing by the manufacturer before being released to the City of Tacoma. Testing shall be done via service feed to the 120VAC field terminal. Service power shall be routed through the generator bypass switch, UPS inverter before being connected to the power panel so that all service load circuits are tested.

If the cabinet specified comes with a UPS system (BBS) and batteries; the entire controller cabinet assembly shall undergo a BBS field test procedure where the cabinet is run off battery power for a minimum of one hour.

9-29.14 Vacant
(Special Provision)
Delete this section and replace with the following:

9-29.14 Flashing Beacon Systems

9-29.14(1) Pedestrian Activated Crosswalk Beacons
Crosswalk beacons shall be 9000 Series Rectangular Rapid Flashing Beacon (RRFB) by JSF Technologies. The system shall include all necessary equipment to locate and operate RRFBs at the locations specified in the Plans including but not limited to: signal housing, mounting brackets, NEMA 3R rated control box complete with controller and power supply, wiring harnesses, and pedestrian push button and wiring.

9-29.14(2) School Zone Beacons
School zone beacons shall comply with the details in the Plans. A flasher cabinet shall be included with each pole assembly. The flasher cabinet shall be controlled using a control node meeting the requirements of Section 9-29.11 of these Special Provisions.

9-29.16 Vehicular Signal Heads, Displays, and Housing

9-29.16(2) Conventional Traffic Signal Heads

9-29.16(2)B Signal Housing

(March 31, 2018 Tacoma GSP)

The second paragraph is supplemented with the following:

The door shall open a minimum of 160 degrees.

The third paragraph is supplemented with the following:

The sections shall be held firmly together by corrosion-resistant hardware in such a manner that additional sections may be added easily.

The fourth paragraph is supplemented with the following:

The terminal strip for a standard three-section head shall be a minimum five-position, ten-terminal, barrier-type strip with No. 8 screw-type fasteners. To one side of each terminal shall be attached the white, red, yellow and green signal section leads, leaving the opposite terminal for field wires. Multi-section heads shall be provided with a terminal strip located in the yellow (center) section. Lead shall be No. 18 AWG type with 1/32-inch wall, 105-1/4 centigrade thermoplastic insulation.

9-29.16(3) Polycarbonate Traffic Signal Heads

(March 31, 2018 Tacoma GSP)

This section is deleted.

9-29.17 Signal Head Mounting Brackets and Fittings

(March 31, 2018 Tacoma GSP)

This section is revised to read:

Vehicle and pedestrian signal heads shall be as detailed in the standard plans.

Span wire vehicle signal hanger hardware shall consist of span wire clamp, balance adjuster, wire entrance fitting and vehicle head locking device.

A. Construction

1. Bronze hangers are required.
2. The minimum size of pins shall be 5/8-inch diameter. Pins shall be stainless steel.
3. The minimum size of the ‘J’ or ‘U’ cable clamps is 1/2-inch diameter. Cable clamp bolts shall be stainless steel. Clamping insert shall be used.
4. The cable saddle shall be at least 9 inches long.
5. All cotter pins shall be brass and washers shall be stainless steel.
6. All hardware shall be of stainless steel, bronze or brass materials.
7. Signal stem shall be locked with a square headed set screw 1/4-inch minimum in diameter.
8. Wire entrance shall be a minimum of 1-1/4-inch diameter and shall have a female threaded base for nipple.
9. The balance adjuster directional lock shall be of the clamping type with 1/2-inch through bolt for locking. No set screw or lock nut acceptable.
10. All stems shall be secured to signal head with proper lock fitting.

Vehicle signal heads attached to a mast arm shall use a type M mounting bracket as detailed in the standard plans and in accordance with Section 8-20.3(14)B and Section 9-29.17.

9-29.18 Vehicle Detector

(March 31, 2018 Tacoma GSP)

This section is supplemented with the following:

Unless otherwise specified in the contract plans, the vehicle detection system provided shall be a Gridsmart detection system with the performance and pedestrian modules included.

Add the following new section:

(March 31, 2018 Tacoma GSP)

9-29.18(3) Gridsmart Detection System

The Gridsmart system provided shall provide all necessary components required in order to fully install, setup, test, operate and maintain a fully functional detection system, including, but not limited to, the following components:

1. Gridsmart Power over Ethernet Bell Camera(s)
2. GS2 Gridsmart Processor with the following Modules:
    (1) Performance Module
    (2) Pedestrian Module
3. Mounting Hardware
4. Connection Cables

Unless otherwise identified in the project plans, one Bell Camera is required for each intersection. Additional cameras may be required, and will be identified in the project plans when two or more major arterials intersect, or where sight lines require additional cameras. Changes to the intersection layout, or camera locations may require additional cameras for proper functionality. Field adjustments to the camera location shall not be permitted without approval from the Engineer.

All mounting hardware and cabling shall meet the manufacturer's recommendations, unless otherwise specified herein.

9-29.19 Pedestrian Push Buttons

(March 31, 2018 Tacoma GSP)

This section is supplemented with the following:

Pushbutton systems shall be fully compliant with Accessible Pedestrian System requirements as defined by the American with Disabilities Act. Pushbutton systems shall be two wire systems (four wire systems shall not be permitted).

Unless otherwise specified, the pedestrian push button central control unit shall be Polara shelf mount control unit capable of communication through a SDLC cable (Polara Model iCCU-S).

Push buttons stations shall be Polara - iN2 series with the following options:

1. 9x12 Front Plate Adapter
2. 9x12 Faceplate compliant with MUTCD R10-3b
3. No braille on Face Plate
4. Custom Messages
5. Black Button Cover

Extenders may be required for locations where the APS buttons are not within an acceptable reach. Extenders or adapters may be required to accommodate the size of the faceplates for locations where two pushbuttons are mounted to the same pole.

9-29.20 Pedestrian Signals
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

All pedestrian signals housings shall be die-cast aluminum.

The Vacant Section 9-29.22 is replaced with the following:

Add the following new section:
(March 31, 2018 Tacoma GSP)

9-29.22 Preemption Hardware
Preemption Hardware shall be Opticom Model 721 unless otherwise specified.

9-29.24 Service Cabinets
(March 31, 2018 Tacoma GSP)
This section is supplemented with the following:

In addition to the following requirements, service cabinets shall meet Tacoma Power standards.

Meterbase: 100 amp, 4 jaw, link by-pass type

Panelboard: 120/240 vac, 200 amp copper bus (w/rating label), 1 phase, 3 wire, 18 ckt

Main breaker: 100 amp frame, 100 amp trip, BAB2100, AIC rating shall be confirmed with Tacoma Power prior to ordering

Bolt-on branch breakers: Type BAB, per panel schedule in the Plans

Utility landing pad: 200a single ø, 3-wire silver plated copper bus

Photo-cell bypass switch: SPDT, 15 amp, 120 vac

Contactors: lighting rated, 30amp, 2 pole, 120 vac coil, 3 – required

Photo electric cell: 1800 watt, 120 vac, twist lock, mounted behind wireglass window on side of cabinet

Cabinet: NEMA 3R, padmount, 1/8th inch type 5052H32 aluminum construction, 2 screened and gasketed vents

Hinged padlockable EUSERC #308 style tilt back meter hood with handle and polished wire glass window

Closed cell neoprene gasket, card holder hinged deadfront white secured with quarter-turn fasteners

Cabinet ground: 4 point with #2 minimum bonding wire to neutral doors: heavy duty concealed hinges, welded in place

Finish: mill finish aluminum

Add the following new Section

9-29.27 Fiber Optic Splice Closure

(Special Provision)

Fiber Optic Splice Closure shall be a Coyote Closure manufactured by Preformed Line Products or equivalent, shall be suitable for both vault and aerial applications, and shall meet the following requirements:

1. Be made of two injection-molded high-density thermoplastic shells, be 22 inches in length and 6 inches in diameter, and have capacity to store up to four splice trays.
2. Each splice case shall have two end plates; one end plate shall have no ports, the other endplate shall consist of a three section end plate with six ports - two 3/4-inch ports and four 7/8-inch ports. Each unused port shall have a grommet installed. The end plates shall be durable glass-filled high-density thermoplastic shells.
3. The splice enclosure shall be suitable for outdoor applications with a temperature range of -10°C to 60°C.
4. The splice enclosure shall provide sufficient space to allow entry of fiber optic cable without exceeding the cable minimum bending radius.
5. The enclosure shall protect the splices from moisture and mechanical damage and shall be resistant to corrosion.
6. The enclosure shall be waterproof, re-enterable and shall have a neoprene gasket sealing system to prevent water from entering.
7. The enclosure shall permit selective splicing to allow one or more fibers to be cut and spliced without disrupting other fibers.
8. The enclosure shall have strain relief for the cable to prevent accidental tension from disturbing the splices.
9. Each splice tray will be able to store 36 splices securely. Each splice shall be individually mounted and mechanically protected on the splice tray. Vinyl markers shall be supplied to identify each fiber spliced within the enclosure.

END OF SECTION

END OF SPECIAL PROVISIONS

1