


ENGINEERING CONSTRUCTION STANDARDS

COMPRISED OF
PART 1: SPECIAL PROVISIONS
&
PART 2: STANDARD DETAILS

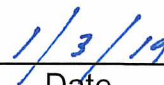
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City of Auburn
Engineering Services
Community Development & Public Works Departments
25 West Main Street
Auburn, WA 98001-4998

Approved By:



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Date

**PREFACE FOR THE
CITY OF AUBURN
ENGINEERING CONSTRUCTION
STANDARDS**

Grading, Utility, Street and other civil construction work within the City of Auburn shall utilize the 2018 WSDOT Standard Specifications for Road, Bridge, and Municipal Construction (English Version) as supplemented and amended by the City of Auburn Special Provisions contained within Part 1 of this document and the applicable and most current published version of City of Auburn Standard Details and Washington State Department of Transportation (WSDOT) Standard Plans for Road and Bridge Construction as included or referenced in Part 2 of this document.

Contractors are required to have the City of Auburn Engineering Construction Standards (Parts 1 and 2) and the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction available at the job site during construction. Contractors must also have a copy of all City of Auburn Standard Details and WSDOT Standard Plans that are referenced in the Plans available at the job site during construction.

WSDOT Standard Plans and Specifications are available at a nominal charge from the Washington State Department of Transportation at Engineering Publications: Washington State Department of Transportation, Engineering Publications, PO Box 47304, Olympia, WA 98504, or at (360)705-7431, or at <http://www.wsdot.wa.gov/Publications/Manuals/PriceList.htm>.

The City of Auburn Engineering Construction Standards are available online at: http://www.auburnwa.gov/doing_business/public_works/publications_forms.htm

It is the responsibility of the user to obtain the most current version and any associated revisions from the City of Auburn.

All references within the Engineering Construction Standards to measurement, payment or contractual obligations between the city and the contractor are in reference to a public contract and are not applicable to development projects

In case of conflict between the various elements of the Engineering Construction Standards, refer to Section 1-04.2 (Coordination of Contract Documents, Plans, Special Provisions Specifications, and Addenda) of this document for order of precedence.

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DIVISION 1 General Requirements**1-01 Definitions and Terms**

(April 2006 City of Auburn)

Whenever the words “as directed”, “as required”, “as permitted”, or words of the like effect are used, it shall be understood that the direction, requirement or permission of the City of Auburn is intended. The words “sufficient”, “necessary”, “proper”, and the like shall mean sufficient, necessary or proper in the judgment of the City of Auburn. The words “approved”, “acceptable”, “satisfactory”, or other words of the like shall mean approved by, or acceptable to, the City of Auburn.

(January 4, 2016 APWA GSP)

Supplement this Section with the following:

All references in the Standard Specifications, Amendments, or WSDOT General Special Provisions, to the terms “State”, “Department of Transportation”, “Washington State Transportation Commission”, “Commission”, “Secretary of Transportation”, “Secretary”, “Headquarters”, and “State Treasurer” shall be revised to read “Contracting Agency”.

All references to the terms “State” or “state” shall be revised to read “Contracting Agency” unless the reference is to an administrative agency of the State of Washington, a State statute or regulation, or the context reasonably indicates otherwise.

All references to “State Materials Laboratory” shall be revised to read “Contracting Agency designated location”.

(October 2018D, City of Auburn)

Applicant

The term Applicant shall be used to mean the Owner and any agent of the Owner authorized to represent the Owner. For Facility Extension Work, the term Applicant also refers to the Developer.

Applicant’s Engineer

The term Applicant’s Engineer shall be used to mean the individual, partnership, firm, corporation, or joint venture, contracting with the Applicant to complete the engineering design of the prescribed work.

City

The term City shall be used to mean the City Engineer or any designee thereof.

Contract

Where the term Contract is used within this document it shall mean the work necessary to complete the Project in accordance with the Contract Documents.

Contract Documents

The term Contract Documents shall be used to mean the combination of requirements as follows:

1. WSDOT Standard Specifications for Road, Bridge and Municipal Construction 2016 (English) edition, except as modified or superseded herein,
2. WSDOT Standard Plans (M21-01) for Road, Bridge and Municipal Construction, Current Version unless otherwise referenced in the Plans.
3. City of Auburn Standard Details, Current Version unless otherwise referenced in the Plans.
4. Manual on Uniform Traffic Control Devices for Streets and Highways, current edition,
5. American Water Works Association Standards, current edition,
6. The City approved plans, and
7. Any other documents reviewed and approved by the City and required as part of the development, including Facility Extension Agreements, Development Agreements, SEPA Conditions, and other documents.

Contracting Agency

The term Contracting Agency shall mean the City of Auburn.

Contractor:

The term Contractor shall be used to mean the individual, partnership, firm, corporation, or joint venture, contracting with the Applicant to do the prescribed work.

Current Edition

The latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the project is approved, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes.

Dates***Completion Date***

The day all the work specified for the project is completed and all the obligations of the Contractor are fulfilled. All required documentation must be furnished by the Contractor before establishment of this date. The Completion Date is the date on which the guarantee/warranty period begins.

Final Acceptance Date

Final Acceptance Date is the same as Completion Date.

Engineer

The term Engineer shall be used to mean the City Engineer or any designee thereof.

Equal Products

The terms "or equal", "approved equivalent", etc., as used in the Contract Documents, shall mean equal as determined by the City Engineer.

Measurement

The term Measurement is used in reference to public contract bid items and is not applicable to development projects.

Notice to Proceed

The written notice from the City to the Contractor authorizing the Contractor to begin working.

Payment

The term Payment is used in reference to public contract bid items and is not applicable to development projects.

Plans

The City approved plans and the Standard Details and/or Standard Plans referenced by them, which show location, character, and dimensions of the prescribed work including layouts, profiles, cross-sections, and other details.

Project

The term Project shall mean the development project being governed by the Contract Documents under an approved permit with the City.

Project Specifications

The term Project Specifications shall refer to the Standard Specifications as amended, revised, and supplemented by the Special Provisions.

Special Provisions

The term Special Provisions shall be used to mean the supplemental specifications to the WSDOT Standard Specifications for Road, Bridge and Municipal Construction developed, prepared, and approved by the City of Auburn and contained in Part I of the manual titled "City of Auburn Engineering Construction Standards". To clarify the purpose of each section provided, Special Provisions have the following section descriptions.

Supplement:	Text supplements or adds clarification to that Section of the Standard Specifications.
Revision:	Parts of that Section of the Standard Specification are altered.
Replacement:	Text replaces the entire identified Section of the Standard Specifications.
New Section:	This Section is a City of Auburn specification or is unique to this project and will not be found in the Standard Specifications.
Deletion:	This Section is deleted in its entirety.

Standard Details

Same as "Standard Plans" as defined in the Standard Specifications.

Standard Plans

The manual of standard plans adopted by the City of Auburn is the City of Auburn Construction Standards – Part 2 Standard Details, which includes City of Auburn Standard Details and certain WSDOT Standard Plans by reference.

Standard Specifications

The Standard Specifications for Road, Bridge and Municipal Construction, (English) edition as issued by the Washington State Department of Transportation, hereinafter referred to as the "Standard Specifications". The most current published hardcopy version of the Standard Specifications shall apply unless noted otherwise in the Plans.

Traffic

Both vehicular and non-vehicular traffic, such as pedestrians, bicyclists, wheelchairs, and equestrian traffic.

Shop Drawings

Same as "Working Drawings" as defined in the Standard Specifications.

Working Days and Business Days

Working Days and Business Days shall refer to days that are not considered holidays or nonworking days as defined in Section 1-08.5 of the Standard Specifications.

1-04.11 Final Cleanup

(February 2018, City of Auburn)

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

The City Right-of-Way, material sites, and all ground the Contractor occupied to do the Work shall be left neat and presentable.

Supplement the section with the following:

Final cleanup shall also include cleaning out all newly installed storm drain pipe and structures and any ditches that may have been filled during the work, replacing damaged surfacing, and putting the site in a neat, orderly condition and, in respect to structures, cleaning all windows and leaving buildings broom clean.

1-05 Control of Work**1-05.4 Conformity with and Deviations from Plans and Stakes**

(September 2016 City of Auburn)

Revise the second sentence of the second paragraph to read:

The allowable tolerance for the Contractor's work shall not exceed 0.02 feet from lines, grades, depths and cross-sections shown on the Plans unless otherwise specified in these contract documents.

Supplement this section with the following:

(April 2018D, City of Auburn)

The Contractor shall establish all survey controls, both horizontal and vertical, as necessary to assure proper placement of all project elements based on the primary control points provided by the Engineer. Survey work shall be within the following tolerances:

Stationing	±0.01 foot
Alignment	±0.01 foot (between successive points)
Superstructure Elevations	±0.01 foot (from plan elevations)
Substructure Elevations	±0.05 foot (from plan elevations)

During the progress of the work, the Contractor shall make available to the Engineer all field books including survey information, footing elevations, cross sections and quantities.

The Contractor shall be fully responsible for the close coordination of field locations and measurements with appropriate dimensions of structural members being fabricated.

1-05.7 Removal of Defective and Unauthorized Work

(April 2018D, City of Auburn)

Supplement this section with the following:

If the Contractor fails to remedy defective or unauthorized work within the time specified in a written notice from the Engineer, or fails to perform any part of the work required by the Contract Documents, the Engineer may correct and remedy such work as may be identified in the written notice, with Contracting Agency forces or by such other means as the Contracting Agency may deem necessary.

If the Contractor fails to comply with a written order to remedy what the Engineer determines to be an emergency situation, the Engineer may have the defective and unauthorized work corrected immediately, have the rejected work removed and replaced, or have work the Contractor refuses to perform completed by using Contracting Agency or other forces. An emergency situation is any situation when, in the opinion of the Engineer, a delay in its remedy could be potentially unsafe, or might cause serious risk of loss or damage to the public.

Direct or indirect costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, or work the Contractor failed or refused to perform, shall be paid by the Contractor. Such direct costs shall include in particular, but without limitation, compensation for additional professional services required, and costs for repair and replacement of the Contractor's unauthorized work.

The rights exercised under the provisions of this Section shall not diminish the Contracting Agency's right to pursue any other avenue for additional remedy or damages with respect to the Contractor's failure to perform the work as required.

1-05.10 Guarantees

(June 2018D, City of Auburn)

Supplement this section with the following:

All work shall be guaranteed for a minimum period of one year beyond the "Completion Date" thereof against defective materials, equipment, and workmanship and shall also include the landscape establishment required in the Contract per Section 8-02.3(13) (Plant Establishment). At its sole discretion, the City may require a longer warranty period for some, or all, work, and will indicate this requirement in the applicable agreement and/or permit documents.

Upon receipt of notice from the City of failure of any part of the material, equipment or workmanship during the guarantee period, the affected part or parts shall be replaced with new materials or equipment by, and at the expense of, the Contractor. This guarantee shall be bonded in compliance with Section 1-03.4 (Contract Bond). The Contractor shall be available approximately 60 calendar days prior to the expiration of the one-year guarantee period to tour the project, with the Engineer, in support of the Engineer's effort to establish a list of corrective work required under the one-year guarantee. Upon the receipt of written notice of such required corrective work, the Contractor shall pursue vigorously, diligently, and without unauthorized interruption of the City Facilities, the work necessary to correct the items listed.

1-05.11 Final Inspection

Delete the entire Section and replace with the following:

1-05.11 Final Inspections and Operational Testing

(October 1, 2005 APWA GSP)

1-05.11(2) Final Inspection and Physical Completion Date

(October 1, 2005 APWA GSP)

When the Contractor considers the work physically complete and ready for final inspection, the Contractor by written notice, shall request the Engineer to schedule a final inspection. The Engineer will set a date for final inspection. The Engineer and the Contractor will then make a final inspection and the Engineer will notify the Contractor in writing of all particulars in which the final inspection reveals the work incomplete or unacceptable. The Contractor shall immediately take such corrective measures as are necessary to remedy the listed deficiencies. Corrective work shall be pursued vigorously, diligently, and without interruption until physical completion of the listed deficiencies. This process will continue until the Engineer is satisfied the listed deficiencies have been corrected.

If action to correct the listed deficiencies is not initiated within 7 days after receipt of the written notice listing the deficiencies, the Engineer may, upon written notice to the Contractor, take whatever steps are necessary to correct those deficiencies pursuant to Section 1-05.7. The Contractor will not be allowed an extension of contract time because of a delay in the performance of the work attributable to the exercise of the Engineer's right hereunder.

Upon correction of all deficiencies, the Engineer will notify the Contractor and the Contracting Agency, in writing, of the date upon which the work was considered physically complete. That date shall constitute the Physical Completion Date of the contract, but shall not imply acceptance of the work or that all the obligations of the Contractor under the contract have been fulfilled.

1-05.11(3) Operational Testing

(October 1, 2005 APWA GSP)

It is the intent of the Contracting Agency to have, at the Physical Completion Date, a complete and operable system. Therefore when the work involves the installation of machinery or other mechanical equipment; street lighting, electrical distribution or signal systems; irrigation systems; buildings; or other similar work, it may be desirable for the Engineer to have the Contractor operate and test the work for a period of time after final inspection but prior to the physical completion date. Whenever items of work are listed in the Contract Provisions for operational testing, they shall be fully tested under operating conditions for the time period specified to ensure their acceptability prior to the Physical Completion Date. During and following the test period, the Contractor shall correct any items of workmanship, materials, or equipment which prove faulty, or that are not in first class operating condition. Equipment, electrical controls, meters, or other devices and equipment to be tested during this period shall be tested under the observation of the Engineer, so the Engineer may determine their suitability for the purpose for which they were installed. The Physical Completion Date cannot be established until testing and corrections have been completed to the satisfaction of the Engineer.

The costs for power, gas, labor, material, supplies, and everything else needed to successfully complete operational testing, shall be included in the unit contract prices related to the system being tested, unless specifically set forth otherwise in the proposal.

Operational and test periods, when required by the Engineer, shall not affect a manufacturer's guaranties or warranties furnished under the terms of the contract.

1-05.12 Final Acceptance

(June 2018D, City of Auburn)

Revise the first paragraph to read:

The Contractor must perform all physical Work under the Contract before a Completion Date and final acceptance can occur.

(December 2016, City of Auburn)

Add the following new section:

1-05.17 Oral Agreements

No oral agreement, conversation, or electronic mail (e-mail), excluding electronic submittals outlined in Section 1-06 (Control of Material) and Requests for Information outlined in Section 1-04.3(1) (Request for Information (RFI)), with any officer, agent, or employee of the City, either before or after execution of the contract, shall affect or modify any of the terms or obligations contained in any of the documents comprising the contract. Such oral agreement, conversation, or e-mail shall be considered as unofficial information and in no way binding upon the City, unless subsequently put in writing AND signed by the City.

(April 2017, City of Auburn)

Add the following new section:

1-05.18 Record Drawings

The following requirements are intended to provide the project Contractor with the information necessary to furnish the City with satisfactory record construction drawings:

1. The Contractor shall be responsible for tracking all relevant field changes to the approved construction drawings. These changes shall be clearly identified in red ink in a comprehensive manner on one set of full size Plans to be known as the "Record Construction Drawings".
2. The Record Drawing set shall be used for this purpose alone, shall be kept separate from other Plan sheets, and shall be clearly marked as Record Drawings. The Record Drawings shall be kept on site, and shall be available for review by the Contracting Agency at all times. The Contractor shall bring the Record Drawings to each progress meeting for review when such meetings are included in the Contract.
3. The quality of the Record Drawings, in terms of accuracy, clarity, and completeness, is to be adequate to allow the Contracting Agency to modify the computer-aided drafting (CAD) Contract Drawings to produce a complete set of Record Drawings for the Contracting Agency without further investigative effort by the Contracting Agency.
4. The record construction drawings shall identify all existing or abandoned utilities that were encountered during construction that were not shown on the approved construction drawings.
5. The Record Drawing markups shall document all changes in the Work, both concealed and visible. Items that must be shown on the markups include but are not limited to:

- Actual dimensions, arrangement, and materials used when different than shown in the Plans.
- Changes made by Change Order or Field Directive.
- Changes made by the Contractor as approved by the Engineer.
- Accurate locations of storm drainage, sanitary sewer, water mains and other water appurtenances, structures, conduits, light standards, vaults, width of roadways, sidewalks, landscaping areas, building footprints, channelization and pavement markings, etc. Include pipe invert elevations, top of castings (manholes, inlets, etc.).

The record construction drawings shall identify all deviations from the approved construction drawings as follows:

Sanitary Sewer

Manholes:

- Type/size of structure
- Location to the nearest 1-foot horizontal
- Rim elevations to the nearest 0.1-foot vertical
- Invert elevations to the nearest 0.1-foot vertical
- Pipe sizes to the nearest 1-inch inside diameter

Pipes:

- Type of pipe
- Location to the nearest 1-foot horizontal
- Length between structures to the nearest 1 foot
- Slopes based on invert elevations
- Pipe sizes to the nearest 1-inch inside diameter

Side Sewers:

- Type of pipe
- Location from reference manhole to the nearest 1 foot horizontal and consistent with the TV report
- Location to the nearest 1-foot horizontal
- Length between structures to the nearest 1 foot
- Slopes based on the constructed invert elevations
- Invert elevations at right-of-way lines to the nearest 0.5-foot vertical

Storm Drainage

Manholes/Catch Basins:

- Type/size of structure
- Location to the nearest 1-foot horizontal
- Rim elevations to the nearest 0.1-foot vertical
- Invert elevations to the nearest 0.1-foot vertical
- Pipe sizes to the nearest 1-inch inside diameter

Pipes:

- Type of pipe
- Location to the nearest 1-foot horizontal

Length between structures to the nearest 1-foot
Slopes based on the constructed invert elevations
Pipe sizes to the nearest 1-inch inside diameter

Water

Pipes:

Type of pipe and joints
Deflection of bends to the nearest 1 degree
Location to the nearest 1-foot horizontal
Location to the nearest 0.5-foot vertical between valves at 50-foot stations and intersection with other utilities
Length between valves to the nearest 1 foot
Pipe sizes to the nearest 1-inch inside diameter

Valves, Hydrants, Blowoffs, Air Vacs, and PRV's:

Type of facility
Location to the nearest 1-foot horizontal

Meters and Services:

Type of service material
Location of service line to the nearest 1-foot horizontal
Meter location to the nearest 1-foot horizontal
Meter sizes to the nearest ¼-inch in diameter

Streets

Public Streets:

Centerline elevations to the nearest 0.1-foot vertical at 100-foot stations
Centerline slopes and vertical curve data based on the constructed centerline elevations
Gutterline elevations to the nearest 0.1-foot vertical (if not a standard crown section)
Gutterline slopes and vertical curve data based on the constructed gutterline elevations (if not a standard crown section)

Driveway and Sidewalk:

Type of driveway (commercial or residential section)
Centerline driveway location to the nearest 1-foot horizontal
Driveway width to the nearest 1-foot horizontal
Sidewalk width to the nearest 1-foot horizontal

Channelization:

Type of buttons, reflectors, and curbs
General layout location to the nearest 1-foot horizontal

Signing:

Type of signs
Location of signs to the nearest 1-foot horizontal

Illumination:

Location of luminaries, junction boxes and service cabinets to the nearest 1-foot horizontal

Signalization:

Location of signal poles, junction boxes, service cabinets, and controllers to the nearest 1-foot horizontal

Landscaping:

Location of trees, shrubs, ground cover, sod, root control, irrigation, and other landscape features the nearest 1-foot horizontal

6. At the time the Contractor transmits the comprehensive redline Record Construction Drawings to the City, they shall certify that said drawings are in conformance to the above-referenced requirements and are an accurate depiction of built conditions;
7. The City shall receive and approve the Contractor's certified "Record Construction Drawings" as specified herein prior to achieving physical completion.

These Record Construction Drawings shall be kept current during the course of construction by the Contractor and be available for review upon request by the Engineer. The Contractor shall certify on the Record Drawings that said drawings are an accurate depiction of built conditions, and in conformance with the requirements detailed above. The Contractor shall submit final Record Drawings to the Contracting Agency. Contracting Agency acceptance of the Record Drawings is one of the requirements for achieving Physical Completion.

1-06 Control of Material

1-06.1 Approval of Materials Prior to Use

(September 2018, City of Auburn)

Section 1-06.1 is supplemented with the following:

For each proposed material that is required to be submitted for approval using either the QPL or RAM process identified in Section 9-38.1(2) (Request for Submittal Approval (RSA) Form Instructions) the Contractor will be allowed to submit for approval two materials per material type at no cost. Additional materials may be submitted for approval and will be processed at a cost of \$100.00 per material submitted by QPL submittal and \$300.00 per material submitted by RAM. All costs for the processing additional materials will be deducted from monies due or that may come due to the Contractor. Subject to a request by the Contractor and a determination by the Engineer the costs for processing may be waived.

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

(February 2019 City of Auburn)

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

The RAM shall be prepared by the Contractor in accordance with the instructions identified in Section 9-38.1(2) (Request for Submittal Approval (RSA) Form Instructions) and be submitted to the Engineer for approval before the material is incorporated into the Work.

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.

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, for 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

(June 27, 2011 APWA GSP)

Delete this Section, including its sub-sections, in its entirety and replace it with the following.

(December 2016, City of Auburn)

Add the following new section:

1-07.5(5) City of Auburn Requirements

The following list represents a portion of City of Auburn Code requirements dealing with the preservation of public natural resources that affect or are affected by the proposed work. Copies of applicable code are available in the City Clerk's office at City Hall, 25 West Main Street, Auburn, Washington. The City recommends that bidders review such materials before submitting sealed proposals.

City of Auburn Code – Section 8.28: Defines general noise nuisances prohibited in the City of Auburn.

City of Auburn Code – Sections 14, 16, 17, 18: Reviews types of permits required for grading, landfills, mining, excavation, utility extension, building and all associated permits. Requirements of City Code and the most current edition of the Uniform Building Code adopted by the City apply in all cases. Permit applications are reviewed by the Planning Department, Building Division and/or Engineering Division.

City of Auburn Code – Section 18.62: Permitting required for all mine-related activities (including asphalt or concrete batching, rock crushing, and transportation to and from a mine). Permit applications are reviewed by the Planning Department.

1-07.6 Permits and Licenses

(December 2016, City of Auburn)

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

The Contractor shall become familiar with all permits and licenses to be obtained and shall ensure that all their requirements are met.

(April 2017, City of Auburn)

Supplement this section with the following:

All required permits and licenses shall be obtained and paid for by the Contractor.

1-07.11(2) Contractual Requirements

(January 2, 2018 WSDOT Amendment)

In this section, "creed" is revised to read "religion".

Item numbers 1 through 9 are revised to read 2 through 10, respectively.

After the preceding Amendment is applied, the following new item number 1 is inserted:

1. The Contractor shall maintain a Work site that is free of harassment, humiliation, fear, hostility and intimidation at all times. Behaviors that violate this requirement include but are not limited to:
 - a. Persistent conduct that is offensive and unwelcome.
 - b. Conduct that is considered to be hazing.
 - c. Jokes about race, gender, or sexuality that are offensive.
 - d. Unwelcome, unwanted, rude or offensive conduct or advances of a sexual nature which interferes with a person's ability to perform their job or creates an intimidating, hostile, or offensive work environment.
 - e. Language or conduct that is offensive, threatening, intimidating or hostile based on race, gender, or sexual orientation.
 - f. Repeating rumors about individuals in the Work Site that are considered to be harassing or harmful to the individual's reputation.

(December 2016 City of Auburn)

The City will not knowingly do business with any bidder, contractor, subcontractor, or vendor whose employment practices are discriminatory and not in compliance with applicable laws and regulations. The City reserves the right to determine the Contractor's, Subcontractor's, or Vendor's normal employment practices, and will take whatever action it considers appropriate should discriminatory employment practices be discovered.

1-07.11(5) Sanctions

(January 2, 2018 WSDOT Amendment)

This section is supplemented with the following:

Immediately upon the Engineer's request, the Contractor shall remove from the Work site any employee engaging in behaviors that promote harassment, humiliation, fear or intimidation including but not limited to those described in these specifications.

1-07.11(6) Incorporation of Provisions

(January 2, 2018 WSDOT Amendment)

The first sentence is revised to read:

The Contractor shall include the provisions of Section 1-07.11(2) Contractual Requirements (1) through (5) and the Section 1-07.11(5) Sanctions in every subcontract including procurement of materials and leases of equipment.

1-07.13(2) Relief of Responsibility for Completed Work

(March 2018, City of Auburn)

This Section is deleted and replaced with the following:

Unless stated otherwise in the Contract, the Contractor shall bear the risk of loss or damage for all finished or partially finished work until completion of the work. This includes all vandalism, theft, and acts of God or nature.

1-07.13(3) Relief of Responsibility for Damage by Public Traffic

(April 2006, City of Auburn)

Revise the first sentence to read:

When it is necessary for public traffic to utilize a roadway facility during construction, the Contractor may, upon approval of a written request for each completed section, be relieved of responsibility for damages to permanent work by public traffic under the following circumstances:

1-07.15 Temporary Water Pollution Prevention

(May 2015, City of Auburn)

Supplement this Section with the following:

The Contractor shall implement erosion and sediment control (ESC) measures as necessary to prevent erosion and to stop sediment-laden water from leaving the site and entering the storm drain system. Measures shall be in accordance with, and conform to, the City of Auburn Surface Water Management Manual and Section 8-01 (Erosion Control and Water Pollution Control) of these Special Provisions.

1-07.16 Protection and Restoration of Property

(December 2016, City of Auburn)

Supplement this section with the following:

The Contractor shall not trespass upon private property and shall be responsible for all injury or damage to persons or property, directly or indirectly, resulting from the Contractor's operations in completing this work. The Contractor shall comply with the laws and regulations of the City of Auburn, County, State, and Federal governments relating to the safety of persons and property and will be held responsible for, and required to make good, all injury and damage to persons or property caused by the Contractor's operations.

Sprinkler irrigation systems that encroach within the limits of improvements shall be modified as necessary to ensure operation "equal or better than" the original condition upon completion of the improvements. This work will include, but not be limited to, cutting and capping existing pipe, relocating existing risers and sprinkler heads, new pipe heads and connections, and testing of the system.

The Contractor shall give a minimum of 7 working days prior written notification to the owners of any ditches, landscaping, irrigation lines and appurtenances that interfere with the work. The Contractor shall be liable for any damage to irrigation facilities by the Contractor's operations and shall restore such damaged facilities to "equal or better than" original condition.

Asphalt concrete pavement or bituminous surfacing outside the project area that is disturbed by the work shall be restored to its original condition. Asphalt pavement restoration shall comply with the provisions of Section 5-02 (Bituminous Surface Treatment) and 5-04 (Hot Mix Asphalt) of the Contract Specifications.

Existing cement concrete curb, gutter and sidewalk structures disturbed by the Contractor's operations shall be replaced to match existing. Cement concrete shall be Class 3000 with

entrained air in conformance with Section 6-02 (Concrete Structure) of the Contract Specifications.

Existing street shoulders disturbed by the Contractor's operation shall be resurfaced with 6 inches of compacted Gravel Borrow and 2 inches of compacted Crushed Surfacing Top Course sloped ½ inches per foot away from the paved street. Street shoulder restoration shall be in conformance with Section 4-04.3(11) (Shoulder Ballast) of the Contract Specifications.

All other surfaces, mailboxes, fences, signs, lawn irrigation systems, etc., disturbed by the project, shall be promptly replaced or relocated to original or better condition. Gravel driveways disturbed by the work shall be resurfaced with a compacted 2-inch layer of Crushed Surfacing Top Course. All ditches shall be reconstructed as indicated on the drawings.

The Contractor shall restore all disturbed landscaping in conformance with Section 8-02 (Roadside Restoration) of the Contract Specifications.

1-07.16(1) Private/Public Property

(November 2018, City of Auburn)

Add the following new section:

1-07.16(1)A Protection and Restoration of Existing Markers and Monuments

All existing survey monuments and property corner markers shall be protected from movement by the Contractor. RCW 58.24.040(8) and WAC 332-120 and their rules shall apply to all existing survey markers and/or monuments that must be removed for construction purposes. When survey markers and/or monuments are disturbed, they are to be referenced by survey ties and then replaced by the Contractor. All existing property corner markers disturbed or removed by the Contractor's operations which, in the opinion of the Engineer, were not required to be removed for construction purposes shall be replaced, at the Contractor's own expense, by a Professional Land Surveyor registered in the State of Washington. This includes the City of Auburn benchmark system. Any damaged monuments must be reset to second order, first class specifications.

1-07.16(2) Vegetation Protection and Restoration

(August 2, 2010 WSDOT GSP)

Section 1-07.16(2) is supplemented with the following:

Vegetation and soil protection zones for trees shall extend out from the trunk to a distance of 1 foot radius for each inch of trunk diameter at breast height.

Vegetation and soil protection zones for shrubs shall extend out from the stems at ground level to twice the radius of the shrub.

Vegetation and soil protection zones for herbaceous vegetation shall extend to encompass the diameter of the plant as measured from the outer edge of the plant.

1-07.17 Utilities and Similar Facilities

(June 2018D, City of Auburn)

Supplement this section with the following.

For the purpose of determining vertical clearance requirements for overhead power and communication lines, all public and private streets within the City of Auburn shall be considered conventional highways and are subject to the requirements stated in WAC-468-34-290 unless otherwise determined by the City Engineer.

(April 2018D, City of Auburn)

Supplement this section with the following.

The Contractor is responsible for determining the exact location of existing underground utilities.

A list of utilities and known contact persons will be available at the pre-construction conference for the Contractor's convenience. In most cases, the City has contacted these utility companies, identifying the project elements and potential impacts to their facilities.

The Contractor is responsible for any breakage of utilities or services resulting from their operations.

The Contractor is responsible for the complete repair (including materials) of any utility damaged by the work (including water services) Copper water service lines, if damaged, must be replaced in kind by one continuous service line from the water main to the meter. Splicing will not be permitted. The contractor shall repair any damage caused by broken water mains or services. The Contractor shall have sufficient materials and qualified personnel available to effect immediate repairs of water and sewer lines that may be damaged by the work.

The Contractor shall be responsible for securing private locate services where One-Number Locator Services do not cover (such as property outside the public right of way).

(April 2017, City of Auburn)

Add the following new section:

1-07.17(1)A Disruptions to City Water Services

All water service shutdowns caused by construction activities shall be requested by the Contractor a minimum of 4 working days in advance of the proposed shutdown, shall be approved by the City a minimum of 2 working days before the shutdown, and shall be performed by City Water Utility staff. The Contractor shall schedule Work such that all water service disruptions are limited to 4 hours.

The City does not guarantee a complete dry system following any water shutdown. All costs for dewatering following a water shutdown shall be included in the unit bid prices of the work involved.

(April 2017, City of Auburn)

Add the following new section:

1-07.17(1)B(1)Utility Potholing

The Contractor shall physically locate, uncover, and document the location of underground utilities at the locations identified in the plans. The purpose of utility potholing is to allow sufficient time ahead of pipe laying operations to identify underground conflicts, allow ample time to make minor adjustments in pipe grade and/or alignment, and generally facilitate the Contractor's work schedule.

The Contractor shall submit a potholing plan/schedule to the Engineer for review and/or approval prior to commencing potholing or pipe laying operations. The plan shall show the proposed location and clearly state the purpose for each proposed potholing location. The Engineer may add or delete potholing locations.

In no way shall the work described under Utility Potholing relieve the Contractor of any of the responsibilities described in Section 1-07.17 (Utilities and Similar Facilities) of the Standard Specifications and these Special Provisions.

1-07.17(2) Utility Construction, Removal, or Relocation by Others

(April 2017, City of Auburn)

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

Any authorized agent of the Contracting Agency or utility owners may enter the City right-of-way to repair, rearrange, alter, or connect their equipment.

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

(January 4, 2016 APWA GSP)

1-07.18(1) General Requirements

- A. The Contractor shall procure and maintain the insurance described in all subsections of section 1-07.18 of these Special Provisions, from insurers with a current A. M. Best rating of not less than A-: VII and licensed to do business in the State of Washington. The Contracting Agency reserves the right to approve or reject the insurance provided, based on the insurer's financial condition.
- B. The Contractor shall keep this insurance in force without interruption from the commencement of the Contractor's Work through the term of the Contract and for thirty (30) days after the Physical Completion date, unless otherwise indicated below.
- C. If any insurance policy is written on a claims made form, its retroactive date, and that of all subsequent renewals, shall be no later than the effective date of this Contract. The policy shall state that coverage is claims made, and state the retroactive date. Claims-made form coverage shall be maintained by the Contractor for a minimum of 36 months following the Completion Date or earlier termination of this Contract, and the Contractor shall annually provide the Contracting Agency with proof of renewal. If renewal of the claims made form of coverage becomes unavailable, or economically prohibitive, the Contractor shall purchase an extended reporting period ("tail") or execute another form of guarantee acceptable to the Contracting Agency to assure financial responsibility for liability for services performed.
- D. The Contractor's Automobile Liability, Commercial General Liability and Excess or Umbrella Liability insurance policies shall be primary and non-contributory insurance as respects the Contracting Agency's insurance, self-insurance, or self-insured pool coverage. Any insurance, self-insurance, or self-insured pool

coverage maintained by the Contracting Agency shall be excess of the Contractor's insurance and shall not contribute with it.

- E. The Contractor shall provide the Contracting Agency and all additional insureds with written notice of any policy cancellation, within two business days of their receipt of such notice.
- F. The Contractor shall not begin work under the Contract until the required insurance has been obtained and approved by the Contracting Agency
- G. Failure on the part of the Contractor to maintain the insurance as required shall constitute a material breach of contract, upon which the Contracting Agency may, after giving five business days' notice to the Contractor to correct the breach, immediately terminate the Contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the Contracting Agency on demand, or at the sole discretion of the Contracting Agency, offset against funds due the Contractor from the Contracting Agency.

1-07.18(2) Additional Insured

(January 4, 2016 APWA GSP)

All insurance policies, with the exception of Workers Compensation, and of Professional Liability and Builder's Risk (if required by this Contract) shall name the following listed entities as additional insured(s) using the forms or endorsements required herein:

- the Contracting Agency and its officers, elected officials, employees, agents, and volunteers

The above-listed entities shall be additional insured(s) for the full available limits of liability maintained by the Contractor, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract, and irrespective of whether the Certificate of Insurance provided by the Contractor pursuant to 1-07.18(4) describes limits lower than those maintained by the Contractor.

For Commercial General Liability insurance coverage, the required additional insured endorsements shall be at least as broad as ISO forms CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

1-07.18(3) Subcontractors

(January 4, 2016 APWA GSP)

The Contractor shall cause each Subcontractor of every tier to provide insurance coverage that complies with all applicable requirements of the Contractor-provided insurance as set forth herein, except the Contractor shall have sole responsibility for determining the limits of coverage required to be obtained by Subcontractors.

The Contractor shall ensure that all Subcontractors of every tier add all entities listed in 1-07.18(2) as additional insureds, and provide proof of such on the policies as required by that section as detailed in 1-07.18(2) using an endorsement as least as broad as ISO CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency evidence of insurance and copies of the additional insured endorsements of each Subcontractor of every tier as required in 1-07.18(4) Verification of Coverage.

1-07.18(4) Verification of Coverage

(January 4, 2016 APWA GSP)

The Contractor shall deliver to the Contracting Agency a Certificate(s) of Insurance and endorsements for each policy of insurance meeting the requirements set forth herein when the Contractor delivers the signed Contract for the work. Failure of Contracting Agency to demand such verification of coverage with these insurance requirements or failure of Contracting Agency to identify a deficiency from the insurance documentation provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

Verification of coverage shall include:

1. An ACORD certificate or a form determined by the Contracting Agency to be equivalent.
2. Copies of all endorsements naming Contracting Agency and all other entities listed in 1-07.18(2) as additional insured(s), showing the policy number. The Contractor may submit a copy of any blanket additional insured clause from its policies instead of a separate endorsement.
3. Any other amendatory endorsements to show the coverage required herein.
4. A notation of coverage enhancements on the Certificate of Insurance shall not satisfy these requirements – actual endorsements must be submitted.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency a full and certified copy of the insurance policy(s). If Builders Risk insurance is required on this Project, a full and certified copy of that policy is required when the Contractor delivers the signed Contract for the work.

1-07.18(5) Coverages and Limits

(January 4, 2016 APWA GSP)

The insurance shall provide the minimum coverages and limits set forth below. Contractor's maintenance of insurance, its scope of coverage, and limits as required herein shall not be construed to limit the liability of the Contractor to the coverage provided by such insurance, or otherwise limit the Contracting Agency's recourse to any remedy available at law or in equity.

All deductibles and self-insured retentions must be disclosed and are subject to approval by the Contracting Agency. The cost of any claim payments falling within the deductible or self-insured retention shall be the responsibility of the Contractor. In the event an additional insured incurs a liability subject to any policy's deductibles or self-insured retention, said deductibles or self-insured retention shall be the responsibility of the Contractor.

1-07.18(5)A Commercial General Liability

(January 4, 2016 APWA GSP)

Commercial General Liability insurance shall be written on coverage forms at least as broad as ISO occurrence form CG 00 01, including but not limited to liability arising from premises, operations, stop gap liability, independent contractors, products-completed operations, personal and advertising injury, and liability assumed under an insured contract. There shall be no exclusion for liability arising from explosion, collapse or underground property damage.

The Commercial General Liability insurance shall be endorsed to provide a per project general aggregate limit, using ISO form CG 25 03 05 09 or an equivalent endorsement.

Contractor shall maintain Commercial General Liability Insurance arising out of the Contractor's completed operations for at least three years following Substantial Completion of the Work.

Such policy must provide the following minimum limits:

\$1,000,000	Each Occurrence
\$2,000,000	General Aggregate
\$2,000,000	Products & Completed Operations Aggregate
\$1,000,000	Personal & Advertising Injury each offence
\$1,000,000	Stop Gap / Employers' Liability each accident

1-07.18(5)B Automobile Liability

(January 4, 2016 APWA GSP)

Automobile Liability shall cover owned, non-owned, hired, and leased vehicles; and shall be written on a coverage form at least as broad as ISO form CA 00 01. If the work involves the transport of pollutants, the automobile liability policy shall include MCS 90 and CA 99 48 endorsements.

Such policy must provide the following minimum limit:

\$1,000,000	Combined single limit each accident
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1-07.18(5)C Workers' Compensation

(January 44, 2016 APWA GSP)

The Contractor shall comply with Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

1-07.18(5)D Excess or Umbrella Liability

(January 4, 2016 APWA GSP)

The Contractor shall provide Excess or Umbrella Liability insurance with limits of not less than \$1 million each occurrence and annual aggregate. This excess or umbrella liability coverage shall be excess over and as least as broad in coverage as the Contractor's Commercial General and Auto Liability insurance

All entities listed under 1-07.18(2) of these Special Provisions shall be named as additional insureds on the Contractor's Excess or Umbrella Liability insurance policy.

This requirement may be satisfied instead through the Contractor's primary Commercial General and Automobile Liability coverages, or any combination thereof that achieves the overall required limits of insurance.

1-07.18(5)E LHWCA Insurance

(January 4, 2016 APWA GSP)

If this Contract involves work on or adjacent to Navigable Waters of the United States, the Contractor shall procure and maintain insurance coverage in compliance with the statutory requirements of the U.S. Longshore and Harbor Workers' Compensation Act (LHWCA).

Such policy must provide the following minimum limits:

\$1,000,000	Bodily Injury by Accident – each accident
\$1,000,000	Bodily Injury by Disease – each employee
\$1,000,000	Bodily Injury by Disease – policy limits

1-07.18(5)J Pollution Liability

(January 4, 2016 APWA GSP)

The Contractor shall provide a Contractors Pollution Liability policy, providing coverage for claims involving bodily injury, property damage (including loss of use of tangible property that has not been physically injured), cleanup costs, remediation, disposal or other handling of pollutants, including costs and expenses incurred in the investigation, defense, or settlement of claims, arising out of any one or more of the following:

1. Contractor's operations related to this project.
2. Remediation, abatement, repair, maintenance or other work with lead-based paint or materials containing asbestos.
3. Transportation of hazardous materials away from any site related to this project.

All entities listed under 1-07.18(2) of these Special Provisions shall be named by endorsement as additional insureds on the Contractors Pollution Liability insurance policy.

Such Pollution Liability policy shall provide the following minimum limits:

\$1,000,000 each loss and \$2,000,000 annual aggregate

1-07.23 Public Convenience and Safety

(December 2016, City of Auburn)

In the last sentence of the first paragraph, replace the word "Highway" with the word "Public".

Supplement this section with the following:

The use of any project area by vehicles or pedestrians before project acceptance is not to be construed as utilization by the City of Auburn.

1-07.23(1) Construction Under Traffic

(April 2018, City of Auburn)

Supplement this section with the following:

All unattended excavations shall be barricaded at all times.

The Contractor shall obtain the approval of the Inspector of all barricading and lighting before leaving the job site each day. Failure to provide proper barricading and lighting will be cause for the City to call in a barricading company to install proper barricades and lights and charge the Contractor for all costs incurred. Inspector approval shall not relieve the Contractor of their legal responsibilities in case of project area accidents.

At the end of each working day, the Contractor shall place temporary patches or steel plates over unfinished portions of trenches crossing traveled ways. Material for temporary patches shall be hot or cold mix asphalt concrete. The cost for temporary patches or steel plates shall be included in the appropriate unit bid prices for the work involved.

Traffic control devices that are in conflict with required construction traffic devices or construction work shall be covered, removed and temporarily stored, or temporarily relocated by the Contractor.

Flagging, signs, and all other traffic control devices shall be in accordance with Section 1-10.3 (Traffic Control Labor, Procedures, and Devices).

Signal downtime will not be allowed Monday thru Friday between the hours of 6:00 AM and 9:00 AM and between 3:00 PM and 6:00 PM

(April 2018D, City of Auburn)

Add the following new section:

1-07.23(1)A Dust and Mud Control and Street Cleaning

The Contractor is responsible for controlling dust and mud within the project limits. All streets outside the project limits used by the Contractor during the execution of this Contract shall be kept clean. The Contractor shall be prepared to use the proper equipment necessary to render the streets free of all mud, debris, and foreign materials. Any damage caused by dust or mud accumulation on the streets and in the storm sewer system shall be the sole responsibility of the Contractor.

The Contractor's cleaning actions must comply with the City of Auburn's Surface Water Management Manual (SWMM). A copy of the City's SWMM manual can be found on the City's website at auburnwa.gov under publications and forms.

The Contractor shall provide for a clean surface on all surfaced roadways upon completion of each day's activities. Equipment required for this operation shall be on the job site or available at all times. Failure to have this equipment on the job site or available may necessitate a shutdown of the project.

(April 2018D, City of Auburn)

Add the following new section:

1-07.23(1)B Daily Cleanup and Maintenance Items

The Contractor shall clean all roadways, streets and appurtenances, including sidewalks which are open for public use, of all material or debris that has been dropped or otherwise

deposited thereon, as a result of Contractor's on- and off-site operations, at the conclusion of each working day, and at such other times as deemed necessary by the Engineer to ensure the safety of the traveling public and to prevent inconvenience to the public and owners of private property adjacent to the project.

If the Engineer determines that roadways, streets, sidewalks, and appurtenances are not properly cleaned to prevent public inconvenience, or the condition of the excavation or disposal sites so warrant, the Contractor shall provide facilities to remove clay or other deposits from tires, between wheels, and outside of truck beds before trucks and other equipment will be allowed to travel over paved streets.

Any violation of the above requirements will be sufficient grounds for the Engineer to order the roadways, streets and appurtenances cleaned or sprinkled by others at the expense of the Contractor.

1-07.23(2) Construction and Maintenance of Detours

(December 2016, City of Auburn)

Supplement this section with the following:

The Contractor shall submit a written procedure for routing and maintenance of traffic. The City of Auburn Engineering Division, City of Auburn Police Department, and the Valley Regional Fire Authority must approve all street blockage, traffic routing, etc.

Streets may be closed to through traffic, unless otherwise specified in Section 1-07.23(1)C (Closure Restrictions), with Engineer approval. The Contractor shall obtain written approval from the Engineer at least 15 working days prior to an anticipated street closure. Street closures shall be such that they provide for maximum public safety and public convenience. They shall be opened to through traffic at such time as the work has been completed, or as the Engineer may direct.

Street closures and detours shall provide for the following:

1. Reasonable access to, and egress from, the properties adjacent to the project at all times.
2. At least one-way traffic on all existing roadways within the project limits during working hours and at the end of each working day provisions for the safe passage of two-way traffic during the non-working hours.
3. If the Contractor requires delays or limited term street closure beyond that provided for herein, the request shall be submitted, in writing, for the approval of the Engineer before the anticipated delay or closure. The delay or closure request shall state the reason, the locations, the time and date, and the duration of the required delay or closure.
4. The Contractor is required, at their own expense, to remove all excess materials, debris, or other obstruction caused by their operation, from the streets or alleys as the work progresses, whether within the project limits or along haul routes. If the Contractor neglects to remove such materials or obstruction and return streets, sidewalks, driveways, and roads in suitable condition for traffic within 1 working day after having received written notice from the Engineer, the work may be done by the City of Auburn and the cost thereof charged to the Contractor and deducted from money due, or to become due, to the Contractor. The Contractor shall repair or replace any

streets, sidewalks, roads, or culverts damaged by their operations, to the satisfaction of the Engineer and other concerned parties.

5. The Contractor must maintain convenient access for local traffic to driveways, houses, and buildings along the work route. Such access shall be maintained as near as possible to that which existed before construction began. The Contractor shall provide 10 working days advance notice to all property owners and tenants of street and alley closures or other restrictions, which may interfere with their access. When the abutting owners' access across right-of-way lines is to be eliminated and replaced under the Contract by another access, the existing access shall not be closed until the replacement access facility is available.

The Contractor shall be responsible for making detailed notifications of detours and closures as follows:

1. The Contractor shall provide at least 10 working days advance written notification to the local public transportation organization(s), School District, Fire Authority and Police Department before the beginning of operations, so that these agencies may reroute their emergency vehicles around the construction zone. If the Fire Authority or Police Department determine that rerouting is not possible, the Contractor shall provide reasonable access through the construction zone at all times.
2. The Contractor shall notify all affected owners and agencies of all closures, detours and traffic interruptions at least 10 working days in advance of such closure. Notification shall be in writing and must include the beginning and ending times and dates of traffic disruption(s), names of streets or locations of alleys to be affected, detour routes, etc. The Contractor shall give the Engineer written certification of all notifications before all traffic disruptions. On large projects requiring extended traffic disruption, the Contractor shall make additional notifications, as conditions require.

1-07.24 Rights of Way

Delete this section and replace it with the following:

(September 2018D, City of Auburn)

Street right-of-way lines, limits of easements, and limits of construction permits shall be shown on the Plans. The Contractor's activities shall be confined within these limits, unless arrangements for use of private property are made.

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 agreements obtained by the City from the owner of the private property. If easement agreements were obtained by the City as part of this project, they are included in the Appendix. Copies of the easement agreements not obtained prior to advertising will be made available to the Contractor once obtained by the City.

The Contractor shall give 48 hours' notice to each property owner prior to entry of each property. 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 City, any additional land and access thereto that the Contractor may desire for temporary

construction staging facilities, Contractor's convenience, storage or materials, or other Contractor needs. However, before using any private property, whether adjoining the work or not, the Contractor shall submit to the City a completed "Property Owner Permission for Construction" form. The "Property Owner Permission for Construction" form is available at the City of Auburn Public Works Department. If the Contractor utilizes private property for temporary construction facilities, storage of materials and equipment, employee parking or other Contractor needs, a "Temporary Use Permit" shall be secured from the City of Auburn in accordance with Section 18.46A.070 of the Auburn City Code. The Contractor must file a written release with the City from all private property owners upon whose property the Contractor's operations has encroached before completion, unless such work was specified in the Contract.

(March 2018, City of Auburn)

Add the following new section:

1-07.28 Haul Routes

Prior to moving any materials or equipment on public streets, the Contractor shall submit a haul route plan to the Engineer for approval per Section 9-38 (Submittal Approval). The plan must be submitted 10 working days prior to hauling. The Engineer must approve the haul route plan before hauling begins. Damage done to streets during the Contractor's hauling shall be repaired to pre-construction conditions at the Contractor's expense.

If the Contractor hauls materials or equipment without an approved haul route plan or not in accordance with an approved haul route, the Contractor may be assessed penalties per Section 1-08.9(1) (Penalties). The assessment of penalties is at the sole discretion of the Engineer.

1-08 Prosecution and Progress

(May 25, 2006 APWA GSP)

Add the Following New Section Including Subsections:

1-08.0 Preliminary Matters

1-08.0(1) Preconstruction Conference

(April 2018D, City of Auburn)

Prior to beginning construction work a preconstruction conference will be scheduled 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 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 electronically 1 working day prior to the preconstruction conference, the following, per Section 9-38 (Submittal Approval):

1. Preliminary progress schedule.

2. SPCC Plan per Section 1-07.15(1) of the Contract Documents.

In addition, the Contractor shall prepare and submit the following at the preconstruction conference:

1. Emergency Call List; and
2. A Preliminary Schedule of Submittals

1-08.0(2) Hours of Work

(April 2018D, City of Auburn)

Except in the case of emergency or unless otherwise approved by the Engineer, normal working hours shall be from between 7:00 a.m. and 6:00 p.m. Monday through Friday. If the Contractor desires different than the normal working hours stated above, the request

All working hours and days are also subject to local permit and ordinance conditions (such as noise ordinances).

If the Contractor wishes to deviate from the established working hours, the Contractor shall submit a written request to the Engineer for consideration. This request shall state what hours are being requested, and why. Requests shall be submitted for review no later than 5 working days prior to the day(s) the Contractor is requesting to change the hours.

(April 2018D, City of Auburn)

If the requested working hour deviation is approved by the Engineer, it may be revoked at any time the City receives complaints from the public or adjoining property owners regarding the noise from the Contractor's operations.

1-08.4 Notice to Proceed and Prosecution of the Work

Delete the first paragraph and replace it with the following:

(August 2015D City of Auburn)

The City will send a dated and signed official "Notice to Proceed" to the Contractor.

The Contractor shall not commence with the work until the Engineer has given the Notice to Proceed. The Contractor shall give the City at least three (3) working days advance notice before beginning each phase of the work (such as excavation, street paving, etc.). The Contractor shall diligently pursue the work to be completed within the existing public Right-of-way in the agreed upon timeframe. This timeframe shall be established by the submittal and acceptance of a construction schedule addressing all items of work and their completion

1-10 Temporary Traffic Control**1-10.1 General**

(April 2017, City of Auburn)

Supplement this section with the following:

The Contractor is also responsible for distributing City provided informational flyers to affected property owners. The flyers shall be hand-delivered to these properties before the start of construction and shall include the name of the project, funding source, general contractor, approximate date for start and completion of construction activities. . The Contractor shall provide traffic control for City provided inspection, testing, and survey as requested by the Engineer.

1-10.2 Traffic Control Management**1-10.2(2) Traffic Control Plans**

(December 2018D, City of Auburn)

Supplement this section with the following:

Contractor prepared Traffic Control Plans shall conform to the established standards for plan development as shown in the MUTCD, 2009 Edition, Part VI, and the WSDOT Work Zone Traffic Control Guidelines, latest edition. A separate pedestrian traffic control plan shall be required from the Contractor if normal pedestrian travel is affected by the Contractors actions. The Contractor shall submit the Traffic Control Plan and/or Pedestrian Accommodation Plan to the Engineer for review and approval at least 5 working days in advance of the time the traffic control devices, including signs, are scheduled to be installed and utilized. Traffic Control Plans and Pedestrian Accommodation Plans shall be submitted per Section 9-38.1 (Submittals) and shall include the City's Traffic Control Plan Checklist with each submittal. The Engineer must approve the Traffic Control Plan before any onsite work begins on the project. Outside edges of the traveled way may be delineated with traffic safety drums or tubular markers providing that the requirements of Section 1-07.23(1) (Construction Under Traffic) are met. Barricades shall be in accordance with the applicable Standard Plans.

1-10.3 Traffic Control Labor, Procedures, and Devices**1-10.3(1)Traffic Control Labor****1-10.3(1)B Other Traffic Control Labor**

(April 2018D, City of Auburn)

Supplement this section with the following:

When working within signalized intersections, the Contractor shall schedule and coordinate the use of City provided uniformed police officers to control traffic. Contractor is responsible for all coordination with the City of Auburn Police Department to secure a uniformed police officer as required. This coordination shall be done a minimum of 3 working days in advance of the day a uniformed police officer is necessary. When the City of Auburn Police Department is not able to secure a uniformed police officer, the Contractor shall provide uniformed officers from outside police agencies and shall contract for those services directly. Contractor shall notify the Engineer prior to the use of outside agency police services.

1-10.3(3)A Construction Signs

(December 2016, City of Auburn)

Supplement this section with the following:

The Contractor shall provide and install "Construction Site Sign(s)" in accordance with the contract documents 2 working days in advance of any on site construction activities. Installation of the signs shall be in accordance with Section 1-10.3(3) (Construction Signs) and) and the applicable City of Auburn Standard Detail.

(April 2018, City of Auburn)

Add the following new section:

1-10.3(3)L Temporary Signage for Roadway Traffic Revisions

Temporary "Traffic Revision Ahead" (W20-901) signs with two warning flags shall be installed in advance of roadway projects that include traffic revisions. Temporary "New Signal Ahead" (W20-902) signs with two warning flags shall be installed in advance of the intersection on all approaches to the new signal. Temporary "Traffic Signal Revision" (W20-903) signs with two warning flags shall be installed in advance of each intersection approach with signal modifications. A 12-inch x 12-inch warning placard shall be affixed to the top of each signal head being modified. Warning signs shall be mounted on 4"x 4" wooden posts and placed per plan and MUTCD requirements. The Contractor shall remove all temporary signs and posts no earlier than 3 months and no later than 6 months following completion of the traffic revisions. Posthole voids shall be restored with native material.

END OF DIVISION 1

DIVISION 2 Earthwork**2-01 Clearing, Grubbing and Roadside Cleanup****2-01.1 Description**

(December 2016, City of Auburn)

Supplement this section with the following:

Clearing and grubbing shall be done to the construction limits shown on the Plans. When no clearing and grubbing limits are shown, the clearing and grubbing limits shall be the smallest area required to complete the other Contract Work.

2-01.2 Disposal of Usable Material and Debris**2-01.2(1) Disposal Method No. 1 – Open Burning**

(December 2016, City of Auburn)

Delete this section and replace it with the following:

Open burning will not be permitted on this project.

2-01.2(3) Disposal Method No. 3 - Chipping

(January 2017, City of Auburn)

Supplement this section with the following:

Woodchips shall not be utilized on the project site unless approved by the Engineer. Wood chips shall be disposed of by Disposal Method No. 2 – Waste Site.

2-01.3 Construction Requirements

(January 2018, City of Auburn)

Supplement this section with the following:

Where the Plans indicate clearing and grubbing on private property, the terms of the easement agreements referenced in Section 1-07.24 (Rights of Way) shall dictate if the property owners are responsible for relocating trees, shrubs, or other landscaping from the work area, and the required advance notice to the property owner(s) from the Contractor. Absent of these stipulations, respective property owners are responsible for relocating or removing trees, shrubs, or any other landscaping material within the work areas that they wish to save, unless specified elsewhere in the contract documents, and the Contractor shall notify property owners a minimum of 7 calendar days in advance of clearing the site, to allow the owner time to remove landscape material.

2-02 Removal of Structures and Obstructions**2-02.3 Construction Requirements****2-02.3(2) Removal of Bridges, Box Culverts, and other Drainage Structures**

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor shall remove storm drainage structures as described in the Plans. The resultant void shall be backfilled with Gravel Borrow per Section 9-03.14(1) (Gravel Borrow), unless otherwise noted. All material removed from the site shall be properly disposed of, unless otherwise identified to be salvaged.

2-02.3(4)A Remove and Reset Fencing

(January 2018, City of Auburn)

This work consists of removing and resetting fencing as shown on the Plans. The Contractor is responsible for ensuring that any remaining fence and fence to be reset is undamaged. The Contractor shall repair any damage caused by the Contractor's negligence at no additional cost to the City. Costs for the replacement of fencing components and finishes (such as gates, posts, foundations, fabric, stain, and other material) required for the resetting of removed fence shall be included in the costs for removing and resetting the fence.

For the protection of pets and security of the property, the Contractor shall schedule removal of fencing with the property owner at least 5 working days in advance. Unless approved by the property owner, no site shall be left unfenced.

2-02.3(4)B Remove and Reset Private Signs

(August 2016, City of Auburn)

Where shown on the Plans, the Contractor shall remove existing private signs for placement in new locations.

The Contractor is responsible for ensuring that the sign(s) and mounting apparatus(es) remain undamaged. Any damage caused by the Contractor's negligence shall be repaired or replaced by the Contractor at the Contractor's expense. The new cement concrete foundation(s) shall be equal or larger in size than the existing foundation(s), unless otherwise designated in the Contract Documents.

All electrical work shall be performed in accordance with applicable subsections of Section 8-20 (Illumination, Traffic Signal Systems, and Electrical) of the Standard Specifications and as amended by these Special Provisions.

2-02.3(4)C Remove and Reset Private Luminaires

(August 2016, City of Auburn)

Where shown on the Plans, the Contractor shall move existing private luminaires to new locations.

Following removal of the existing light fixture, the Contractor shall protect the fixture and all component parts from loss or damage until such time as the fixture is relocated. Any damage caused by the Contractor's negligence shall be repaired or replaced by the Contractor at the Contractor's expense. The new cement concrete foundation(s) shall be equal or larger in size than the existing foundation(s), unless otherwise designated in the Contract Documents.

All electrical work shall be performed in accordance with applicable subsections of Section 8-20 (Illumination, Traffic Signal Systems, and Electrical) of the Standard Specifications and as amended by these Special Provisions.

(January 2018D, City of Auburn)

Add the following new section:

2-02.3(5) Salvage

All casings, pipe, frames, grates, covers, traffic signal equipment, poles, luminaires and other material of recoverable value identified to be salvaged from the project shall be carefully delivered to the City of Auburn Maintenance & Operations Building (1305 "C" Street SW) in their existing condition.

The Contractor shall provide notice to the Engineer a minimum of 3 working days prior to delivery of any salvaged item.

Following removal items to be salvaged, the Contractor shall protect the items and all component parts from loss or damage until such time as all they are delivered by the Contractor to the City of Auburn Maintenance and Operations building. The Contractor shall replace lost, damaged, or destroyed items in kind, at the Contractor's expense. The Contractor shall coordinate the receiving of salvaged items by the City. The Contractor shall label any salvaged traffic signal poles, mast arms, and signal/lighting equipment with the City contract number and location from which they were salvaged. Labels shall be removable weather proof tags that will not damage or mark the salvaged item.

2-03 Roadway Excavation And Embankment

2-03.3 Construction Requirements

2-03.3(3) Excavation Below Subgrade

(January 2018, City of Auburn)

Supplement this section with the following:

The Contractor shall remove and dispose of unsuitable roadway subgrade material. The Contractor shall replace the removed material with crushed surfacing base course per Section 9-03.9(3) (Crushed Surfacing), unless otherwise specified in the Contract Documents. When specified in the Plans, the Contractor shall place construction geosynthetic beneath the crushed surfacing base course.

2-03.3(7) Disposal of Surplus Material

2-03.3(7)C Contractor-Provided Disposal Site

(December 2018D, City of Auburn)

Supplement this section with the following:

If, during the course of this project, it becomes necessary to dispose of either excess or unsuitable materials, the additional following requirements shall be observed:

1. In no case shall any waste materials be disposed of on any site within the City limits of Auburn, unless the Contractor has a valid Grading (Fill) Permit according to Section 1-07.5(5) (City of Auburn Requirements) in this document;
2. Grading (Fill) Permits are issued by the City of Auburn Community Development Department after all conditions have been met to the satisfaction of the City Engineer;

3. The Grading Permits are issued to the legal owner of the property. Any questions regarding the requirements should be directed to the City of Auburn Community Development Services at 253.931.3020 (Option 3) or permitcenter@auburnwa.gov;
4. Any waste material disposed of outside the City limits of Auburn shall be at the Contractor's risk. The Contractor is responsible for complying with all local codes and ordinances;
5. Failure to comply with the above requirements shall be grounds for the City to issue a suspension of work until such time as the requirements have been satisfied;
6. Time lost by failure to satisfy these requirements shall be insufficient reason for granting time extensions.

2-03.3(14) Embankment Construction

(December 2016, City of Auburn)

Supplement this section with the following:

Embankments shall be constructed in compacted layers of uniform thickness by Method C of Section 2-03.3(14)C (Compacting Earth Embankments).

2-04 Haul**2-04.2 Hauling on other than City Streets**

(January 2017, City of Auburn)

Supplement this section with the following:

If the sources of materials provided by the Contractor necessitate hauling over roads other than City of Auburn streets, the Contractor shall, at the Contractor's expense, make all arrangements for the use and cleaning, if necessary, of the haul routes.

2-06 Subgrade Preparation**2-06.3(1) Subgrade for Surfacing**

(December 2016, City of Auburn)

Supplement this section with the following:

Before placing base course, subgrade shall be shaped to conform to the "typical cross-section" shown in the Plans. Adequate water shall be spread on the subgrade to obtain optimum moisture content for compaction. The subgrade shall be graded to a uniform cross-section true to line and grade before placing base material.

(March 9, 2016 APWA GSP)

Add the following new section:

2-06.3(3) Subgrade for Permeable Pavements

Before placing permeable ballast for Porous HMA/WMA, the Contractor shall bring the Subgrade to the required line, grade, and cross-section. The Contractor shall compact the Subgrade to a depth of 6 inches to at least 90 percent, but not more than 92 percent, of the maximum density as determined by the compaction control tests described in Section 2-03.3(14)D. Two (2) density tests will be conducted for every 5,000 square feet of prepared

subgrade; or four (4) tests per 200 lineal feet of roadway or sidewalk. All subgrade shall be firm and unyielding as determined by the Engineer.

The Contractor shall take measures to protect the prepared and approved subgrade from traffic, water run-on, standing water, or other damage. Subgrade that has been over compacted, shall be scarified to a minimum depth of eight (8) inches and recompact.

Material used to protect the Subgrade from traffic or provide access to adjacent facilities shall be removed and the subgrade compacted prior to placing geotextile, if used and/or permeable ballast.

2-07 Watering

2-07.3 Construction Requirements

(December 2016, City of Auburn)

Supplement this section with the following:

The Contractor shall water to control dust and shall have a water truck available for watering.

(January 2019, City of Auburn)

Add the following new section:

2-07.4(1) Water from City Hydrants

The Contractor shall obtain a Fire Hydrant Meter Permit from the City of Auburn Permit Center (1 East Main Street) before taking of water from hydrants. Water will be furnished by the City from the fire hydrant to be designated at the time a Fire Hydrant Meter Permit is obtained and in accordance with the terms of the Fire Hydrant Meter Permit. To obtain a Fire Hydrant Meter Permit the applicant shall make a deposit of \$2,110.00 which covers the use of a water meter, hydrant wrench, brass adapter, backflow prevention device and hydrant gate valve, and is refundable if returned in acceptable condition. When the meter, hydrant wrench, backflow prevention device, and gate valve are returned in an acceptable condition and all water usage fees have been paid, the \$2,110.00 deposit will then be refunded to the applicant. The applicant shall pay a base fee of \$45.13 per month and all water usage will be paid by the applicant at the rate of \$4.43 per hundred cubic feet.

NOTE: These are current 2019 rates and may be revised periodically. The Contractor shall be responsible to contact the City and verify these rates when preparing the bid. Adjustment of these rates by the City will not be the basis for any contract unit price adjustment.

The Contractor shall furnish all required equipment and material necessary for transporting the water from the hydrant, including gauges for testing (except the meter, wrench and valve as stated above).

END OF DIVISION 2

DIVISION 3: AGGREGATE PRODUCTION AND ACCEPTANCE

DIVISION 3 Aggregate Production and Acceptance

No changes to this section.

END OF DIVISION 3

DIVISION 4 Bases

No changes to this section.

END OF DIVISION 4

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

DIVISION 5 Surface Treatments and Pavements Bases

(January 2018, City of Auburn)

Add the following new Section, including subsections:

5-03 Non-Woven Fabric for Pavement Overlays

5-03.1 Description

(January 2018, City of Auburn)

This work consists of placing Non-woven Fabric for pavement overlays as shown in the Plans.

5-03.2 Materials

(January 2018, City of Auburn)

Asphalt Binder PG 64-22 per Section 9-02 (Bituminous Materials).

Fabric: Non-woven polypropylene material.

	Elastic Recovery, at 15 pounds wet or dry	100%
	Weight	3 to 5 oz./square yard
	Tensile Strength, either direction	80 pounds minimum
Elongation	50% minimum	
	Asphalt Retention	0.2 gallons/square yard minimum
	Melting Point	300 degrees or greater
Minimum Width	75 inches	

5-03.3 Construction Requirements

(January 2018, City of Auburn)

Equipment Requirements

All equipment, tools, and machines are subject to the approval of the Engineer.

Surface cleaning equipment shall be capable of removing oil, grease, and other objectionable materials from the pavement surface.

Application equipment shall consist of brooms and distributor. The distributor shall have a capacity of not less than 1,000 gallons. Asphalt shall be uniformly applied at the specified rate.

The distributor shall be equipped with a 10-foot spray bar and extensions, pressure pump and gauge, volume gauge located to be easily read by an inspector from the ground, a tachometer to accurately control the speed and spread of the asphalt, and two thermometers indicating continuous asphalt temperatures, (one of which is permanently installed).

An independent power unit developing a minimum of 25-psi pressure at the spray bar shall supply power for the pressure pump.

Surface Preparation

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

The pavement surface shall be dry and free of all foreign materials such as dirt, grease, oil, etc. Cracks shall be filled per Section 5-04.3(4)A1 (Crack Sealing). Holes shall be repaired per Section 5-04.3(4)C (Pavement Repair).

Where existing Asphalt Concrete Pavement depths are 2 inches or less, soil residual herbicide shall be applied to the roadway surface per Section 5-04.3(4)B (Soil Residual Herbicide).

Asphalt Application

The asphalt, with a minimum temperature of 290 degrees F, shall be sprayed uniformly at the rate of 0.25 to 0.30 gallons per square yard over the area to be fabric covered. The Contractor shall shield the preceding application to avoid laps and ridges where separate applications of asphalt meet. In inaccessible areas asphalt application may be provided by a suitable hand sprayer.

Fabric Application

The Contractor shall not begin fabric application until the Engineer has determined that all materials, equipment, and labor are ready.

Fabric cannot be moved once placed, therefore, the initial alignment is very important. If alignment is to be changed, the fabric shall be cut and realigned with an overlapping joint a minimum of 6 inches in the direction of traffic. Fabric shall be also lapped a minimum of 6 inches at transverse and longitudinal fabric joints. The lapped top 6 inches of fabric shall be folded back and asphalt shall be applied to the bottom fabric at the rate of 0.05 gallons per square yard. The top fabric shall be immediately replaced and the joint shall be broomed and squeegeed to form a smooth, tight lapjoint.

The fabric shall be broomed into the asphalt eliminating all air bubbles. Air bubble removal can be best accomplished by brooming from the center of the fabric toward the outer edges.

Membrane Curing

The entire surface of the fabric shall be pneumatically rolled until the fabric is well embedded into the asphalt.

Asphalt Concrete Overlay

The asphalt concrete overlay shall immediately follow the fabric installation in accordance with Section 5-04 (Hot Mix Asphalt (HMA)).

The fabric manufacturer's recommendations and requirements regarding asphalt temperature, protection of fabric, rolling temperature and techniques, etc., shall be followed.

A representative of the manufacturer shall be on the project at the beginning of fabric placement. The representative shall remain on the site until the Contractor has demonstrated to the Engineer an understanding required to satisfactorily perform the work.

The Contractor shall not place more fabric than can be overlaid in the same day.

No fabric, except that which is required for normal lapped joints, shall be exposed to traffic. If traffic must drive on the fabric, the fabric shall be dusted with sand to prevent vehicles from picking up the asphalt. Before resuming asphalt overlay, the sand shall be swept clean from the fabric.

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

5-04 Hot Mix Asphalt

5-04.1 Description

(January 2, 2018 WSDOT Amendment)

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

The manufacture of HMA may include additives or processes that reduce the optimum mixing temperature (Warm Mix Asphalt) or serve as a compaction aid in accordance with these Specifications.

(January 2017, City of Auburn)

Supplement this section with the following:

HMA Class 3/8-inch, Class 1/2-inch, and Class 3/4-inch are designated as leveling or wearing courses. HMA Class 1-inch is designated as a pavement base course. All mixtures are considered dense graded HMA.

5-04.2 Materials

(January 2, 2018 WSDOT Amendment)

The reference to "Warm Mix Asphalt Additive" is revised to read "HMA Additive".

(January 2018, City of Auburn)

Supplement this section with the following:

The crack sealant material shall be rubberized asphalt per Section 9-04.2(1) (Hot Poured Joint Sealants) and shall be listed in the WSDOT Qualified Products List (QPL).

(February 2018, City of Auburn)

Supplement this section with the following:

High RAP/Any RAS is not allowed. All references and sections specific to High RAP/Any RAS are deleted.

5-04.2(1) How to Get an HMA Mix Design on the QPL

(January 2, 2018 WSDOT Amendment)

The last bullet in the first paragraph is revised to read:

- Do not include HMA additives that reduce the optimum mixing temperature or serve as a compaction aid when developing a mix design or submitting a mix design for QPL evaluation. The use of HMA additives is not part of the process for obtaining approval for listing a mix design on the QPL. Refer to Section 5-04.2(2)B.

In the table, "WSDOT Standard Practice QC-8" is revised to read "WSDOT Standard Practice QC-8 located in the WSDOT Materials Manual M 46-01".

5-04.2(1)A2 High RAP/Any RAS – Mix Design Submittals for Placement on QPL

(February 2018, City of Auburn)

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

This section is deleted.

5-04.2(1)C Mix Design Resubmittal for QPL Approval

(January 2, 2018 WSDOT Amendment)

Item number 3 of the first paragraph is revised to read:

3. Changes in modifiers used in the asphalt binder.

5-04.2(2)B Using Warm Mix Asphalt Processes

(January 2, 2018 WSDOT Amendment)

This section, including title, is revised to read:

5-04.2(2)B Using HMA Additives

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 accordance with Section 5-04.3(6) 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

(March 9, 2016 APWA GSP)

Supplement this section with the following:

Porous Asphalt (PHMA/PWMA) Acceptance Infiltration Test

Contractor shall conduct infiltration tests on the finished PHMA/PWMA per ASTM C1701 at locations chosen by the Engineer. Newly-placed PHMA/PHWA shall have a minimum infiltration rate of 100 inches/hour. Infiltration tests shall be completed every 150 linear feet of roadway and conducted in accordance with ASTM C1701.

If the measured infiltration rate is less than 100 inches/hour, the Contractor shall conduct an additional four infiltration tests in line with the paver direction of travel. Two tests upstream and two tests downstream of the initial test locations shall be taken at distances of 20 feet and 40 feet. Results of the additional tests will be averaged. The Contractor shall conduct additional testing upstream and downstream to identify area to be removed. If the average infiltration rate is less than required remove and replace the failing section at the direction of the Engineer and at no cost to the Contracting Agency.

5-04.3(2) Paving Under Traffic

(January 2018, City of Auburn)

Supplement this section with the following:

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The Contractor shall keep intersections open to traffic at all times, except when paving an intersection or paving across an intersection. During such time, and provided that there has been an advance warning to the public, the intersection may be closed for the minimum time required to place and compact the HMA.

Before closing a road, advance warning signs shall be placed and signs shall also be placed marking the detour or alternate route.

5-04.3(3)A Mixing Plant

(January 2, 2018 WSDOT Amendment)

In item number 5 of the first paragraph, "WSDOT T 168" is revised to read "FOP for AASHTO T 168".

5-04.3(3)C Pavers

(January 2018, City of Auburn)

Replace the first sentence of the seventh paragraph with the following:

Reference lines for vertical control may be required.

Supplement this section with the following:

When laying HMA, the paver shall be operated at a uniform forward speed consistent with the plant production rate and roller train capacity to result in a continuous operation. The auger speed and flight gate opening shall be adjusted to coordinate with the operation.

5-04.3(3)D Material Transfer Device or Material Transfer Vehicle

(January 2017, City of Auburn)

Supplement this section with the following:

This section only applies to paving on State Routes and within the right of way of the State.

5-04.3(4) Preparation of Existing Paved Surfaces

(January 2, 2018 WSDOT Amendment)

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

Unless otherwise approved by the Engineer, use cationic emulsified asphalt CSS-1, CSS-1h, or Performance Graded (PG) asphalt for tack coat.

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor shall remove existing pavement markers, lane markers, and plastic markings.

5-04.3(4)A Crack Sealing

5-04.3(4)A1 General

(January 2018, City of Auburn)

The last 3 sentences of the fourth paragraph are deleted and replaced with the following:

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

Sealing shall be placed in an overband (simple band-aid) configuration whereas the Rubberized Asphalt sealant material is placed into and over the crack. Overbanding shall be controlled using an industrial squeegee to provide a smooth flush pavement surface with a minimum width of 2 inches and a maximum width of 4 inches. If, in the opinion of the Engineer, the Contractor's method of sealing results in an excessive amount of sealant causing a raised or bumpy pavement surface, sealing shall be stopped, corrected, and the method changed. Any excess overflow shall be cleaned from the pavement surface. Blending sand shall be used when, in the opinion of the Engineer, blotting the asphalt becomes necessary.

5-04.3(4)B Soil Residual Herbicide

(August 2016, City of Auburn)

Replace the first sentence of the first paragraph with the following:

The Contractor shall apply one application of an approved soil residual herbicide.

(August 2016, City of Auburn)

The first paragraph is supplemented as follows:

Any area that has not been paved within the 24 hour time limit or that has been rained on, shall be treated again at the Contractor's expense. The herbicide shall be applied uniformly in accordance with the manufacturer's recommendations.

5-04.3(4)C Pavement Repair

(January 2018, City of Auburn)

Supplement this section with the following:

HMA for pavement repair shall be HMA Class 1/2-inch PG 64-22 or as shown in the Plans. Pavement repair areas shown in the Plans, if any, are for reference only. The repair areas shall be as directed by the Engineer in the field.

5-04.3(6) Mixing

(January 2, 2017, WSDOT Amendment)

The first paragraph is revised to read:

The asphalt supplier shall introduce recycling agent and anti-stripping additive, in the amount designated on the QPL for the mix design, into the asphalt binder prior to shipment to the asphalt mixing plant.

The seventh paragraph is revised to read:

Upon discharge from the mixer, ensure that the temperature of the HMA does not exceed the optimum mixing temperature shown on the approved Mix Design Report by more than 25°F, or as approved by the Engineer. When an additive is included in the manufacture of HMA, do not heat the additive (at any stage of production including in binder storage tanks) to a temperature higher than the maximum recommended by the manufacturer of the additive.

5-04.3(7) Spreading and Finishing

(January 2017, City of Auburn)

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

Supplement this section with the following:

In all instances, wearing courses of 3 inches or greater shall be created using a maximum depth of 1 ½-inch lifts.

5-04.3(8) Aggregate Acceptance Prior to Incorporation in HMA

(January 2, 2017, WSDOT Amendment)

The following new paragraph is inserted after the first paragraph:

The Contracting Agency’s combined aggregate bulk specific gravity (Gsb) blend as shown on the HMA Mix Design will be used for VMA calculations until the Contractor submits a written request for a Gsb test. The new Gsb will be used in the VMA calculations for HMA from the date the Engineer receives the written request for a Gsb retest. The Contractor may request aggregate specific gravity (Gsb) testing be performed by the Contracting Agency twice per project. The Gsb blend of the combined stockpiles will be used to calculate voids in mineral aggregate (VMA) of any HMA produced after the new Gsb is determined.

5-04.3(9)A Test Sections

(February 2018, City of Auburn)

Supplement this section with the following:

All references to Statistical Evaluation for High RAP/Any RAS in this section, including subsections is deleted.

5-04.3(9)A1 Test Section – When Required, When to Stop

(January 2, 2017, WSDOT Amendment)

The following new row is inserted after the second row in Table 9:

VMA	Minimum PF _i of 0.95 based on the criteria in Section 5-04.3(9)B4 ²	None ⁴
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5-04.3(9)A2 Test Section – Evaluating the HMA Mixture in a Test Section

(January 2, 2017, WSDOT Amendment)

In Table 9a, the test property “Gradation, Asphalt Binder, and V_a” is revised to read “Gradation, Asphalt Binder, VMA, and V_a”

5-04.3(9)B3 Mixture Statistical Evaluation – Acceptance Testing

(January 2, 2017, WSDOT Amendment)

In Table 11, “V_a” is revised to read “VMA and V_a”

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5-04.3(9)B5 Mixture Statistical Evaluation – Composite Pay Factors (CPF)

(January 2, 2017, WSDOT Amendment)

The following new row is inserted above the last row in Table 12:

Voids in Mineral Aggregate (VMA)	2
----------------------------------	---

5-04.3(9)B7 Mixture Statistical Evaluation – Retests

(January 2, 2017, WSDOT Amendment)

The second to last sentence is revised to read:

The sample will be tested for a complete gradation analysis, asphalt binder content, VMA and Va, and the results of the retest will be used for the acceptance of the HMA mixture in place of the original mixture subplot sample test results.

5-04.3(10) HMA Compaction Acceptance

5-04.3(10)A HMA Compaction – General Compaction Requirements

(March 9, 2016 APWA GSP)

Supplement this section with the following:

Pneumatic tire rollers shall not be used for compaction of PHMA/PWMA.

The Contractor shall develop a roller pattern that will initially consolidate the pavement structure as well as target 15% to 18% final air voids (82% to 85% of maximum theoretical (Rice) density). The Contractor shall monitor compaction during placement of PHMA/PWMA with a pavement density gauge.

5-04.3(10)C1 HMA Compaction Statistical Evaluation – Lots and Sublots

(January 2, 2017, WSDOT Amendment)

The bulleted item in the fourth paragraph is revised to read:

- For a compaction lot in progress with a compaction CPF less than 0.75 using an LSL = 91.0, a new compaction 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.

5-04.3(10)C2 HMA Compaction Statistical Evaluation – Acceptance Testing

(January 2, 2017, WSDOT Amendment)

In the table, “WSDOT FOP for AASHTO T 355” is revised to read “FOP for AASHTO T 355”.

(August 2016, City of Auburn)

Replace the first sentence of the first paragraph with the following:

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

The nuclear moisture-density gauge results of all compaction acceptance testing and the CPF for each lot will be available to the Contractor within 2 working days after the results are received from the outside testing lab hired by the City.

5-04.3(10)C3 HMA Statistical Compaction – Price Adjustments

(January 2, 2017, WSDOT Amendment)

In the first paragraph, “WSDOT FOP for AASHTO T 355” is revised to read “FOP for AASHTO T 355”.

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

For each HMA compaction lot (that is accepted by Statistical Evaluation) which does not meet the criteria in the preceding paragraph, the compaction lot shall be evaluated in accordance with Section 1-06.2(2)D5 to determine the appropriate Composite Pay Factor (CPF).

The last two paragraphs are revised to read:

Determine the Compaction Price Adjustment (CPA) from the table below, selecting the equation for CPA that corresponds to the value of CPF determined above.

Calculating HMA Compaction Price Adjustment (CPA)	
Value of CPF	Equation for Calculating CPA
When CPF > 1.00	$CPA = [0.80 \times (CPF - 1.00)] \times Q \times UP$
When CPF = 1.00	CPA = \$0
When CPF < 1.0	$CPA = [0.40 \times (CPF - 1.00)] \times Q \times UP$

Where

- CPA = Compaction Price Adjustment for the compaction lot (\$)
- CPF = Composite Pay Factor for the compaction lot (maximum is 1.05)
- Q = Quantity in the compaction lot (tons)
- UP = Unit price of the HMA in the compaction lot (\$/ton)

5-04.3(12)A2 Longitudinal Joints

(January 2018, City of Auburn)

Replace the second paragraph including the numbered list with the following:

If a hot-lap joint is allowed, two paving machines shall be used; the pavement within 6 inches of the hot-lap joint will not be excluded from compaction testing; and construction equipment other than rollers shall not operate on any non-compacted HMA.

(August 2016, City of Auburn)

Add the following new section:

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

5-04.3(12)A3 Asphalt Concrete Pavement Butt Joints

The Contractor shall provide butt joints where the new asphalt concrete pavement meets the existing pavement as shown on the Plans in a manner to produce a smooth riding connection to the existing pavement. The depth of butt joint required shall be determined by the depth of new asphalt concrete pavement specified on the Plans, but not less than 2 inches. The surface elevation of new and existing Asphalt Concrete Pavement shall be the same at all butt joints.

All asphalt concrete joints shall be sealed with asphalt binder PG 64-22 per Section 9-02 (Bituminous Materials).

5-04.3(14) Planing Bituminous Pavement

(January 2018, City of Auburn)

Supplement this section with the following:

Planing of the existing pavement shall provide a surface that is slightly grooved or roughened to ensure a bond to the asphalt concrete pavement. The full depth beginning and end of each lane of planing shall be squared-off to form a uniform, transverse joint.

The Contractor shall provide for safe vehicle travel over existing manholes, valve boxes, catch basins, etc., for planed areas opened to traffic. Before opening the roadway to traffic, any delaminating of the planed asphalt surface shall be removed and the resulting holes patched with HMA. Also, the surface shall be cleaned by sweeping to remove dust and foreign matter. Where the plans call for a grind an overlay, the overlay work shall commence within 5 working days of completing the pavement grinding except where specified otherwise in the Contract.

Planing tailings may be used as trench backfill. Planing tailings may also be used as crushed surfacing when mixed with Crushed Surfacing per Section 9-03.9(3) (Crushed Surfacing) per Section 4-04.3(3) (Mixing).

(September 2016, City of Auburn)

Add the following new section:

5-04.3(17) Asphalt Cold Patch

“Asphalt Cold Patch” for temporary pavement patching and temporary pedestrian ramps or walkways shall be placed by the Contractor immediately upon the request of Engineer as required for maintenance of traffic as specified in Section 1-07.23(1) (Construction Under Traffic) in this document. “The Asphalt Cold Patch” shall be removed in its entirety before asphalt concrete pavement is placed.

(September 2016, City of Auburn)

Add the following new section:

5-04.3(18) Porous HMA

Subgrade Preparation and Permeable Ballast/Choker Course Placement

The Contractor shall prepare subgrade in conformance with Section 2-06 and in accordance to the Plans except that subgrade soil shall be compacted to 90 percent of the maximum density under the tests described in Section 2-03.3(14)D.

Protect gravel borrow subgrade to remain. Keep traffic off of the prepared subgrade during construction. Final 12-inch excavation of gravel borrow subgrade to be done at time of

placement of permeable ballast/choker course in order to protect the existing subgrade infiltration capabilities. Final excavation shall proceed as machinery is pulling back and travelling on preliminary grade as final grade is excavated.

To prevent compaction when installing the permeable ballast/choker course, these materials shall be dumped onto the subgrade from the edge of the installation and pushed out onto the subgrade. Subsequent load shall be dumped from the top of the sand filter sand and permeable ballast/choker course as the installation progresses.

Maintain flow diversion measures to prevent runoff and sediment from entering the work limits. Remove debris or sediment that has accumulated on the finished subgrade after viewing and before placing permeable ballast/choker course.

Place and compact permeable ballast/choker course aggregate to the grades indicated on the Plans in 6-inch maximum compacted lifts. Compaction shall be performed using a 10-ton vibratory drum compactor. The required compaction effort for each aggregate type shall be determined using a test strip. Compact the test strip using a predetermined number of passes with the compactor. Measure the density of the permeable ballast/choker course using a nuclear densometer gauge in backscatter mode. Perform additional passes with the roller and measure the aggregate density again. Repeat until the increase in density achieved with the additional passes of the compactor is less than or equal to 1.2 pounds per cubic foot on average. The number of passes with the compactor required to achieve this density shall be used to compact the remainder of the aggregate for the project. Compaction testing using the nuclear densometer gauge shall be used to confirm compaction at a frequency of one test per 2,000 square feet.

Protect placed aggregate from stormwater run-on and contamination from adjacent exposed soils.

Pervious Asphalt Concrete Pavement

The Contractor shall prepare and place asphalt pavement in conformance with Section 5-04.

Testing and acceptance requirements for Commercial HMA described in Section 5-04 of the Standard Specifications and of these Special Provisions shall apply to pervious asphalt concrete.

Transport the mix to the job site in clean vehicles with smooth dump beds that have been sprayed with a non-petroleum release agent. Limit the time of haul to avoid drainage of the asphalt to the bottom of the truck bed. The mix should be covered during transportation to prevent cooling and the formation of lumps.

Pavement shall be laid utilizing a self-propelled paving machine of 5-foot-minimum width and laser plane control or unit with an activated screed or strike-off assembly, capable of being heated if necessary, and capable of spreading and finishing the mixture without segregation for the widths and thicknesses required.

Roller shall be steel tandem drum-type, static-type of a 5 to 10 ton size. Maximum loading shall be 265 lbs. per linear inch of drum. The asphalt pavement shall be rolled a minimum of two rollings. The surface shall receive a final rolling utilizing a one-ton roller to remove all roller marks and imperfections in the surface.

Compaction shall be commenced when the asphalt mix temperature mix is at a range of 200 degrees to 240 degrees F.

Compacted depth of pervious asphalt pavement of any layer shall not exceed 0.25 foot.

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Allow the pervious pavement to cure for 24 hours before applying any vehicular traffic loading.

5-05 Cement Concrete Pavement

5-05.3(1) Concrete Mix Design for Paving

(January 2017, City of Auburn)

Supplement this section with the following:

Proportioning of Concrete

- A. The Contractor shall design the concrete mix determining the proportions of Portland cement, coarse and fine aggregate, and water necessary to produce a workable concrete meeting the following requirements:
 - (1) A compressive strength of 4,000 psi at 28 calendar days.
 - (2) A maximum slump of 3 inches for fixed form paving and 2 ½ inches for slip form paving.
 - (3) If air-entrained concrete is used, the mix shall contain no more than 6 percent entrained air as determined by AASHTO T 152.
- B. The Contractor shall design the mix on the basis of an absolute volume method such as outlined in the American Concrete Institute (ACI) Standard 211.1, "Recommended Practice for Selecting Proportions for Normal Weight Concrete".
- C. Water reducing, set retarding or superplasticizer chemical admixtures may be used at the option of the Contractor but subject to approval by the Engineer. The Contractor shall indicate in advance the particular type and name product of admixtures that they proposes to use and only such admixtures approved by the Engineer may be incorporated into the concrete mix. Admixtures selected for use shall be compatible with all other components of the concrete. The use of calcium chloride as an admixture will not be permitted.
- D. The Contractor shall submit for the record, not later than 15 calendar days prior to the start of paving operations, the proposed mix design including the aggregates grading to be used. The submission shall be accompanied with certified laboratory reports on the tests performed on the trial mixes. In the event that the concrete mix designed by the Contractor does not produce concrete of the specified strength and workability, the Contractor shall adjust the mix as required to meet the specified requirements at no additional cost to the City and shall submit new certified test results.
- E. In the event the Contractor elects to use an air-entraining admixture, they shall determine by trials the amount of the selected admixture that will produce concrete having the desired air content and the amount shall not be varied except as approved by the Engineer. The admixture shall be added during batching at the plant in accordance with the admixture manufacturer's recommendations.

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- F. The Contractor shall determine the proportions and batch weights for air-entrained concrete in the same manner as for regular concrete provided, however, that in making such adjustments as may be necessary by reason of air-entrainment, the minimum quantity of fine aggregate and the minimum quantity of water shall be used which will provide concrete of the required workability.
- G. Whenever the Contractor modifies the concrete mix, other than minor adjustments in the relative quantities of fine and coarse aggregates, they shall submit a copy of the new mix design, together with certified copies of tests results, to the Engineer.
- H. No change in the sources or character of the materials shall be made without due notice to the Engineer. No new materials shall be used until approved by the Engineer and until new trial mixes have been designed, tested and accepted.

5-05.3(8) Joints

(August 2016, City of Auburn)

The first paragraph is revised to read:

The Contractor shall submit for approval to the Engineer a Joint Plan at least 10 working days prior to the commencement of any pavement construction. Transverse and longitudinal joints shall be contraction or through joints (including construction joints). Joints shall be constructed in accordance with the detail shown in the Contract Plans and shall be of the type and at the locations indicated on the Contract Plans. The faces of all joints shall be constructed perpendicular to the surface of the cement concrete pavement.

5-05.3(8)D Isolation Joints

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Isolation joints are placed only where shown on the Plans. The joint alignment shall be at right angles to the Pavement Structure centerline unless otherwise specified in the Contract.

Longitudinal isolation joints shall be constructed with premolded material, ½-inch in thickness and conform to Section 9-04.1(2) (Premolded Joint Filler for Expansion Joints). They shall extend from 1 inch below the bottom of pavement to ¾ inch below the top of pavement.

The joint material shall be held accurately in place during the placing and finishing of the concrete by a bulkhead, a holder, metal cap or any other approved method. The joint shall be perpendicular to the paved surface and the holder shall be in place long enough to prevent sagging of the joint material.

A wood filler strip or metal cap shall be placed on the top of the premolded joint filler to form the groove ¾ inch deep, and shall remain in place until after the finishing and the concrete is sufficiently set to resist sloughing in the groove. The joint filler shall be stapled together at the ends to preserve continuity.

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Immediately after removal of side forms, the edges of the pavement shall be carefully inspected and wherever the joint filler is not fully exposed, the concrete shall be chipped down until the edge of the filler is fully exposed for the entire depth.

(August 2016, City of Auburn)

Add the following new section:

5-05.3(8)E Sealing through Joints

After the pavement is cured and before carrying any traffic, the space left by the removal of the wood filler strip or the metal cap above the top of the expansion joint filler strip shall be thoroughly cleaned of all loose material. The ¾ inch wide groove shall be completely free of any projecting concrete from the sides and the groove shall be continuous across the slab to each edge. It shall then be filled level with the pavement surface with joint sealant meeting the requirements of Section 9-04.2 (Joint Sealants).

The joint sealant material shall be heated and placed in accordance with the manufacturer's instructions. Burned material will be rejected. The through joint groove shall be dry at the time of pouring the sealing compound.

(August 2016, City of Auburn)

Add the following new section:

5-05.3(9) Integral Cement Concrete Curb on New Pavement

Integral doweled curb on new pavement shall be constructed as shown in the Contract Plans.

The pavement width shall be extended to the back of the curb. The pavement where the curb is to be placed shall be roughened or otherwise treated so that a permanent bond can be secured between the curb and the pavement. Curing compound shall not be used on the pavement where the curb is to be constructed.

Curb shall be constructed in accordance with Section 8-04.3(1) (Cement Concrete Curbs, Gutters and Spillways) and the Contract Plans.

5-05.3(10) Tie Bars and Corrosion Resistant Dowel Bars

(August 2016, City of Auburn)

The first paragraph is revised to read:

Epoxy-coated tie bars shall be placed at all longitudinal contraction and construction joints, in accordance with the requirements shown in the Contract Plans. In addition, epoxy-coated dowel bars shall be installed when concrete curbs are constructed on top of concrete pavement in accordance with the requirements shown in the Contract Plans.

(January 2017, City of Auburn)

Supplement this section with the following:

Curb dowels shall be placed at 28 inches on center in the fresh concrete pavement. Curb dowels shall be placed in all segments of curbing that is full depth and shall be placed in transition areas for curb cuts in which a minimum of 1 inch of cover from the top of the finished curb can be achieved.

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Dowel bars shall be set while the concrete is still plastic enough to not require hammering them into place.

(September 2016, City of Auburn)

Add the following new section including subsections:

5-05.3(23) Cement Concrete Pavement for Alley

This work consists of placing Cement concrete pavement for alleyways.

5-05.3(23)A Pavement and Alley Requirements

(August 2016, City of Auburn)

Cement concrete pavement for alleys shall meet the requirements of Section 5-05 (Cement Concrete Pavement). Alleys shall meet the requirements for driveways in Section 8-06 (Cement Concrete Driveway Entrances).

5-05.3(23)B Extra Concrete for Alley Approach Ramp

(August 2016, City of Auburn)

When constructing and finishing cement concrete Alley pavement, the Engineer may in some cases require the Contractor to place additional concrete over the surface of the Alley pavement to serve as an integral ramp or vehicular access to abutting private property. Additional thickness for such ramps shall not exceed 6 inches above the original planned concrete surface at any point, and will be addressed in accordance with Section 1-04.4 (Changes).

Supplement Division 5 with the following:

(March 9, 2016 APWA GSP)

5-06 Pervious Concrete Pavement

5-06.1 Description

This work shall consist of constructing a pervious cementitious pavement composed of portland cement concrete on a prepared subgrade or subbase in accordance with these Specifications and in conformity with the lines grades, thicknesses, and typical cross-sections shown in the Plans or established by the Engineer.

5-06.2 Materials

Materials shall meet the requirements of the following sections:

Portland Cement	9-01
Aggregates for Portland Cement Concrete	9-03.1
Premolded Joint Filler for Expansion Joints	9-04.1(2)
Curing Materials and Admixtures	9-23
Water	9-25

Hydration stabilizing admixtures shall conform to the requirements of Section 9-23.6(3) or 9-23.6(5).

Synthetic Fibers for Concrete

When specified synthetic fibers to be included in the mix for portland cement concrete shall conform to the requirements of ASTM D 7508/7508M.

5-06.3 Construction Requirements

5-06.3(1) Pervious Concrete Construction Meeting

Prior to the start of construction of the pervious concrete pavement section, including excavation of the pavement section, the Contractor shall coordinate, schedule and attend a preconstruction meeting for the pervious concrete pavement. The following are required to attend the meeting:

1. Contracting Agency representative.
2. General Contractor's representative(s).
3. Engineer of Record for the pervious concrete pavement.
4. Concrete placement lead person(s).
5. Associated Subcontractor's representative.
6. Pervious concrete Supplier's representative.
7. Material Testing Laboratory's representative.

The meeting shall cover all aspects of the work including, but not limited to:

1. Submittals.
2. Short and long term schedule.
3. Inspection of the Work.
4. Protection of the Work.
5. Pervious concrete placement.
6. Curing.
7. Materials.
8. Specifications.
9. Testing.
10. Test panel and JMF.
11. Acceptance criteria.

5-06.3(2) Pervious Concrete Mix Design

The Contractor shall provide a mix design for pervious concrete and shall submit the mix design to the Engineer in writing. Pervious concrete shall not be placed in the test panels without a mix design that has been reviewed and accepted by the Engineer.

5-06.3(2)A Mix Design Criteria

The Contractor shall include the following elements and results of the described procedures in the proposed mix design:

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1. A unique identification number for the mix design that is approved for the Job Mix Formula (JMF).
2. Portland cement shall be Type I, Type II, Type I-II Type IP, or Type IS.
3. The cementitious content, including pozzolans if used, shall be a minimum of 480 pounds per cubic yard.
4. The mix shall incorporate a hydration stabilizing admixture.
5. Synthetic microfibers may be utilized at the manufacturer's recommended dosage rate.
6. The water / cement ratio shall not exceed 0.35.
7. No more than 25 percent of portland cement in the mix, by weight, may be replaced by fly ash, ground granulated blast furnace slag, or a combination of both.
8. Coarse aggregate shall conform to Section 9-03.1(4), AASHTO Grading No.8.

5-06.3(2)B Job Mix Formula (JMF)

The approved mix design established through the approved test panel becomes the JMF.

5-06.3(3) Submittals

In accordance to Section 1-05.3, the Contractor shall submit the following items to the Engineer for acceptance prior to placing any pervious concrete pavement:

1. The source of all materials proposed for use in constructing pervious concrete pavement.
2. Batch weights for all constituents of one (1) cubic yard of the proposed pervious concrete mix.
3. The specific gravity (SSD) of all aggregates to be used in the proposed pervious concrete mix.
4. The proposed gradation of coarse aggregates used in pervious concrete.
5. The designed volume in cubic feet of all proposed components for 1(one) cubic yard of the proposed pervious concrete mix.
6. The design water / cement ratio of the proposed mix design.
7. The fresh density of the proposed pervious concrete mixture as determined by ASTM C1688.
8. Catalogue cuts and Certificates of Compliance for all proposed admixtures.
9. Mill Certification of the portland cement and pozzolans, if used, for the current lot to be used in the production of the proposed pervious concrete mix. The Contractor shall maintain this submittal throughout the duration of the project as lots change.
10. Current certification by the National Ready Mix Concrete Association (NRMCA) for the batch plant(s) to be used in the production of pervious concrete.
11. Current certifications by the NRMCA for the trucks to be used in transporting pervious concrete from the batch plant to the point of placement.
12. Qualification documentation for current certifications by the NRMCA for the Contractor's personnel who will be installing pervious concrete. See Section 5-

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06.3(10)A. Valid acceptable documentation is the NRMCA issued wallet card or certification certificate.

13. At the time of delivery of the material to the site, the Contractor shall provide an original Certificate of Compliance for each truckload of pervious concrete. The Certificate of Compliance shall include information noted in Section 6-02.3(5)B. If the Certificate of Compliance from the concrete producer is not provided to the Engineer upon delivery, the truckload shall not be placed.

5-06.3(4) Equipment

Equipment necessary for handling materials, mixing, delivering, and performing all parts of the Work, shall be in good repair, designed for the task, and operated by trained and qualified personnel.

5-06.3(4)A Batching Plant and Equipment

Pervious concrete shall be centrally mixed in a plant with a current NRMCA certification.

5-06.3(4)B Mixer Trucks

Pervious concrete shall be transported to the location by truck mixers, non-agitating trucks shall not be used for the transport of pervious concrete. The drums on mixer trucks used to transport pervious concrete shall have fins that are not excessively worn, damaged or have excessive concrete buildup. Mixer trucks shall have a current NRMCA certification.

5-06.3(4)C Side Forms

Pervious concrete shall be placed in stationary forms. If pervious concrete is to be placed against a curb, previously placed concrete, or other existing structure, they may be used as a side form for the pervious concrete paving. Forms for pervious concrete shall be made of steel or wood and shall be in good condition, and shall be capable of being anchored in place so that they will be true to grade, line and slope. Forms shall be sufficiently rigid to maintain specified tolerances and capable of supporting concrete and mechanical concrete placing equipment. Forms shall be in good condition, straight, clean, free of debris, non-adherent rust and hardened concrete.

Set, align, and brace forms so that they hardened pavement meets the lines, grades and slopes as shown in the drawings. Apply form-release agent to the form face, which will be in contact with concrete, immediately before placing concrete. Form release agent shall not be applied to previously placed concrete. Previously placed pavement shall be protected from damage.

The Contractor shall inspect all forms for line, grade and slope. No pervious concrete shall be placed until the forms have been inspected by the Engineer.

5-06.3(4)D Finishing Equipment

Finishing equipment for pervious concrete paving shall be designed for the intended work, shall be clean and in good operating condition.

Equipment used for striking off the pervious concrete shall leave a smooth surface at the planned grades and shall not cause excess paste to be left on, or drawn to, the surface. If rollers or spinning screeds are used to compact, they shall be of sufficient weight and width to compact the pervious concrete uniformly through its depth and to grade without marring the surface. Equipment used for compacting pervious concrete shall not cause the surface

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to close or otherwise clog and shall produce a surface that is free of ridges or other imperfections. Tools used for producing joints shall be designed and manufactured for the purpose and shall not otherwise damage or mar the surface.

Vibrating equipment shall not be used for placement or compaction of pervious concrete.

5-06.3(5) Measuring and Batching Materials

Measuring and batching materials for pervious concrete pavement shall conform to the requirements of Section 5-05.3(4).

5-06.3(6) Acceptance

For acceptance, pervious concrete pavement will be divided into lots as follows: A single lot (lot) is represented by the lesser of: one (1) day's production or 360 square yards of pervious concrete in place. Where the Contractor has more than one crew placing pervious concrete, lots will be associated with each crew. Representative lot size will be determined to the nearest square yard. If no sample is taken on a Day, that Day's quantities may be included in the next or previous Day's lot(s). The Engineer may isolate an area of pervious concrete within a lot that is deemed to be defective in any way and such an area will be considered to be a new lot for purposes of acceptance. New lots determined in this manner shall be extended as necessary such that they are bounded by planned joints. Acceptance of a lot of pervious concrete pavement will be based on the following criteria:

1. Grade: Conform to the dimensions, lines, slopes and grades specified on the plans. Pervious concrete pavement shall be true to planned grades and shall not deviate from grade more than $\frac{1}{4}$ inch in ten (10) feet. Where abutting existing facilities such as sidewalks, walkways, curbs, driveways or other pavements, the pervious concrete shall be flush.
2. Conformance to JMF: The pervious concrete pavement used shall conform to the mix design for the JMF within the limits as set forth in Section 6-02.3(5)C and as determined from the accepted test panel.
3. Compacted Thickness and Average Hardened Density: After a minimum of seven (7) calendar days of curing, remove and measure three (3) cores from each lot. Remove cores in accordance with ASTM C42/C42M. Measure the length of each core in accordance with ASTM C1542/1542M. No single core shall be less than $\frac{3}{4}$ inch of the design depth on the drawings. The average of all cores from a lot shall be within minus $\frac{3}{8}$ inch of the design depth on the plans. After length is measured, measure hardened density of each core in the lot in accordance with ASTM C1754/C1754M. The hardened density from a lot must be within +/- 5 percent of the average hardened density of the JMF (approved test panel).
4. Infiltration Rate: The infiltration rate at any single test point shall not be less than 100 inches per hour.
5. Fresh Density: The fresh density of each lot will be measured by ASTM C1688 at the point of placement shall be within +/- five (5) pounds per cubic foot of the fresh density determined from the JMF (approved test panel).
6. Appearance: The appearance of each lot shall be consistent with the JMF (approved test panel). The pervious concrete pavement shall have a consistent surface texture, shall not be raveled, shall be free of ridges or other surface

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imperfections, shall have joints that are in the specified location and are constructed per specification, and shall be free of cracks.

Testing for acceptance will be performed by the Contractor.

5-06.3(6)A Infiltration Rate of Placed Pavement

The infiltration rate of the pervious concrete shall be determined at four (4) random locations within each lot. The locations for conducting infiltration tests will be determined by the Engineer. The Contractor shall coordinate and schedule testing with the Engineer a minimum of five (5) Working Days in advance. The infiltration rate on the finished surface will be determined in accordance with ASTM C1701, except the infiltration ring diameter may be 12-inches to 24-inches in diameter. The infiltration test will be conducted after a minimum of seven (7) calendar days of curing has occurred.

If the measured infiltration rate is less than 100 inches/hour at any test location, the Contractor may perform additional infiltration tests for the purpose of assessing overall infiltration performance and/or determining a defective lot in accordance with Section 5-06.3(6). The determination of a defective lot, or lots, and the extent(s), will be by the Engineer. The cost of all testing shall borne by the Contractor.

5-06.3(7) Rejection

Pervious concrete may be rejected by the Contractor for any reason.

A truckload of pervious concrete will be rejected if the Certificate of Compliance is not provided at the time of delivery of the material to the site. See Section 5-06.3(4)B.

Pervious concrete that is improperly cured or is allowed to freeze during the initial seven (7) day curing period will be rejected.

Pervious concrete pavement that does not meet the acceptance criteria put forth in Section 5-06.3(6) will be rejected by the Engineer on a lot by lot basis.

During the removal process of the rejected pavement, The Contractor shall implement measures to protect the adjacent pervious concrete pavement to remain. If pervious concrete pavement becomes damaged by the Contractor during removal of the rejected pavement then additional pavement areas may be rejected by the Engineer to the next planned joint.

Fresh pervious concrete that has been rejected by the Engineer, or the Contractor, shall not be placed, or shall be removed and replaced, at no additional cost.

5-06.3(8) Mixing Pervious Concrete

Batch, mix and deliver pervious concrete in compliance with ASTM C94/C94M except that pervious concrete shall not be transit mixed or shrink mixed. If water is added to the mix after it is delivered on site, the fresh density for the pervious concrete shall meet the requirements of the approved JMF referenced in this section.

5-06.3(8)A Limitations of Mixing Pervious Concrete

Mixing and placing concrete shall be discontinued when a descending air temperature in the shade away from artificial heat reaches 40° F and shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 40° F.

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The temperature of fresh pervious concrete shall not be less than 55° F, nor more than 90° F when placed.

Pervious concrete shall not be mixed with aggregates at less than 32° F.

5-06.3(9) Subgrade Preparation And Base

Prepare and protect subgrade in accordance with Section 2-06.

Prepare and protect subbase in accordance with Section 4-04.

5-06.3(10) Placing, Spreading, Finishing, Edging, Tolerances, and Curing

Pervious concrete shall not be placed, compacted or finished when the natural light is inadequate, unless an adequate lighting system is in operation. The adequacy of light will be determined by the Engineer.

Wet the surface of the subbase with water immediately before placing pervious concrete. Deposit concrete either directly from the transporting equipment or by conveyor on the subbase, unless otherwise specified. Pervious concrete shall not be placed on frozen subbase. Deposit concrete between the forms to an approximately uniform height. Spread the concrete using mechanized equipment or hand tools. Vibrating equipment shall not be used for spreading pervious concrete.

Strike off concrete between forms using a form-riding paving machine, roller screed, or spinning screed.

Compact concrete to a uniformly dense structure without clogging the surface with paste.

Finish the pervious concrete to a uniform, open-textured surface to match the appearance of the approved JMF test panel.

Edges shall be hand tooled to a radius of ¼ inch.

Curing materials for pervious concrete shall be in place no more than 20 minutes of discharge onto the subbase. The pavement surface and all exposed edges shall be completely covered with sheet curing materials conforming to Section 9-23.1. The curing material shall be secured at all exterior edges and interior laps without damaging the pervious concrete. The method of securing the curing material shall prevent wind from removing the sheet and from blowing under the sheet across the surface of the concrete. Cure the pavement for a minimum of seven (7) uninterrupted days.

All traffic (foot and vehicular), staging, stockpiling or other work shall be kept off of the pervious concrete pavement during the curing period. Any testing for acceptance shall not occur until the end of the curing period.

Protect concrete from freezing and cold weather in accordance with 5-06.3(12).

5-06.3(10)A Contractor's Qualifications

The contractor shall employ no less than one (1) National Ready Mixed Concrete Association (NRMCA) certified Pervious Concrete Craftsman for each crew, who must be on site, over-seeing the work during all pervious concrete placement; or employ no less than three (3) NRMCA Certified Pervious Concrete Installers per crew, who must be on site working during each pervious concrete placement. The minimum number of certified individuals must be present on each crew for every pervious concrete placement, including

the test panel placements, and a certified individual must be in charge of the placement crew and procedures.

If, in the opinion of the Engineer, personnel used for installing pervious concrete are unqualified, inattentive to quality, or unsafe, they shall be removed or reassigned from installation of pervious concrete at the written request of the Engineer.

5-06.3(10)B Test Panel

Production placement of pervious concrete shall not occur until the Contractor has completed a test panel of pervious concrete pavement that meets all of the acceptance criteria described herein and is accepted by the Engineer.

The Contractor shall construct a test panel utilizing a minimum of seven (7) cubic yards of pervious concrete. If multiple pavement section depths are shown on the plans, a test panel shall be constructed for each pavement section depth/thickness. The width of the test panel shall have a width no smaller than the greatest width to be used during the construction and installation of the pervious concrete onsite. The test panel(s) shall include at least one joint and at the spacing specified on the plans and specifications. Test panels may be placed non-contiguously. The test panel(s) shall be equivalent and representative of the production pervious concrete pavement in all aspects including subbase, depth, joints, method of placement, curing, and preparation. Construction and evaluation of the test panel shall occur as follows:

1. Notify the Engineer at least ten (10) Working Days before installing pervious concrete test panels.
2. Coordinate the location of the test panel with the Engineer.
3. Install the test panel in accordance with the Specifications and Drawings.
4. Notify the Engineer when the test panel is ready for inspection and acceptance testing.
5. Acceptance testing will be conducted in accordance with Section 5-03.3(6).
6. Remove, replace, and dispose of any unsatisfactory portions of test panels as determined by the Engineer, at no additional cost to the Contracting Agency.

Failure to install acceptable test panel(s) of pervious concrete will indicate an unapproved test panel(s) and require new test panel(s) for review.

The completed and approved test panel(s) shall establish the JMF.

The approved test panel shall meet the requirements of Section 5-03.3(6).

Upon successful completion of the infiltration test, unless otherwise determined by the Engineer, three (3), cores will be cut in accordance with ASTM C42 and will be used to validate the mix design under the acceptance criteria of Section 5-06.3(6). Cores shall be taken at the same location where the infiltration test was conducted. The average hardened density of the cores shall be the hardened density used for the JMF. The hardened density of each core used for determining the JMF shall be within five (5) percent of the mean value of the three cores. Core holes shall be filled by the Contractor with pervious concrete meeting the proposed JMF and shall match adjacent pavement color, texture and grade.

The completed and accepted test panels shall be maintained and protected throughout the duration of the Work and may not be demolished and disposed of without written

permission from the Engineer. If the test panel(s) is incorporated into the Work, it shall remain in place accepted as a single lot.

5-06.3(11) Joints

Construct joints at the locations, depths and with horizontal dimensions indicated on plans unless noted otherwise in this section. Joints shall be of three (3) types: construction, contraction, isolation. Construction joints shall be formed at the end of a day's work or when necessary to stop production for any reason. Contraction joints shall be used to control random cracking. Isolation joints shall be used where the pervious concrete abuts existing facilities or where shown on the Plans.

5-06.3(11)A Construction Joints

Construction joints shall be located at the location of a planned contraction or isolation joint. Construction joints are to be formed by placing a header between the forms, at right angles, to the full depth of the finished pervious concrete, and set to the height of the forms. Pervious concrete shall be placed against the header and compacted and finished as normal, including edging. The header shall remain in place until paving resumes.

5-06.3(11)B Contraction Joints

Contraction joints (transverse and longitudinal) shall be constructed at the locations and intervals shown in the Contract. Contraction joints shall be a depth of 1/3 the thickness of the pervious concrete pavement section and have a width of no more than 1/4 inch. Contraction joints shall not be saw cut unless specifically noted on the Plans. Saw cut joints shall have a minimum width of 1/8 inch. Plastic formed contraction joints shall be tooled on both sides of the joint with a radius of 1/2 inch. Tool joint to the depth and width in fresh concrete immediately after the concrete is compacted.

5-06.3(11)C Isolation Joints

Isolation joints shall be placed where the pervious concrete abuts existing structures or where shown on the Plans. Isolation joints shall continue through the depth of the pervious concrete using a 3/8 inch premolded joint filler meeting the requirements of Section 9-04.1(2). Isolation joints may be formed by forming a construction joint and affixing the premolded joint filler against one side of the joint and placing fresh pervious concrete against it. Isolation joints and filler shall be flush with the surrounding pervious concrete and shall not deviate from the acceptance criteria for smoothness as shown in Section 5-06.3(6). The edge of the pervious concrete adjacent the premolded joint filler shall be hand tooled with a 1/2 inch radius.

5-06.3(12) Cold Weather Work

When concrete is being placed and the ambient air temperature is expected to drop below 35° F during the day or night, the Contractor shall protect the concrete from freezing. The Contractor shall submit for approval a Cold Weather Plan prior to placing concrete when ambient air temperature below 35° F is anticipated, or when requested by the Engineer. When a Cold Weather Plan is required, pervious concrete shall not be placed without an approved Cold Weather Plan.

Under the Cold Weather Plan, the Contractor shall, provide a sufficient supply of straw, hay, blankets, or other suitable blanketing material and spread it over the pavement to a sufficient depth to prevent freezing of the concrete. The blanket material shall be placed on

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top of the sheet curing materials and covered with a layer of burlap or plastic sheeting, weighted or anchored to prevent the wind from displacing the insulation. At no time during the curing period shall the temperature of the pervious concrete be allowed to drop below 55° F. The Engineer may require recording thermometers if daytime temperature is below 50°. The curing period may be extended by the Engineer if the pervious concrete temperature has been allowed to drop below 55° F.

The cold weather protection shall be maintained for seven (7) days. Pervious concrete that has frozen during this period will be rejected.

5-06.3(13) Protection of Pervious Concrete Pavement

As part of the Construction Stormwater Pollution Prevention plan (SWPPP), rain runoff, surface water of any kind and sediment shall be prevented from entering the area of pervious concrete construction, including excavation, until the pervious concrete application has cured, testing is completed and determined to meet specifications and the adjacent areas that sheet flow/drain onto the pervious concrete are permanently stabilized from erosion and plantings are established. Once pavement is placed, flow diversion measures and protective covers shall continually be maintained until adjacent areas are permanently stabilized and concrete has been accepted. Construction vehicular traffic shall not be allowed onto the pervious concrete pavement.

Do not open the pavement to vehicular traffic until the concrete has cured for at least seven (7) uninterrupted days, testing has been completed, and the pavement has been accepted by the Engineer.

The Contractor shall take every precaution to protect the pervious concrete pavement from damage, including the introduction of foreign materials to the surface, throughout the course of the work. Pervious concrete pavement that is damaged or has been adversely impacted by the introduction of foreign materials shall be remediated to the satisfaction of the Engineer or rejected and replaced to the nearest joint.

Supplement Division 5 with the following:

5-07 Textured Asphalt

5-07.1 Description

(August 2016, City of Auburn)

This work consists of texturing and coloring asphalt concrete pavement in areas indicated on the Contract Drawings. Work includes imprinting the hot mix asphalt surface with a textured finish, and coating the finish surface with a colored epoxy material. All imprinting work shall be performed by an Authorized Street Print Applicator or substituted in its entirety with an approved equivalent described here in accordance with 1-06.7(4) (Proposed Equivalents).

5-07.2 Materials

(August 2016, City of Auburn)

The following specifications and methods are referenced as part of these Special Provisions.

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American Society for Testing and Materials

- 1) ASTM D-4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Tester
- 2) ASTM D-4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
- 3) ASTM D-2697 Standard Test Method for Volume of Nonvolatile Matter in Clear or Pigmented Coatings

5-07.2(1) Coating Material

(August 2016, City of Auburn)

The coating material shall be a premium high performance material consisting of epoxy modified acrylic polymers blended with sand and aggregate, "StreetBond SP150E," or an approved equivalent.

5-07.2(2) Colorant

(August 2016, City of Auburn)

The colorant shall be a highly concentrated, high quality, UV stable pigment blend designed to be added to coating material to provide color to the coating. The colorant shall be StreetBond Colorant, with the color "Bedrock," and the same colorant shall be used in each coating layer applied to the asphalt surface. One pint of StreetBond Colorant shall be used with one 5-gallon pail of StreetBond SP150E Coating Material.

5-07.3 Construction Requirements

(August 2016, City of Auburn)

The Contractor shall follow the latest StreetPrint Application Procedures as issued by Integrated Paving Concepts Inc.

5-07.3(1) Textured Asphalt Terms

(August 2016, City of Auburn)

Textured Asphalt Pavement shall be described as "StreetPrint Pavement Texturing", "StreetPrint", or approved equivalent pavement on the Contract Plans and documents related to the project.

Pavement Texturing is defined as a finishing system, which treats the surface of Hot Mix Asphalt (HMA) by imprinting fully compacted asphalt pavement with "grid style" or other styles of depressions to replicate, in relief, the concrete grout depressions common to hand-laid brick or cobblestone, or any other design as shown on the Plans or described in the specifications, and coating the imprinted asphalt surface using an approved surfacing system. This system shall be the "StreetPrint" system utilizing the "StreetBond HW Surfacing System" or an approved equivalent.

Imprinting Asphalt Concrete Pavement is defined as pressing flexible templates into hot, **fully-compact**ed, Asphalt Concrete Pavement to create the appearance of grout lines or patterns in the asphalt surface.

Surfacing System is defined as multiple applications of premium coating material, and shall be StreetBond HW Surfacing System applying StreetBond SP150E.

"Authorized StreetPrint Applicator" is a contractor licensed by Integrated Paving Concepts Inc., (Tel. 800-688-5652), and shall have a foreman, supervisor or lead hand on

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site who has successfully completed a StreetPrint Level 1 or Level II Accreditation Training Program.

5-07.3(2) Certification

(August 2016, City of Auburn)

The contractor shall furnish certification of test results showing that surfacing materials has the following properties:

1. Adhesion (PLI) To an Asphalt substrate (ASTM D-4541) Result: Cohesive failure of asphalt prior to adhesive failure.
2. Taber Abrasion H-10(Dry Wear Index) (ASTM D-4060). Maximum of 0.98 grams/1000 cycles after 7 calendar days cure.
3. Solids by Volume (%) (ASTM D-2697). Minimum = 24 +/-2%.

5-07.3(3) Equipment

(September 2016, City of Auburn)

All equipment, tools, and machines used to perform the work shall be maintained in satisfactory working order at all times. Descriptive information on the surfacing application equipment shall be submitted to the Engineer for approval not less than 5 working days before the work starts.

5-07.3(3)A Templates

(August 2016, City of Auburn)

Templates shall be manufactured from flexible, woven wire rope cut and welded into the patterns used for imprinting Asphalt Concrete Pavement.

5-07.3(3)B Reciprocating Infra-Red Heater

(September 2016, City of Auburn)

Reciprocating Infra-Red Heater shall be used to apply heat to the asphalt surface in designated areas for imprinting. The heating equipment used shall allow continuous monitoring of the surface temperature to ensure the asphalt does not over heat and burn. Equipment that is specifically excluded from this section shall not be used for reheating of the asphalt in any form, including direct flame heaters.

5-07.3(3)C Vibratory Plate Compactor

(August 2016, City of Auburn)

Vibratory Plate Compactor shall be used for pressing the wire templates into the heated asphalt to create the specified pattern.

5-07.3(3)D Spray Equipment

(August 2016, City of Auburn)

Spray Equipment shall be capable of applying the coating material to the asphalt surface in a controlled thin film.

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5-07.3(4) Construction

5-07.3(4)A Surface Preparation Prior to Coating

(August 2016, City of Auburn)

The asphalt surface shall be free of dirt, debris, oil or anything that will adversely affect the adhesion of the new coating system. All loose material on the asphalt surface shall be removed and prior to applying the coatings, the asphalt surface shall be completely dry.

5-07.3(4)B Layout and Imprinting

(August 2016, City of Auburn)

Layout and imprinting of the pattern into the surface of the HMA is shown in the Plans.

5-07.3(4)C Heating of Asphalt

(August 2016, City of Auburn)

Direct flame heaters shall not be allowed for the purpose of heating the asphalt. Hot air portable heaters may only be used for heating isolated areas. The temperature of the asphalt surface shall be regularly monitored during the reheating process. The asphalt pavement shall be adequately heat soaked (softened) to a depth of at least 1/2 inch, without burning the asphalt. If during the re-heating process the surface is overheated and begins to emit black smoke, the contractor shall stop work immediately. The damaged surface area shall be removed by milling the upper 1-1/2 inch and replaced by a partial depth patch with the topmost layer matching the existing surface layer mix and binder. Patching and all work associated with the repair effort shall be at no cost to the City.

5-07.3(4)D Sample Area

(August 2016, City of Auburn)

Prior to installing the Surfacing System to the entire project, a sample area shall be completed. Upon approval from the Engineer for appearance of color, the Contractor may proceed with completing the Surfacing System installation.

5-07.3(4)E Coating Installation

(August 2016, City of Auburn)

The Contractor shall apply the Surfacing System only when the air temperature is at least 50°F and rising, and will not drop below 50°F within 8 hours of application of the coating material. There should be no precipitation expected within 2 hours after applying the final layer of coating material.

5-07.3(5) Quality Control

5-07.3(5)A General

(August 2016, City of Auburn)

At all times the Contractor shall have a representative familiar with all manufacturer's recommendations for products used on site, or if the StreetPrint process is utilized then a foreman, supervisor or lead hand who is registered with Integrated Paving Concepts, Inc., as a Level 1 or Level II Accredited StreetPrint Installer shall be onsite at all times during

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installation; certification must be submitted for approval 5 working days prior to commencing construction.

5-07.3(5)B Stamping Depth

(August 2016, City of Auburn)

Upon completion, the patterned area shall be checked for proper depth of print. 98% of the stamped area shall have an imprint depth of 1/4 inch. If any sample areas have an imprint depth that is less than 1/4 inch, those areas shall be re-heated and re-stamped prior to applying the coatings.

5-07.3(5)C Coating Thickness

(August 2016, City of Auburn)

The total thickness shall be monitored by measuring the volume of material used per unit area. For this project an average coverage area for the combined coating layers shall be per manufacturer's recommendation or 150 square feet coated per 5-gallon pail of StreetBond SP150E material used. The Contractor shall provide proof of material usage.

5-07.3(5)D Protection of Existing Pavement Markings

(August 2016, City of Auburn)

The Contractor shall protect all existing pavement markings from contamination from the asphalt sealant including any existing markings on curbing. All disturbed pavement markings shall be returned to their original condition, at no additional cost to the City as specified in Section 8-22 (Pavement Markings).

Supplement Division 5 with the following:

5-08 Stamped Colored Cement Concrete

5-08.1 Description

(August 2016, City of Auburn)

This work shall be for the completion of stamped concrete medians as indicated on the Plans.

5-08.2 Materials

(August 2016, City of Auburn)

Stamped concrete shall be air entrained concrete Class 4000 in accordance with the requirements of Section 6-02.

Solomon Liquid Colors Inc. colorant (Solomon Colors, PO Box 8288, Springfield, Illinois 62791. Phone (800) 624-0261 / (217) 522-3112. Fax (800) 624-3147 / (217) 522-3145. Web Site www.solomoncolors.com. E-Mail sgs@solomoncolors.com), or approved equivalent, shall be added to the concrete mixture per the following specifications:

Colorant Material Specifications:

- Color: ColorFlo Liquid Color
- Name: Dark Redwood

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- Number: 489
- Compliance: ASTM C 979.
- Material: Predispersed iron oxide pigments containing high pigment solids in aqueous base liquid.

Produce uniform and consistent color.

- Permanent, inert, stable to atmospheric conditions, sunfast, weather resistant, alkali resistant, water insoluble, lime proof, and nonbleeding.
- Free of deleterious fillers and extenders.
- Particle Size: 95 to 99 percent minus 325 mesh.
- Specific Gravity: 1.9 to 2.0.

Color Mixing Specifications:

- Mixer shall be loaded to a minimum of 40% capacity to ensure good color suspension.
- The mix design shall be consistent and the water cement ratio shall be maintained with a maximum 4 inch slump.
- The Contractor shall reverse the drum, bringing the concrete to the back of the truck, prior to adding color to the ready mix truck.
- The Contractor shall mix the concrete at high speed for a minimum of 5 minutes before pouring concrete.

5-08.3 Construction Requirements

(August 2016, City of Auburn)

Construction Requirements for Stamped Colored Concrete:

Measuring, Batching, Mixing, and Delivering Concrete: As specified in Section 6-02, except as specified in this section.

1. Measure, batch, mix, and deliver concrete with pigments in accordance with manufacturer's instructions.
 2. Ensure mixer is clean and free of washout water before loading.
 3. Load mixer to a minimum of 40 percent capacity.
 4. Do not load mixer beyond recommended capacity.
 5. Add concrete materials to mixer in same order for each batch.
 6. Do not add pigment to mixer as first concrete material.
 7. Maintain consistent amounts of batch water in each batch.
- Placing, Finishing, and Curing Concrete: As specified in Section 6-02, except as specified in this section.
 1. Place, finish, and cure concrete with pigments in accordance with manufacturer's instructions.

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2. Allow excess surface water to evaporate before finishing.
 3. Do not over-finish surface. Avoid burning surface.
 4. Do not fog with water or cover surface of colored concrete during initial curing process for a minimum of 48 hours.
- Add liquid pigments to concrete batch automatically by use of metering, volumetric, or weight measuring system or manually by weight or volume in accordance with manufacturer's instructions.
 - Recycle liquid pigments while in their container before use to ensure uniformity and proper viscosity.
 - Add liquid pigments to concrete batch after prewetted aggregate and before cement addition.

Calcium chloride shall not be permitted in the concrete mix, as it causes discoloration.

Forms shall be as specified in Section 8-14.3(2).

Cleaning:

- Clean concrete of efflorescence in accordance with manufacturer's instructions.
- Ensure concrete has sufficiently cured before cleaning.
- Use concrete cleaner approved by pigment manufacturer. Do not use cleaners containing acid.
- Apply cleaner in accordance with cleaner manufacturer's instructions.

5-08.3(1) Stamping

(August 2016, City of Auburn)

The Contractor shall apply a Brickform, or approved equivalent, Antique Release agent, to the concrete as soon as all standing water has disappeared from the concrete surface and prior to beginning the stamping process.

The Contractor shall apply a Brickform, or approved equivalent, concrete sealer to the finished concrete after it has cured for 28 calendar days.

While the initially finished concrete is plastic, the Contractor shall accurately align and place stamp "skins" or semi rigid mats in sequence and changing direction of patterns as necessary to produce the pattern shown in the Plans. The Contractor shall uniformly load mats and press into concrete to produce the required imprint pattern and depth of imprint on the concrete surface. The Contractor shall remove the stamp mats immediately. The Contractor shall hand stamp edges and surfaces unable to be imprinted by stamp mats.

The Contractor shall utilize a stamping template that matches the pattern specified in the Plans. Upon completion, the patterned area shall be checked for proper depth of print. 98% of the stamped area shall have an imprint depth of 1/4 inch. If any sample areas have an imprint depth that is less than 1/4 inch, those areas shall be re-stamped prior to applying the coatings. The stamped pattern shall be neat, with clean lines and intersections.

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Supplement Division 5 with the following:

5-09 Slurry Seal Surface Treatment

5-09.1 Description

(January 2018, City of Auburn)

This work consists of applying an emulsified asphalt slurry seal to prepared designated street surfaces in complete and strict accordance with these Special Provisions.

The slurry seal surface shall consist of a mixture of emulsified asphalt, mineral aggregate, and water, properly proportioned, mixed, and spread evenly on the surface as specified in this document. The cured slurry shall have a homogenous appearance, fill all cracks, adhere firmly to the surface, and have a skid resistant texture.

5-09.1(1) Applicable Specifications

(January 2018, City of Auburn)

The following specifications and methods are referenced as part of these Special Provisions.

AASHTO __ American Association of State Highway Testing Officials;

ASTM __ American Society for Testing and Materials;

ISSA __ International Slurry Seal Association.

5-09.2 Materials

5-09.2(1) Asphalt Emulsion

(January 2018, City of Auburn)

Emulsified asphalt shall conform to the requirement of ASTM or ISSA Specification for type SS1h, CSS1h, or Quick Setting Mixing Grade Emulsion.

5-09.2(2) Aggregate

(January 2018, City of Auburn)

The mineral aggregate shall consist of natural or manufactured sand, slag, crusher fines, and others or a combination thereof. Smooth-textured sand of less than 1.25% water absorption shall not exceed 50% of the total combined aggregate. The aggregate shall be clean and free of vegetable matter and other deleterious substances. When tested by AASHTO T176 or ASTM D2419, the aggregate blend shall have a sand equivalent of not less than 45. When tested according to AASHTO T104 or ASTM C88 the aggregate shall show a loss of not more than 15%. When tested according to AASHTO T-96 or ASTM C131 the aggregate shall show a loss of not more than 35. Mineral fillers such as Portland Cement, limestone dust, fly ash, and others shall be considered part of the blended aggregate and shall be used in minimum required amounts and must meet the gradation requirements of ASTM D242. Mineral fillers shall only be used if needed to improve the workability of the mix or gradation of the aggregate.

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

The combined mineral aggregate shall conform to the following gradation:

Sieve Size	Percent Passing (Type III)
½ inch - (12.5mm)	
3/8 inch - (9.5mm)	100
No. 4 (4.75mm)	70-90
No. 8 (2.36mm)	45-70
No. 16 (1.18mm)	28-50
No. 30 (0.600mm)	19-34
No. 50 (0.300mm)	12-25
No. 100 (0.150mm)	7-18
No. 200 (0.75mm)	5-15
Theoretical Asphalt Content % Dry	
Aggregate	6.5-12

5-09.2(3) Water

(January 2018, City of Auburn)

All water used with the slurry mixture shall be potable and free from harmful soluble salts.

5-09.2(4) Laboratory Testing

(January 2018, City of Auburn)

Sources for all materials shall be identified before they are required for use on the project. All samples must be taken according to previously mentioned procedures. All materials shall be pretested in a qualified laboratory to determine their suitability for use in slurry. The theoretical asphalt content shall be determined. The laboratory shall also determine if mineral filler is required, and if so, how much should be used. Test samples shall be made and tested on a Wet Track Abrasion Machine.

The Contractor must submit the complete laboratory analysis and test report with abraded and unabraded slurry test samples, to the Engineer before application of the slurry seal can begin.

5-09.2(5) Stockpiling Of Aggregates

(January 2018, City of Auburn)

Precautions shall be taken to insure that stockpiles do not become contaminated with oversized rock, clay, silt, or excessive amounts of moisture. The stockpile shall be kept in areas that drain readily. Segregation of the aggregate will not be permitted.

5-09.2(6) Storage

(January 2018, City of Auburn)

The Contractor shall provide suitable storage facilities for the asphalt emulsion. The container shall be equipped to prevent water from entering the emulsion. Suitable heat shall be provided, if necessary, to prevent freezing.

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

5-09.2(7) Sampling

(January 2018, City of Auburn)

The Contractor shall furnish samples of materials and of the finished slurry surface during progress of the work. The Contractor may be requested to supply test reports as additional materials arrive.

5-09.2(8) Verification

(January 2018, City of Auburn)

Each machine will make test strips after calibration and before construction. Test strips shall be a portion of the project. Samples of the Slurry Seal will be taken and verification made as to mix consistency and proportioning. Verification of the rate of application will also be made. If any of the tests fail to meet minimum standards, additional test strips will be required until the Engineer approves each unit. These additional test strips will be performed at no additional cost to the City. Any unit failing to pass the tests after the third trial will not be permitted to work on the project. Test strips must be accepted or rejected within 24 hours after application.

5-09.3 Construction Requirements

5-09.3(1) Equipment

(January 2018, City of Auburn)

All equipment, tools, and machines used to perform this work shall be maintained in satisfactory working order at all times. Descriptive information on the slurry mixing and application equipment shall be submitted to the Engineer for approval not less than 5 working days before the work starts.

5-09.3(1)A Slurry Mixing Equipment

(January 2018, City of Auburn)

The slurry-mixing machine shall be a continuous flow-mixing unit and shall be capable of accurately delivering a predetermined proportion of aggregate, water, and asphalt emulsion to the mixing chamber and to discharge the thoroughly mixed product on a continuous basis. The aggregate shall be pre-wetted immediately before mixing with the emulsion. The mixing unit of the mixing chamber shall be capable of thoroughly blending all ingredients. No violent mixing is permitted. The mixing machine shall be equipped with an approved fines feeder that provides an accurate metering device or method to introduce a predetermined proportion of mineral filler into the mixer at the same time and location as the aggregate. The fines feeder shall be used whenever added mineral filler is a part of the aggregate blend.

5-09.3(1)B Slurry Spreading Equipment

(January 2018, City of Auburn)

A mechanical type squeegee distributor shall be attached to the mixing machine. It shall be equipped with flexible material in contact with the pavement and shall be maintained to prevent loss of slurry from the distributor. It shall also be adjustable to ensure uniform spread. There shall be a steering device and a flexible strike-off. The spreader box shall have an adjustable width. The box shall be kept clean, and build-up of asphalt and

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

aggregate on the box will not be permitted. The Engineer shall approve the use of burlap drags or other drags.

5-09.3(1)C Cleaning Equipment

(January 2018, City of Auburn)

Power brooms, power blowers, air compressors, water flushing equipment, and hand brooms shall be suitable for cleaning the surface and cracks of the old surface.

5-09.3(1)D Auxiliary Equipment

(January 2018, City of Auburn)

The Contractor shall provide hand squeegees, shovels, and other equipment as necessary to perform the required work.

5-09.3(1)E Calibration

(January 2018, City of Auburn)

Each slurry-mixing unit used to perform the work shall be calibrated in the presence of the Engineer, before construction. Documentation of previous calibration that covers the exact materials being used may be an acceptable substitute provided they were made during the same calendar year. The documentation shall include an individual calibration of each material at various settings that can be related to the machine's metering device(s). No machine will be allowed to work on the project until calibration has been completed and accepted.

5-09.3(2) Preparation of Surface

(January 2018, City of Auburn)

Immediately before applying the slurry, the surface shall be cleaned of all loose material, silt spots, vegetation, and other objectionable material. Any standard cleaning method to clean pavements is acceptable, except water flushing which is not permitted in areas where there are numerous cracks present in the pavement surface. The Engineer shall give final approval of the surface preparation.

5-09.3(3) Composition and Rate of Application of the Slurry Mix

(January 2018, City of Auburn)

The amount of asphalt emulsion to be blended with the aggregate shall be as determined by the laboratory report after final adjustment in the field. A minimum amount of water shall be added as necessary to obtain a fluid and homogeneous mixture. The rate of application shall be at least 15 pounds per square yard but not greater than 20 pounds per square yard.

Adjustment may be required during construction based on field conditions. The Engineer will give final approval for all such adjustments.

5-09.3(4) Weather Limitations

(January 2018, City of Auburn)

The slurry seal surface shall not be applied if either the pavement or air temperatures are 55 degrees F or below and falling, but may be applied when both the air and pavement

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

temperatures are 45 degrees F or above and rising. The mixture should not be applied if high relative humidity prolongs curing beyond a reasonable time.

5-09.3(5) Traffic Control

(January 2018, City of Auburn)

The Contractor is responsible for all Traffic Control. Suitable methods such as barricades, flaggers, pilot cars, etc., shall be used to protect the uncured slurry surface from all types of traffic. Any damage caused by the Contractor's negligence to the uncured slurry will be the responsibility of the Contractor. The Engineer shall give final approval to the traffic control methods used.

5-09.3(6) Application of Slurry Surfaces

5-09.3(6)A General

(January 2018, City of Auburn)

The surface may be pre-wetted by fogging ahead of the slurry box if required by local conditions. Water used in pre-wetting the surface shall be applied at a rate so that the entire surface is damp with no apparent flowing water in front of the slurry box. The slurry mixture shall be of the desired consistency when deposited on the surface and no additional elements shall be added. Total time of mixing shall not exceed 4 minutes. A sufficient amount of slurry shall be carried in all parts of the spreader at all times so that complete coverage is obtained. No lumping, balling or unmixed aggregate shall be permitted. If the coarse aggregate settles to the bottom of the mix, the slurry will be removed from the pavement. No excessive breaking of the emulsion will be allowed in the spreader box. No streaks, such as those caused by oversized aggregate, will be left in the finished pavement.

5-09.3(6)B Joints

(January 2018, City of Auburn)

Neither excessive build-up nor unsightly appearance shall be permitted on longitudinal or transverse joints.

5-09.3(6)C Hand Work

(January 2018, City of Auburn)

Approved squeegees shall be used to spread slurry in areas not accessible to the slurry mixer. Care shall be exercised so that no unsightly appearance results from handwork.

5-09.3(6)D Curing

(January 2018, City of Auburn)

Treated areas will be allowed to cure until the Engineer permits their opening to traffic.

Rolling is normally not required on slurry surfaces. However, in areas of slow turning traffic the paved surface should be rolled by a five-ton roller. The paved area should be subjected to a minimum of five coverages. If a pneumatic roller is used, it should be operated at a tire pressure of 50 pounds per square inch.

DIVISION 5: SURFACE TREATMENTS AND PAVEMENTS BASES

5-09.3(6)E Protection of Existing Monuments and Utility Covers

(January 2018, City of Auburn)

The Contractor shall protect all existing survey monuments and utility covers during the resurfacing operation by placing a paper plate or similar material over them. Following the resurfacing operation, paper plates or similar materials shall then be removed to leave the monuments clean and exposed.

END OF DIVISION 5

DIVISION 6 Structures

6-02 Concrete Structures

6-02.1 Description

(January 2017, City of Auburn)

Supplement this section with the following:

This work shall consist of constructing cast-in-place cement concrete walls as shown on the Plans.

6-07 PAINTING

6-07.1 Description

(January 2018, City of Auburn)

Supplement this section with the following:

This work shall consist of painting and applying painting systems to metal roadway luminaires and metal luminaire parts.

6-07.2 Materials

(January 2018, City of Auburn)

Supplement this section with the following:

Paint materials shall comply with the requirements in Section 9-08 unless described in this section.

The Contractor shall submit 3 samples of the color specified, textures, and gloss for approval. Metal coupon samples shall be 3 inches by 5 inches. Paint color and paint system shall be as shown in the following table for the following items:

Specification Section	Item	Paint Color	Paint system
9-29.6(1)A	New Decorative Traffic Signal Poles and Mast arms, Luminaire Arms	RAL #9004 "Signal Black"	Polyester TGIC Powder Coating by Tiger Drylac (or approved alternate))
9-29.10(2)	New Decorative Roadway Luminaires	RAL #9004 "Signal Black"	Polyester TGIC Powder Coating by Tiger Drylac (or approved alternate)

All steel hardware components and materials shall be galvanized to meet ASTM 153 requirements.

6-07.3(10)H Paint System

(January 2018, City of Auburn)

Delete this section and replace it with the following:

The paint system applied to new steel surfaces shall consist of the following five-coat system:

- Primer Stripe Coat: Section 9-08.1(2)F
- Primer Coat: Section 9-08.1(2)F
- Intermediate Stripe Coat: Section 9-08.1(2)G
- Intermediate Coat: Section 9-08.1(2)G
- Top Coat: Section 9-08.1(2)H

The powder coat system shall be factory primed and powder coat to a minimum of 3.0-mils in accordance to the manufacturer's recommendation and shall meet the following performance requirements when performed at a minimum film thickness of 3.0 mils:

Property	Specification	Performance Requirement
Salt Spray Resistance	ASTM B117	Minimum required by the Specification
Humidity Resistance	ASTM D2247	Minimum required by the Specification
Weatherability	ASTM 336	Minimum required by the Specification
Chemical and Solvent Resistance	-	Polyester family of powder coatings shall have a good resistance to most chemicals and solvents except alkalis and ketones. Verification should be made for each chemical or solvent proposed for use with the coating.

The paint system shall be approved for exterior application and UV-resistant.

Surface finish shall be of consistent and uniform color, texture, and gloss to match the approved sample.

6-07.3(10)I Paint Color

(January 2018, City of Auburn)

Supplement this section with the following:

Surface finish shall be of consistent and uniform color, texture, and gloss to match the approved sample.

Prepare surfaces and touch-up damaged, missed and discolored areas to bring coating system to full dry film thickness, in color and gloss matching that of adjacent coated areas.

(January 2018, City of Auburn)

Add the following new section:

6-07.3(13) Painting of Aluminum Surfaces

All aluminum items specified herein to be powder coated shall be factory primed and powder coated in accordance with the manufacturer's recommendations.

The paint color of aluminum surfaces shall be per 6-07.2

END OF DIVISION 6

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

DIVISION 7 Drainage Structures, Storm Sewers, Sanitary Sewers, Water Mains and Conduits

7-01 Drains

7-01.2 Materials

(August 2016, City of Auburn)

Replace the first two paragraphs after the list of materials with the following:

Non-perforated drainpipe shall be manufactured of polyvinyl chloride (PVC) and shall meet the requirements of Section 9-05.12 and perforated drain pipe shall be manufactured of PVC and meet the requirements of Section 9-05.2(6). Trench drains shall be Polydrain Part No. 420 with stainless steel grates Polydrain Part No. 440 or approved equivalent placed on cement concrete Class 4000 per Section 6-02 (Concrete Structures).

7-01.3 Construction Requirements

(January 2018, City of Auburn)

Supplement this section with the following:

PVC drain pipe shall be used to connect existing roof drains and downspouts to the roadway drainage system. The amount of pipe shown in the proposal is approximate and provided for bidding purposes only.

The trench drain shall be installed per the manufacturer's recommendations and shall be flush with the cement concrete surface to provide the proper surface drainage control. The trench drain shall be connected to the nearest catch basin with drain pipe as shown on the Plans.

7-04 Storm Sewers

7-04.2 Materials

(August 2016, City of Auburn)

Replace the first paragraph and list of materials with the following:

Only the pipe materials listed below are approved for use on City storm sewer systems. Materials shall be in accordance with all provisions of the following sections:

Concrete Storm Sewer Pipe	9-05.7(1) (Plain Concrete Storm Sewer Pipe) 9-05.7(2) (Reinforced Concrete Storm Sewer Pipe)
Solid Wall Polyvinyl Chloride (PVC) Pipe, SDR-35	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Solid Wall Polyvinyl Chloride (PVC) Pipe, SDR-21	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Ductile Iron Pipe, Special Class 52, Storm Pipe	9-05.13 (Ductile Iron Sewer Pipe)

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

High Density Polyethylene Pipe (HDPE)	9-05.21 (High Density Polyethylene Pipe (HDPE))
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The laying length for PVC (SDR-35) shall not exceed 14 feet.

7-04.3 Construction Requirements

7-04.3(1)F Low Pressure Air Test for Storm Sewers Constructed of Non Air-Permeable Materials

(January 2017, City of Auburn)

Supplement this section with the following:

If the test shows zero leakage after a five-minute test time, the Engineer has the authority to accept and end the test immediately.

(January 2017, City of Auburn)

Add the following new section:

7-04.3(1)G Television Inspection

All of the provisions of 7-17.3(2)H (Television Inspection) shall apply.

7-05 Manholes, Inlets, Catch Basins, and Drywells

7-05.2 Materials

(January 2017, City of Auburn)

Supplement this section with the following:

Manholes shall be complete with frames and covers. All manhole frames and covers shall be bolt-down and from East Jordan Iron Works: EJ product #00370781 (Eon #3715ZPT Frame and #3705CPT Cover) or approved equivalent. Catch Basins shall be complete with frames and grates unless otherwise specified on the Plans to be provided with solid metal covers or manhole frames and covers. Castings for manhole frames shall be gray iron or ductile iron and covers and grates shall be ductile iron. All storm sewer grates shall have the words "OUTFALL TO STREAMS, DUMP NO POLLUTANTS" cast in place. Manhole and catch basin steps and handholds shall be steel-reinforced copolymer polypropylene (ASTM D4101) with ½ inch steel reinforcing bar (ASTM A615 Grade 60) and in conformance with ASTM C478.

The fabricator of all precast sanitary manholes shall seal them with Tamoseal Cement Based Waterproof Finish or approved equivalent applied to all interior and exterior surfaces in accordance with the manufacturer's recommendations. The Contractor shall have adequate product on hand to seal any field modifications to sanitary sewer manholes.

(August 2016, City of Auburn)

Add the following new section:

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

7-05.2(1) Trash Racks

Trash racks shall be constructed in accordance with Section 6-02 (Concrete Structures), 6-03 (Steel Structures), and as detailed in the Plans.

7-05.3 Construction Requirements

(January 2017, City of Auburn)

Supplement this section with the following:

All pipes entering or leaving new or existing manholes, catch basins or inlets shall be placed on firmly compacted bedding, particularly within the area of the manhole excavation, which normally is deeper than that of the pipe trench. Special care shall be taken to see that the openings through which pipes or adapters penetrate the manhole are completely and firmly rammed full of non-shrink grout to ensure water tightness.

Manhole adapters shall be provided when connecting PVC or Polyethylene pipes to any new or existing manholes, catch basins or inlets. All manhole adapters for PVC and Polyethylene pipe shall be of a style as required and manufactured for the specific application with sufficient tangent at the ends to allow for proper joint connections. Field fabricated manhole adapters will not be permitted. All manhole adapters must have approval from the Engineer in writing before being installed.

See Section 2-09.3(3)D (Shoring and Cofferdams) for "Shoring or Extra Excavation Class B" and Section 7-08 (General Pipe Installation Requirements) for foundation material and imported bedding and backfill materials.

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

(January 2018, City of Auburn)

Supplement this section with the following:

Manholes or catch basins shall not be adjusted to finish grade until the asphalt paving is completed, at which time the center of each structure shall be carefully relocated from references previously established by the Contractor. The pavement shall be cut in a restricted area and the base material removed to permit removal of the frame or ring. The structure shall be adjusted to finish grade. Temporary access to manholes and catch basins shall be provided as soon as practical after paving.

The frame or ring shall be placed on concrete blocks and/or wedged up to the desired grade. The asphalt concrete pavement shall be cut and removed, the dimensions of which shall be equal to the inside dimensions of the opening plus 2 feet. The base materials and crushed rock shall be removed and Class 3000 cement concrete shall be placed so that the entire volume of the excavation is replaced to within, but not to exceed 6 inches of the finished pavement surface. A quick setting admixture shall be added to the cement concrete backfill. Once manholes or catch basins have been adjusted to finished grade and the cement concrete backfill has cured (the day following placing the cement concrete), HMA Class ½-inch shall be placed and compacted with hand tampers and a patching roller within 48 hours.

7-05.3(3) Connections to Existing Manholes

(January 2017, City of Auburn)

Supplement this section with the following:

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

Where shown in the Plans, new storm drain lines shall be extended to connect to an existing manhole. The pipe extension shall be the same diameter as the existing pipe. Dissimilar pipes shall be joined per Section 7-08.3(2)G (Jointing of Dissimilar Pipe) of these Special Provisions.

(August 2016, City of Auburn)

Add the following new section:

7-05.3(5) Channels for Manholes

Channels for manholes shall be made to conform accurately to the sewer grade, and shall be brought together smoothly with well-rounded junctions. Channel sides shall be carried up vertically to the crown elevation of the various pipes, and the concrete shelf between channels shall be smoothly finished and warped evenly with slopes to drain towards the manhole outflow.

Channels for manholes shall be constructed with non-shrinking mortar. Mortar shall be composed of approximately one part Type II Portland Cement, 1½ to 2 parts sand, and 2 to 3 fluid ounces of water-reducing retarder per sack of cement. Sand, cement, and water shall be as specified for concrete. Water-reducing retarder shall meet ASTM C494 specification for chemical admixture for concrete.

(August 2016, City of Auburn)

Add the following new section:

7-05.3(6) New Castings

Where new castings are indicated to be installed on existing structures in the Plans, the Contractor shall furnish and install new castings of the type specified. Casting shall include frame and grate, or ring and cover and new adjustment section(s) as necessary to set the casting to final grade. Install to the finished grade as shown.

Salvaged castings shall be cleaned and delivered to the City of Auburn as specified in Section 2-02.3(5) (Salvage).

7-08 General Pipe Installation Requirements

7-08.1 Description

(January 2017, City of Auburn)

Delete this section and replace it with the following:

This information shall cover the general requirements for installing culverts, storm sewers, sanitary sewers, and water mains. The Contractor shall also follow all provisions of Sections 7-02 (Culverts), 7-04 (Storm Sewers), 7-09 (Water Mains), 7-17 (Sanitary Sewers), and 1-07.23 (Public Convenience and Safety) as it applies to the specific kind of work. In case of conflicting specifications between Section 7-08 and 7-09, the specifications of Section 7-09 shall take precedence for the installation of water mains and appurtenances.

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

7-08.2 Materials

(January 2018, City of Auburn)

Delete this section and replace it with the following:

Imported bedding, backfill and foundation material shall meet the requirements of the following sections:

Pipe Zone Bedding and Select Trench Backfill	9-03.9(3) (Crushed Surfacing)
Pipe Foundation Material	9-03.10 (Aggregate for Gravel base)
Imported Pipe Trench Backfill	9-03.14(1) (Gravel Borrow)
Controlled Density Fill for Trench Backfill	2-09.3(1)E (Backfilling)

7-08.3 Construction Requirements

7-08.3(1) Excavation and Preparation of Trench

7-08.3(1)A Trenches

(April 2017, City of Auburn)

The second sentence of the third paragraph is deleted.

(January 2018, City of Auburn)

The first sentence of the eighth paragraph is deleted and replaced with the following:

If any of the excavated (also referred to as native) material meets the specifications of material listed in Section 7-08.2 (Materials), the Engineer may require that native material, in the quantity required, be selectively removed, stockpiled separately, and used as pipe zone bedding, foundation material, or trench backfill instead of the quantities of pipe zone bedding, foundation material, or trench backfill respectively.

7-08.3(1)B Shoring

(January 2017, City of Auburn)

Supplement this section with the following:

Shoring shall meet the requirements of Section 2-09.3(3)D (Shoring and Cofferdams), the Occupational Safety and Health Act (OSHA), and the Washington Industrial Safety and Health Act of 1973 (WISHA), Chapter 296-155 WAC, and RCW Chapter 49.17, shall apply to all excavation, trenching and ditching operations on this project. All trenches four (4) feet and over in depth shall be shored in compliance with applicable Federal and State regulations. Extra Excavation Class B will be allowed only with the approval of the Engineer.

7-08.3(2)B Pipe Laying – General

(January 2017, City of Auburn)

Supplement this section with the following:

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

The Contractor shall use neat, vertical full-depth saw cuts for trenching through existing asphalt or cement concrete pavement surfaced areas.

All pipe shall be neatly cut using an approved mechanical cutter without causing damage to the pipe.

7-08.3(2)G Jointing of Dissimilar Pipe

(January 2017, City of Auburn)

Supplement this section with the following:

Where new pipe is connected to existing pipe, the Contractor shall verify the type of existing pipe and join pipes with a pipe adapter specifically manufactured for joining the pipes involved.

(August 2016, City of Auburn)

Add the following new section:

7-08.3(2)J Joining High Density Polyethylene Pipe (HDPE) Pipe

Sections of HDPE shall be joined into continuous lengths on the job site above ground. The joining shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures shall be capable of meeting all conditions recommended by the pipe manufacturer, including but not limited to, temperature requirements of 400 degrees F, alignment, and 75 psi interfacial fusion pressure.

(August 2016, City of Auburn)

Add the following new section:

7-08.3(2)K Packaging, Handling, Storage High Density Polyethylene Pipe (HDPE) Pipe

The manufacturer shall package the pipe in a manner designed to deliver the pipe to the project neatly, intact, and without physical damage. The transportation carrier shall use appropriate methods and intermittent checks to insure the pipe is properly supported, stacked, and restrained during transport such that the pipe is not nicked, gouged, or physically damaged. Pipe shall be stored on clean, level ground to prevent undue scratching or gouging of the pipe. If the pipe must be stacked for storage, such stacking shall be done in accordance with the pipe manufacturer's recommendations. The handling of the pipe shall be done in such a manner that it is not damaged by dragging over sharp objects or cut by chokers or lifting equipment.

Sections of pipe having been discovered with cuts or gouges in excess of 10% of the wall thickness of the pipe shall be cut out and removed. The undamaged portions of the pipe shall be rejoined using butt fusion joining method.

Fused segments of pipe shall be handled so as to avoid damage to the pipe. When lifting fused sections of pipe, chains or cable type chokers must be avoided. Nylon slings are preferred. Spreader bars are recommended when lifting long fused sections. Care must be exercised to avoid cutting or gouging the pipe.

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

(August 2016, City of Auburn)

Add the following new section:

7-08.3(2)L Dewatering Trenches

Where water is encountered in the trench, it shall be removed during pipe-laying operations and the trench so maintained until the ends of the pipe are sealed and provisions are made to prevent floating of the pipe. Trench water or other deleterious materials shall not be allowed to enter the pipe at any time.

“Normal Trench Dewatering” is defined as dewatering methods occurring in, or directly adjacent to, the trench, including trash pumps, sump pumps, or other methods in the excavated areas. “Normal Trench Dewatering” does not include a dewatering system such as well points, well screens, or deep wells. All “Normal Trench Dewatering” work associated with maintaining a trench suitable for pipeline construction will be included in the cost of the pipes or other facilities being installed.

Where groundwater cannot be removed using “Normal Trench Dewatering” methods, the Contractor shall provide a dewatering system that will be used to lower the water table 2 feet below the depth of excavation. See Section 8-05 (Dewatering System) for dewatering system requirements. The dewatering plan must be received 10 calendar days prior to dewatering operations and approved by the Engineer before underground utility installation begins.

7-08.3(3) Backfilling

(January 2017, City of Auburn)

Supplement this section with the following:

The Engineer may require “Controlled Density Fill” where uniform compaction around other utilities, foundations or other fixed objects is not possible.

(January 2018, City of Auburn)

Add the following new section:

7-08.3(3)A Vertical Clearance between Utility Lines

Where the vertical clearance between adjacent storm drainage lines, water or sanitary sewer lines is 2 inches to 6 inches, a pipe mitigation measure is required between the two pipes, which may include a cushion of crushed rock or controlled density fill.

7-08.3(4) Plugging Existing Pipe

(January 2018, City of Auburn)

Delete this section and replace it with the following:

All existing sanitary sewer, storm, and drain pipes shown on the Plans to be abandoned and plugged, shall be plugged on the inlet and outlet ends for a distance of three times the diameter with Class 3000 cement concrete. Care shall be used in placing the concrete in the pipe to ensure that the openings are completely filled and thoroughly plugged.

All existing water pipes shown on the Plans to be abandoned and plugged, shall be plugged on the ends with Mechanical Joint plugs.

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All existing sanitary sewer, storm, and water pipes shown on the Plans to be abandoned and filled, shall be filled with concrete that has a compressive strength of 1,500 psi or less for the entire length of pipe specified.

The Contractor shall seal abandoned or filled pipe connections at manholes or catch basins with Class 3000 cement concrete and grout to provide a smooth, watertight seal.

(August 2016, City of Auburn)

Add the following new section:

7-08.3(5) Pipe Trench Restoration

Trenches excavated as part of a new street construction shall be completed to subgrade before placing surfacing materials and sidewalks. Final restoration will be completed with the street surfacing.

In existing streets, sidewalks and other native or landscaped areas, the restoration shall be to a minimum of the existing adjacent surfaces. Asphalt and cement concrete pavement, sidewalks, etc., shall be replaced upon a firm unyielding base to match existing surface thickness. The minimum asphalt concrete pavement replacement section shall be 2 inches thick.

7-09 Water Mains

7-09.1 Description

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor shall also follow the requirements of Section 7-08 (General Pipe Installation Requirements). In case of conflicting specifications between Section 7-08 and 7-09, the specifications of Section 7-09 shall take precedence for the installation of water mains and appurtenances.

7-09.2 Materials

(January 2018, City of Auburn)

Delete 'Aggregates' and the reference sections pertaining to Foundation Material, Gravel Backfill for Pipe Zone Bedding, Pipe Zone Bedding, and Trench backfill, from the list in the first paragraph.

Supplement this section with the following:

Ductile Iron Pipe per Section 9-30.1(1) with Ductile Iron Fittings per Section 9-30.2(1) shall be the only pipe and fitting materials allowed for water systems owned by the City of Auburn.

7-09.3(10) Backfilling Trenches

(January 2017, City of Auburn)

Supplement this section with the following:

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

Water mains shall be installed with 42-inch minimum finished pipe cover, unless the Engineer determines less cover is adequate where existing facilities, not to be relocated, might interfere with the pipe laying operation.

7-09.3(13) Handling of the Pipe

(January 2017, City of Auburn)

Supplement this section with the following:

Strict adherence to the requirements preventing debris from entering the pipe will be required, including plugging of pipe during transport, storage, and placement. If, in the opinion of the Engineer, any pipe or fitting has been installed with dirt, foreign material, or diesel residue in it, it shall be removed, cleaned, and re-laid at Contractor expense.

7-09.3(19) Connections

7-09.3(19)A Connections to Existing Mains

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor shall field verify all existing piping, dimensions, and elevations to ensure proper fit prior to any connections being made to existing mains.

7-09.3(19)B Maintaining Service

(January 2017, City of Auburn)

Supplement this section with the following:

Water main shut-offs shall be in accordance with Section 1-07.17(1) (Disruption to City Water Services).

7-09.3(21) Concrete Thrust Blocking

(January 2018, City of Auburn)

Supplement this section with the following:

Where trench conditions are such that thrust restraint is not accomplishable with concrete, the Contractor shall provide restrained joints in accordance with Section 9-30.2(6) (Restrained Joints) to replace or supplement concrete blocking or anchors. Supplement and replacement restrained joints shall be provided as recommended by the manufacturer and approved by the Engineer.

7-09.3(23) Hydrostatic Pressure Test

(January 2017, City of Auburn)

Supplement this section with the following:

Add the following sentence at the beginning of the first paragraph:

Hydrostatic tests shall be made on all new pipeline in accordance with the applicable portions of this Standard Specification and ANSI/AWWA C600, except as modified in this document.

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Add the following sentence between the first and second sentence of the first paragraph:

Test pressures shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

Add the following sentence at the end of the second paragraph:

Sections of pipe between valves shall be pressure tested immediately upon completion of each section. Each section shall be immediately backfilled upon the Engineer approving the hydrostatic pressure test results.

7-09.3(24) Disinfection of Water Mains

(January 2017, City of Auburn)

Supplement this section with the following:

The City will take bacteriological test samples. The Contractor shall insert corporation stops in the main at all locations required to take bacteriological test samples. If original test samples prove unsatisfactory, a charge of \$20.00 will be made for processing each additional sample.

7-09.3(24)J Preventing Reverse Flow

(January 2017, City of Auburn)

Supplement this section with the following:

Prior to beginning the water main installation, the Contractor shall prepare a Prevention of Reverse Flow Plan per Section 1-06 (Control of Material), showing the intended method, in detail, which will be incorporated to insure the prevention of reverse flows from entering the existing distribution system. The plan shall meet the requirement of WAC 246-902-490.

The Contractor shall consider this plan as a submittal, and submit it per the specifications in Section 1-06 (Submittals). The Engineer must approve this plan prior to the Contractor starting work on the water main.

7-09.3(24)N Final Flushing and Testing

(January 2017, City of Auburn)

Supplement this section with the following:

Accomplish line flushing in accordance with the latest provisions of AWWA C601. Flush all dead end mains with a temporary blow off. The Contractor is responsible for disposal of water flushed from the line. An approved bacteriological test is required before connection to the existing system. The City will measure water consumed for flushing.

The Contractor shall submit a de-chlorination plan per Section 1-06 (Control of Material) indicating how chlorine concentration and pH adjustment will be achieved per this Section. All costs to submit the plan shall be included in the unit contract price per linear foot of pipe.

7-12 Valves for Water Mains

7-12.3 Construction Requirements

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

(January 2018, City of Auburn)

Add the following new section:

7-12.3(2) Adjust Valve Boxes

The Contractor shall adjust water valve boxes to finish grade as specified in the Plans and in accordance with the applicable City of Auburn Standard Details. Water valve boxes shall be accessible at all times.

Valve boxes shall not be adjusted to finish grade until the asphalt paving is completed, at which time, each valve box shall be carefully relocated from references previously established by the Contractor. The pavement shall be cut in a restricted area and the base material removed to permit adjustment.

The base materials and crushed rock shall be removed and Class 3000 cement concrete shall be placed so that the entire volume of the excavation is replaced to within, but not to exceed 6 inches of the finished pavement surface. A quick setting admixture shall be added to the cement concrete backfill. Once the valve boxes have been adjusted to finished grade and the cement concrete backfill has cured (the day following placing the cement concrete), HMA Class ½-inch shall be placed and compacted with hand tampers and a patching roller within 48 hours.

(August 2016, City of Auburn)

Add the following new section:

7-12.3(3) Combination Air Release/Air Vacuum Valve Assembly

“Combination Air Release/Air Vacuum Valve Assembly” shall be constructed at locations shown on the Plans and shall be a minimum of 1 inch diameter in accordance with the applicable City of Auburn Standard Detail(s).

(August 2016, City of Auburn)

Add the following new section:

7-12.3(4) Valve Wrench Extension Box

The Contractor shall furnish and install valve wrench extension boxes where the valve nut will exceed 48 inches below the top of the finished valve box and finish grade, where shown on the Plans, in accordance with the applicable City of Auburn Standard Detail(s) for deep buried valves.

7-14 Hydrants

7-14.3 Construction Requirements

(January 2017, City of Auburn)

Supplement this section with the following:

A type 2BB Blue Raised Pavement Marker(s) is required at each hydrant location. Location of the blue marker shall be 1-foot offset of centerline in the direction of the hydrant at each hydrant location. Hydrants located within 50-feet of the curb face of an intersection shall be marked on both streets. The reflective surfaces of the raised pavement markers shall be

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

perpendicular to the flow of traffic. The Raised Pavement Markers shall be installed in accordance with Section 8-09 (Raised Pavement Markers).

7-14.3(1) Setting Hydrants

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Where shown in the Plans, the "Hydrant Assembly" shall be installed perpendicular to the supply main. A 6-inch resilient-wedge gate valve with valve box in accordance with Section 7-12 (Valves for Water Mains) shall be installed on each hydrant supply line.

All hydrants shall be inspected upon delivery in the field to ensure proper working order. After installation, fire hydrants, auxiliary gate valves, and other appurtenances thereto shall be subjected to a hydrostatic test and disinfection procedures as specified in Section 7-09 (Water Mains).

After installation each hydrant shall receive 2 field-coats of paint. The first coat shall be Formula B-1-57 iron oxide, and the second coat shall be Safety Yellow Enamel conforming to Federal Specification TT-E-489C Enamel, Alkyd, Gloss, Federal Color No. 1063. The outside surface below the ground shall be coated with asphalt varnish.

During the chlorination process for the newly laid pipe, all valves associated with each hydrant assembly shall be operated while the pipeline is filled with the chlorinating agent and under normal operating pressure.

Any hydrant not in service shall be identified by covering with a burlap or plastic bag properly secured.

7-14.3(4) Moving Existing Hydrants

(January 2018, City of Auburn)

Supplement this section with the following:

Existing hydrants shall be moved where shown in the Plans. Moving existing hydrants shall include removal of all component parts from the water main to the hydrant.

The Contractor shall provide and install the following new components at the new hydrant location shown on the Plans:

- Special Class 52 Ductile Iron pipe;
- 6 inch tee or tapping tee and gate valve with box;
- Restraint system;
- Blocking.

7-15 Service Connections

7-15.2 Materials

(May 2018, City of Auburn)

All water service materials shall be low lead brass CDA89833 or CDA89520, and shall meet ANSI/AWWA C800 and NSF 61 Annex G maximum lead requirements.

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7-15.3 Construction Requirements

(January 2017, City of Auburn)

Supplement this section with the following:

Water service connections shall be installed where shown on the drawings in accordance with these documents and the applicable Standard Details. Multiple service connections to the same main must be made with a 2 foot minimum separation at the main and be staggered horizontally, so that adjacent services are at differing elevations along the pipe. Meter box and water meters shall not be placed in locations which are subjected to vehicular traffic (including driveways, etc.) unless approved by the Engineer and a traffic bearing meter box is provided. Tail pieces (that portion of the service line between the meter and the property line) shall be furnished and installed and shall be of the same material and size as the service line. Connection of the tail piece to the service line from the building shall be made with compression couplings or capped as appropriate. Service pipes shall be installed without joints from the water main to the curb valve near or within the meter box. Tailpieces shall also be installed without joints from the water meter outlet to its termination (18 inches minimum beyond the meter but not beyond the right-of-way line). The existing ¾-inch water meter shall be reinstalled to the new meter setter once the new 1-inch service line, meter setter, and tailpiece, have been installed and the new meter box has been adjusted to grade.

All new materials (service line, meter setter, tailpiece, and meter box) shall be used for water meter relocations. Materials shall match existing size unless otherwise shown on the Plans.

When removing existing meters, the Contractor shall protect all automated meter reading equipment including radios, receivers/transmitters, and other equipment. The removed meters/equipment will be stored in such a manner to prevent damage to the equipment. The Contractor will request and complete training from City staff on proper measures and techniques required to protect the equipment prior to removing any equipped meters.

7-17 Sanitary Sewers

7-17.2 Materials

(December 2018, City of Auburn)

Delete this section and replace it with the following:

Materials shall be in accordance with following Sections:

Solid Wall Polyvinyl Chloride (PVC) Sanitary Sewer Pipe, SDR-35	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Polyvinyl Chloride (PVC) Sanitary Sewer Pipe, SDR-21	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Ductile Iron, Special Class 50 Sanitary Sewer Pipe	9-05.13 (Ductile Iron Sewer Pipe)
High Density Polyethylene Sanitary Sewer Pipe (HDPE)	9-05.23 (High Density Polyethylene Pipe (HDPE))

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The laying length for PVC (SDR-35) shall not exceed 14 feet.

7-17.3 Construction Requirements

7-17.3(1) Protection of Existing Sewage Facilities

(January 2017, City of Auburn)

Supplement this section with the following:

Connections to the existing system shall be plugged during the entire period of sewer construction to prevent dirt, water, and debris from entering the existing system

7-17.3(2) Cleaning and Testing

7-17.3(2)A General

(August 2016, City of Auburn)

Delete the first paragraph and replace with the following:

Sewers and appurtenances, where required in the Plans, shall be cleaned and tested after backfilling by the low pressure air method except if the Engineer approves hydrostatic testing of short sections of small diameter pipe.

(January 2017, City of Auburn)

Supplement this section with the following:

Before final acceptance, the Contractor shall have all sewer lines inspected by the use of a television camera per Section 7-17.3(2)H (Television Inspection). Manholes and other structures shall be cleaned and tested per Section 7-07 (Cleaning Existing Drainage Structures).

Special sealants shall not be used to seal leaks and the use of any such materials will be cause for rejection of the sewer lines.

7-17.3(2)C Infiltration Test

(January 2017, City of Auburn)

Revise the second sentence of the second paragraph to read:

$$\text{"Maximum leakage (in gallons per hour)" = } 0.16 \times \frac{\sqrt{H}}{\sqrt{6}} \times D \times \frac{L}{100}$$

7-17.3(2)F Low Pressure Air Test for Sanitary Sewers Constructed of Non Air-Permeable Materials

(January 2017, City of Auburn)

Supplement this section with the following:

If the test shows zero leakage after a five minute test time, the Engineer has the authority to accept and end the test immediately.

Cleaning and testing of pipes and structures shall be included in the unit contract prices for those items installed.

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

7-17.3(2)H Television Inspection

(January 2017, City of Auburn)

Delete this section and replace it with the following:

The Contractor shall be responsible for having all sewer lines installed by the Contractor inspected by City approved private inspection services that includes the use of a television camera. An approved list of inspection services may be obtained from the Engineer.

After completion of the following, authorization from the City shall be required before the Contractor can perform the initial television camera work:

1. The acceptable placement of applicable pipe, ballast, bedding, and backfill material.
2. The acceptable completion of all applicable channels and grout work.
3. The acceptable debris removal, cleaning, and flushing of all applicable pipes and structures.

The television inspection requirements shall include the provisions of:

1. A color DVD television camera with a pan and tilt capacity in order to view all main lines, lateral lines, and structures including channels.
2. A dye solution to be introduced in sufficient quantity to travel from the structure that is the highest point of inspection to the downstream terminus of the inspection limits. Red or purple dye shall be used for PVC pipe and green dye for ductile iron and concrete pipe.
3. A one-inch reference ball to be mounted to the camera in order to drag along the bottom of the pipe during the entire inspection procedure.
4. Linear measure references to be measured from the center of the beginning structure to the center of the next inline structure and include the direction of flow. The locations of lateral pipes and all distinctive pipe conditions shall be referenced to the centerline of the beginning structure. All structure references shall utilize the designated structure reference numbers shown on the Plans.

The following television inspection information shall be provided to the City:

1. A clear DVD which encompasses the limits of the inspection area and including all reference data as described herein. The recorded reference time and date for the start of each run shall also be indicated.
2. A written report shall be provided corresponding to the recorded inspection and including all reference data as described herein. The report shall consist of a written narrative of all distinctive pipe conditions including ponding areas in excess of ¼ inch.

DIVISION 7: DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

7-18 Side Sewers

7-18.3 Construction Requirements

7-18.3(1) General

(January 2017, City of Auburn)

Supplement this section with the following:

All joints shall be approved rubber-gasket joints except the joint between the new and existing pipe that shall be made with approved flexible transition couplings. Side sewers shall be installed to a minimum slope of two percent or as shown on the Plans unless otherwise directed by the Engineer and shall be 6-inches diameter from the street sewer to the private property line.

Existing side sewers to be connected shall be trimmed to the limit of the right-of-way except where otherwise shown on the Plans and connected to the new sewer with PVC SDR-35 with a diameter to match the existing side sewer or 6 inches, whichever is greater.

(August 2016, City of Auburn).

The third paragraph is replaced with the following:

No joint deflections shall be allowed on side sewers. No horizontal bends shall be allowed in the right-of-way. Vertical bends require Engineer approval.

7-18.3(2) Fittings

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Side sewers shall be connected (where shown on the Plans), using approved sewer saddle tees. Quantities of tees will vary depending upon conditions encountered.

7-18.3(3) Testing

(January 2017, City of Auburn)

Supplement this section with the following:

During construction in areas with more than one side sewer per structure, the Contractor shall test each connected structure to verify which side sewer is used by that structure. The test shall involve flushing every toilet or running every sink or tub on each floor of each structure and directly observing which side sewer the effluent discharges from. Only these side sewers shall be connected. All others are to be abandoned in place per Section 7-08.3(4) (Plugging Existing Pipe).

The Contractor shall be responsible for verifying all City customers originally connected to the sanitary sewer conveyance line are connected to the new sanitary sewer conveyance line. Prior to project completion the Contractor shall document to the City that all City customers have had their services re-established.

All pipes for side sewer and sewer stubs (pipes not ending in a manhole) shall be adequately plugged or capped.

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7-19 Sewer Cleanouts

7-19.3 Construction Requirements

(January 2018, City of Auburn)

Delete this section and replace it with the following:

Sewer cleanouts shall be installed as indicated in the applicable Standard Details.

END OF DIVISION 7

Division 8 Miscellaneous Construction

8-01 Erosion Control and Water Pollution Control

8-01.1 Description

(January 2018, City of Auburn)

This section is revised to read:

This Work consists of furnishing, installing, maintaining, removing and disposing of best management practices (BMPs), as defined in the Washington Administrative Code (WAC) 173-201A, to manage erosion and water quality in accordance with these Specifications and as shown in the Plans or as designated by the Engineer.

8-01.2 Materials

(January 11, 2018 WSDOT Amendment)

The first paragraph is revised to read:

Materials shall meet the requirements of the following sections:

Corrugated Polyethylene Drain Pipe	9.05.1(6)
Quarry Spalls	9-13
Erosion Control and Roadside Planting	9-14
Construction Geotextile	9-33

8-01.3 Construction Requirements

(February, 2018 City of Auburn)

The Contractor shall comply with the requirements of the Construction Stormwater General Permit (CSWGP), when the Contract is covered by a CSWGP. When the Contract does not identify CSWGP coverage, then the requirements identified in this section, that would only be required in the event of permit coverage, are not applicable. All other requirements identified in this section are applicable regardless if the Contract has a CSWGP or not.

8-01.3(1) General

(January, 2018 City of Auburn)

This section is revised to read:

Adaptive management shall be employed throughout the duration of the project for the implementation of erosion and water pollution control permit requirements for the current condition of the project site. The adaptive management includes the selection and utilization of BMPs, scheduling of activities, prohibiting unacceptable practices, implementing maintenance procedures, and other managerial practices that when used singularly or in combination, prevent or reduce the release of pollutants to waters of the State. The adaptive management shall use the means and methods identified in

this section and means and methods identified in the Washington State Department of Transportation's Temporary Erosion and Sediment Control Manual or the Washington State Department of Ecology's Stormwater Management Manuals for construction stormwater.

The Contractor shall install a high visibility fence along the site preservation lines shown in the Plans or as instructed by the Engineer.

Throughout the life of the project, the Contractor shall preserve and protect the delineated preservation area, acting immediately to repair or restore any fencing damaged or removed.

All discharges to surface waters shall comply with surface water quality standards as defined in Washington Administrative Code (WAC) Chapter 173-201A. All discharges to the ground shall comply with groundwater quality standards WAC Chapter 173-200.

The Contractor shall comply with the CSWGP when the project is covered by the CSWGP. Temporary Work, at a minimum, shall include the implementation of:

1. Sediment control measures prior to ground disturbing activities to ensure all discharges from construction areas receive treatment prior to discharging from the site.
2. Flow control measures to prevent erosive flows from developing.
3. Water management strategies and pollution prevention measures to prevent contamination of waters that will be discharged to surface waters or the ground.
4. Erosion control measures to stabilize erodible earth not being worked.
5. Maintenance of BMPs to ensure continued compliant performance.
6. Immediate corrective action if evidence suggests construction activity is not in compliance. Evidence includes sampling data, olfactory or visual evidence such as the presence of suspended sediment, turbidity, discoloration, or oil sheen in discharges.

To the degree possible, the Contractor shall coordinate this temporary Work with permanent drainage and erosion control Work the Contract requires.

Clearing, grubbing, excavation, borrow, or fill within the Right of Way shall never expose more erodible earth than as listed below:

Western Washington (West of the Cascade Mountain Crest)	
May 1 through September 30	17 Acres
October 1 through April 30	5 Acres

Eastern Washington (East of the Cascade Mountain Crest)	
April 1 through October 31	17 Acres
November 1 through March 31	5 Acres

The Engineer may increase or decrease the limits based on project conditions.

Erodible earth is defined as any surface where soils, grindings, or other materials may be capable of being displaced and transported by rain, wind, or surface water runoff.

Erodible earth not being worked, whether at final grade or not, shall be covered within the specified time period (see the table below), using BMPs for erosion control.

Western Washington (West of the Cascade Mountain Crest)	
October 1 through April 30	2 days maximum
May 1 to September 30	7 days maximum

Eastern Washington (East of the Cascade Mountain Crest)	
October 1 through June 30	5 days maximum
November 1 through March 31	10 days maximum

When applicable, the Contractor shall be responsible for all Work required for compliance with the CSWGP.

If the Engineer, under Section 1-08.6, orders the Work suspended, the Contractor shall continue to comply with this division during the suspension.

Nothing in this Section shall relieve the Contractor from complying with other Contract requirements.

8-01.3(1)A Submittals

(January 11, 2018 WSDOT Amendment)

This section's content is deleted.

This section is supplemented with the following new subsection:

8-01.3(1)A1 Temporary Erosion and Sediment Control

A Temporary Erosion and Sediment Control (TESC) plan consists of a narrative section and plan sheets that meets the Washington State Department of Ecology's Stormwater Pollution Prevention Plan (SWPPP) requirement in the CSWGP. Abbreviated TESC plans are used on small projects that disturb soil and have the

potential to discharge but are not covered by the CSWGP. The contract uses the term "TESC plan" to describe both TESC plans and abbreviated TESC plans. When the Contracting Agency has developed a TESC plan for a Contract, the narrative is included in the appendix to the Special Provisions and the TESC plan sheets are included in the Contract Plans. The Contracting Agency TESC plan will not include off-site areas used to directly support construction activity.

The Contractor shall either adopt the TESC Plan in the Contract or develop a new TESC Plan. If the Contractor adopts the Contracting Agency TESC Plan, the Contractor shall modify the TESC Plan to meet the Contractor's schedule, method of construction, and to include off-site areas that will be used to directly support construction activity such as equipment staging yards, material storage areas, or borrow areas. Contractor TESC Plans shall include all high visibility fence delineation shown on the Contracting Agency Contract Plans. All TESC Plans shall meet the requirements of the current edition of the WSDOT Temporary Erosion and Sediment Control Manual M 3109 and be adaptively managed as needed throughout construction based on site inspections and discharge samples to maintain compliance with the CSWGP. The Contractor shall develop a schedule for implementation of the TESC work and incorporate it into the Contractor's progress schedule.

The Contractor shall submit their TESC Plan (either the adopted plan or new plan) and implementation schedule as Type 2 Working Drawings. At the request of the Engineer, updated TESC Plans shall be submitted as Type 1 Working Drawings.

(January 2018, City of Auburn)

Supplement this section with the following:

The Contractor's TESC plan shall be submitted to the Engineer for approval prior to beginning construction.

The TESC plan shall also cover dewatering and the Contractor's proposed method of treating and disposing of dewatering effluent and other impacts of caused by dewatering activities.

Modifications to the temporary erosion and sediment control (TESC) Plans included in the Contract Plans, shall meet all requirements of the City of Auburn Surface Water Management Manual (SWMM).

Prior to beginning any concrete or grinding work, the Contractor shall submit a plan, for the Engineer's review and approval, outlining the procedures to be used to prevent high pH stormwater or dewatering water from entering surface waters. The plan shall include how the pH of the water will be maintained between pH 6.5 and pH 8.5 prior to being discharged from the project or entering surface waters.

The Contractor shall allow at least 5-working days for the Engineer to review any original or revised TESC Plan. Failure to approve all or part of any such Plan shall not make the Contracting Agency liable to the Contractor for any Work delays.

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

(January 11, 2018 WSDOT Amendment)

This section is revised to read:

The Contractor shall identify the ESC Lead at the preconstruction discussions and in the TESC Plan. The ESC Lead shall have, for the life of the Contract, a current Certificate of Training in Construction Site Erosion and Sediment Control from a course approved by the Washington State Department of Ecology. The ESC Lead must be onsite or on call at all times throughout construction. The ESC Lead shall be listed on the Emergency Contact List required under Section 1-05.13(1).

The ESC Lead shall implement the TESC Plan. Implementation shall include, but is not limited to:

1. Installing, adaptively managing, and maintaining temporary erosion and sediment control BMPs to assure continued performance of their intended function. Damaged or inadequate BMPs shall be corrected immediately.
2. Updating the TESC Plan to reflect current field conditions.
3. Discharge sampling and submitting Discharge Monitoring Reports (DMRs) to the Washington State Department of Ecology in accordance with the CSWGP.
4. Develop and maintain the Site Log Book as defined in the CSWGP. When the Site Log Book or portion thereof is electronically developed, the electronic documentation must be accessible onsite. As a part of the Site Log Book, the Contractor shall develop and maintain a tracking table to show that identified TESC compliance issues are fully resolved within 10 calendar days. The table shall include the date an issue was identified, a description of how it was resolved, and the date the issue was fully resolved.

The ESC Lead shall also inspect all areas disturbed by construction activities, all on-site erosion and sediment control BMPs, and all stormwater discharge points at least once every calendar week and within 24-hours of runoff events in which stormwater discharges from the site. Inspections of temporarily stabilized, inactive sites may be reduced to once every calendar month. The Washington State Department of Ecology's Erosion and Sediment Control Site Inspection Form, located at <http://www.ecy.wa.gov/programs/wq/stormwater/construction/InspectionForm.docx>, shall be completed for each inspection and a copy shall be submitted to the Engineer no later than the end of the next working day following the inspection.

8-01.3(1)C Water Management

(January 11, 2018 WSDOT Amendment)

This section is supplemented with the following new subsections:

8-01.3(1)C2 Process Wastewater

(January 11, 2018 WSDOT Amendment)

This section is revised to read:

Wastewater generated on-site as a byproduct of a construction process shall not be discharged to surface waters of the State. Some sources of process wastewater may be infiltrated in accordance with the CSWGP with approval from the Engineer. Some sources of process wastewater may be disposed via independent disposal and treatment alternatives in compliance with the applicable WACs and permits.

8-01.3(1)C4 Management of Off-Site Water

(January 11, 2018 WSDOT Amendment)

This section is revised to read:

Prior to clearing and grubbing, the Contractor shall intercept all sources of off-site surface water and overland flow that will run-on to the project. Off-site surface water run-on shall be diverted through or around the project in a way that does not introduce construction related pollution. It shall be diverted to its preconstruction discharge location in a manner that does not increase preconstruction flow rate and velocity and protects contiguous properties and waterways from erosion. The Contractor shall submit a Type 2 Working Drawing consisting of the method for performing this Work.

8-01.3(1)E Detention/Retention Pond Construction

(January 11, 2018 WSDOT Amendment)

This section is revised to read:

Whether permanent or temporary, ponds shall be constructed before beginning other grading and excavation Work in the area that drains into that pond. Detention/retention ponds may be constructed concurrently with grading and excavation when allowed by the Engineer. Temporary conveyances shall be installed concurrently with grading in accordance with the TESC Plan so that newly graded areas drain to the pond as they are exposed.

(February 2018D, City of Auburn)

Add the following new section:

8-01.3(1)F SWPPP Preparation and General Permit Compliance

The Contractor shall prepare a Storm Water Pollution Prevention Plan, (SWPPP), to address the Contractor's means and methods of completing the work and to comply with both the Construction Stormwater General Permit (CSWGP) and the City's Surface Water Management Manual (SWMM). The resulting document is the Storm Water Pollution Prevention Plan (SWPPP).

The Contractor shall prepare and submit the SWPPP for City approval per section 1-06.7 (Submittals). Approval of the SWPPP document is required prior to the beginning of any ground disturbing activities. The Contractor shall allow a minimum of 5 working days for the Engineer's review of the SWPPP. Failure to approve all or part of any such plan shall not make the Contracting Agency liable to the Contractor for any work delays.

The Contractor shall use, implement, modify, and document the approved SWPPP in compliance with the CSWGP. This work shall include, but is not be limited to, the following:

- Preparing, revising, maintaining the SWPPP in compliance with the CSWGP;
- Designing and planning, sediment control/erosion control measures, (BMPs), needed to meet CSWGP requirements;
- Planning, performing and reporting of storm water monitoring;

- Preparing and maintaining documentation required by the CSWGP.

During construction, the Contractor shall modify the SWPPP to address specific site conditions. The SWPPP and Contractor's revisions shall consist of the Contractor's complete strategy to meet the requirements of the CSWGP. The Contractor shall include and modify as necessary the erosion control measures provided in the Contract Plans. The Contractor shall review and modify the SWPPP as necessary to be consistent with the actual work schedule, sequencing, and construction methods that will be used on the project. The SWPPP and revisions shall meet the requirements of the CSWGP. The Contractor shall provide and maintain on-site the standby equipment and materials to comply with the CSWGP.

The SWPPP, including any Contractor revisions, shall document all the erosion and sediment control Best Management Practices (BMPs) proposed, whether permanent or temporary. The plan shall document installation procedures, materials, scheduling, and maintenance procedures for each erosion and sediment control BMP.

In addition, the SWPPP shall outline the procedures to be used to prevent high pH stormwater or dewatering water from entering surface waters of the state. The plan shall include how the pH of the water will be maintained in compliance with the CSWGP prior to being discharged from the project or entering surface waters.

SWPPP Contents

The SWPPP shall include narrative(s) and site plan(s) that address the following as applicable to the Work:

- Clearing Limits
- Establishment of Construction Access
- Flow Rate Controls
- Sediment Controls
- Soil Stabilization
- Slope Protection
- Drain Inlet Protection
- Channels and Outlets Stabilization
- Pollutant Controls
- De-watering Control
- Maintenance of Best Management Practices
- Project Management
- Protection of Low Impact Development Best Management Practices

The SWPPP will indicate discharge monitoring locations that shall also be clearly marked in the field by the Contractor. The SWPPP will indicate the Contractor's process for controlling, monitoring, and reporting of turbidity and pH in discharges.

On-Site Documentation

The Contractor shall collect, prepare, compile, and maintain hardcopies of the following documents on-site at all times while work is underway and shall make them available in accordance with the CSWGP requirements:

1. Bound notebook #1 with a cover labeled "SWPPP Documents", with the following contents separated by labeled tabbed dividers:
 - Permit Coverage Letter
 - Construction Stormwater General Permit
 - Stormwater Pollution Prevention Plan
 - Erosion Control Plan
2. Bound notebook #2 with a cover labeled "SWPPP Site Log Book", with the following contents separated by tabbed dividers:
 3. Erosion inspection reports.
 4. SWPPP Modifications
 5. Discharge Monitoring Reports (DMR)
 6. Spill Reports

Stormwater Monitoring Requirements

The Contractor shall conduct monitoring of discharges of stormwater runoff for comparisons to benchmark values for turbidity and pH as described in the CSWGP. The Contractor shall provide weekly stormwater monitoring of the project stormwater discharge locations for turbidity and pH as required in the CSWGP. The Contractor shall establish specific project sampling locations for sampling and monitoring at each discharge location to determine background, outfall, and downstream water quality conditions and provide these locations on a map to be included in the SWPPP for approval.

The Contractor shall establish procedures that adapt to unanticipated events such as severe storms, schedule adjustments, modified construction techniques, etc. to be included in the SWPPP. Contractor shall submit any modifications to the procedures to the Engineer for approval.

Contractor shall calibrate equipment according to manufacturers' recommendations and according to their specified schedule. If data appears suspect, the Contractor shall perform additional calibrations immediately.

The Contractor shall complete all online reporting as required by the CSWGP.

Turbidity and pH Exceedances

Following any exceedances of the turbidity or pH benchmarks, the Contractor shall provide the following at no additional cost to the Contracting agency:

1. The necessary SWPPP revisions and on-site measures/revisions including additional source control, BMP maintenance, and/or additional stormwater treatment BMPs that are necessary to prevent continued exceedance of turbidity and/or pH benchmarks.
2. The regulatory notification to the Dept of Ecology and to the Engineer of any monitoring results requiring regulatory notification.

- 3. The additional daily sampling and reporting measures described in the CSWGP to verify when project site runoff is in compliance.

At no cost to the City, the Contractor shall be responsible for paying any fines levied against the City for any failure by the Contractor to comply with the permit requirements as listed in these specifications and as indicated in the permit(s) included in the Appendix to these Special Provisions.

(January 2018, City of Auburn)

Add the following new section:

8-01.3(1)G Temporary Water Pollution/Erosion Control Installation

This work consists of furnishing and installing all temporary water pollution and erosion control items as detailed in the Contract Plans. If additional measures as approved by the City are required beyond those shown in the Contract Plans, they will be paid for under the unit cost bid item(s) determined by the Engineer to be applicable, or, if the Engineer determines additional measures are not applicable to unit cost bid item(s), the measures will be paid under the Force Account bid item for "Erosion/Water Pollution Control".

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

8-01.3(2)B Seeding and Fertilizing

(January 2017, City of Auburn)

Supplement this section with the following:

Seeding:

The following composition, proportion, and quality of grass seed shall be applied at the rate of 5 pounds per 1,000 square feet on all areas requiring roadside seeding (noted "hydroseed" on the Plans) within the project:

Kind and Variety of <u>Seed</u> <u>in Mixture</u>	Percent by <u>Weight</u>	Minimum Percent <u>Pure Seed</u>	Minimum Percent <u>Germination</u>
Colonial Bentgrass (Highland or Astoria)	10%	9.8%	85%
Red Fescue (Illahee, Rainier, or Pennlawn)	40%	39.20%	90%
English Perennial Rye	50%	29.40%	90%
Weed Seed (maximum %)		0.50%	
Inert and Other Crops (minimum %)		1.50%	
	TOTAL 100.00%		

Fertilizer:

The Contractor shall submit three samples of existing soil in the project area, and one of each specified type of topsoil to a soil laboratory for testing to determine fertilizer/amendment composition. Results shall be submitted to the Engineer and fertilizer

and soil amendment formulation and application rates will be based on the laboratory recommendations. However, the minimum fertilizers requirements are as follows:

Total Nitrogen as N-3 1.5 pound per 1,000 square feet;

Available Phosphoric Acid as P2O5-1 2 pounds per 1,000 square feet;

Soluble Potash as K2O-2 20 pounds per 1,000 square feet;

1 pound of nitrogen applied per 1,000 square feet shall be derived from ureaform or ureaformaldehyde. The remainder may be derived from any source.

The fertilizer formulation and application rate shall be approved by the Engineer before use.

8-01.3(2)E Tackifiers

(January 2017, City of Auburn)

Supplement this section with the following:

The moderate-term mulch soil binder for hydroseeding shall be a bonded fiber matrix with integral tackifier specifically manufactured for hydroseeding applications and erosion control. The moderate-term mulch shall be dyed an appropriate color to facilitate visual metering of application of the materials. The moderate-term mulch shall be 'ECO-AEGIS' as manufactured by Canfor, or approved alternate.

8-01.3(7) Stabilized Construction Entrance

(January 11, 2018 WSDOT Amendment)

The first paragraph is revised to read:

Temporary stabilized construction entrance shall be constructed in accordance with the *Standard Plans*, prior to construction vehicles entering the roadway from locations that generate sediment track out on the roadway. Material used for stabilized construction entrance shall be free of extraneous materials that may cause or contribute to track out.

8-01.3(8) Street Cleaning

(January 11, 2018 WSDOT Amendment)

This section is revised to read:

Self-propelled pickup street sweepers shall be used to remove and collect dirt and other debris from the Roadway. The street sweeper shall effectively collect these materials and prevent them from being washed or blown off the Roadway or into waters of the State. Street sweepers shall not generate fugitive dust and shall be designed and operated in compliance with applicable air quality standards. Material collected by the street sweeper shall be disposed of in accordance with Section 2-03.3(7)C.

When allowed by the Engineer, power broom sweepers may be used in non-environmentally sensitive areas. The broom sweeper shall sweep dirt and other debris from the roadway into the work area. The swept material shall be prevented from entering or washing into waters of the State.

Street washing with water will require the concurrence of the Engineer.

8-01.3(15) Maintenance

(January 11, 2018 WSDOT Amendment)

This section is revised to read:

Erosion and sediment control BMPs shall be maintained or adaptively managed as required by the CSWGP until the Engineer determines they are no longer needed. When deficiencies in functional performance are identified, the deficiencies shall be rectified immediately.

The BMPs shall be inspected on the schedule outlined in Section 8-01.3(1)B for damage and sediment deposits. Damage to or undercutting of BMPs shall be repaired immediately.

In areas where the Contractor's activities have compromised the erosion control functions of the existing grasses, the Contractor shall overseed at no additional cost to the Contracting Agency.

The quarry spalls of construction entrances shall be refreshed, replaced, or screened to maintain voids between the spalls for collecting mud and dirt.

Unless otherwise specified, when the depth of accumulated sediment and debris reaches approximately $\frac{1}{3}$ the height of the BMP the deposits shall be removed. Debris or contaminated sediment shall be disposed of in accordance with Section 2-03.3(7)C. Clean sediments may be stabilized on-site using BMPs as allowed by the Engineer.

8-01.3(16) Removal

(January 2018, City of Auburn)

This section is revised to read:

The Contractor shall remove all temporary BMPs, all associated hardware and associated accumulated sediment deposition from the project limits prior to Physical Completion unless otherwise allowed by the Engineer. When the temporary BMP materials are made of natural plant fibers unaltered by synthetic materials the Engineer may allow leaving the BMP in place.

The Contractor shall remove BMPs and associated hardware in a way that minimizes soil disturbance. The Contractor shall permanently stabilize all bare and disturbed soil after removal of BMPs. If the installation and use of the erosion control BMPs have compacted or otherwise rendered the soil inhospitable to plant growth, such as construction entrances, the Contractor shall take measures to rehabilitate the soil to facilitate plant growth. This may include, but is not limited to, ripping the soil, incorporating soil amendments, or seeding with the specified seed.

8-02 Roadside Restoration**8-02.1 Description**

(January 2017, City of Auburn)

Supplement this section with the following:

This work also involves any minor repair or replacement work to restore roadside features the Engineer discovers during construction.

8-02.3 Construction Requirements**8-02.3(1) Responsibility During Construction**

(January 2017, City of Auburn)

Supplement this section with the following:

Landscape construction is anticipated to begin after all curbs, sidewalks, rockeries, utilities, and associated roadside work is completed.

The Contractor shall keep the premises clean, free of excess soils, plants, and other materials, including refuse and debris, resulting from his work throughout the planting operation. The Contractor shall maintain continuous pedestrian access and shall not stockpile materials or park equipment in any manner that may create hazards or obstacles to this access. At the end of each workday, and as each planting area is completed, it shall be neatly dressed and all surrounding walks and paved areas shall be cleaned to the satisfaction of the Engineer.

Cleaning by flushing into sewers will not be allowed. The Contractor shall remove surplus soils, materials, and debris from the construction site and shall leave the project in a clean condition at the conclusion of the work.

8-02.3(4) Topsoil

(January 2017, City of Auburn)

Supplement this section with the following:

Topsoil shall be used to restore any landscape beds or planter areas disturbed by the Work.

8-02.3(4)A Topsoil Type A

(January 2017, City of Auburn)

Supplement this section with the following:

Topsoil Type A is to be used for all planting and seeding areas and shall be tested in an independent, certified soil testing lab to determine need for fertilizers, or amendments, or both, based on its intended use. The topsoil shall be modified according to the soil testing laboratory recommendations at no additional cost to the City.

8-02.3(4)C Topsoil Type C

(January 2017, City of Auburn)

Supplement this section with the following:

Native as used in this context shall mean naturally occurring material.

8-02.3(5) Planting Area Preparation

(February 2018, City of Auburn)

Supplement this section with the following:

Upon approval of the subgrades by the engineer, a topsoil layer shall be placed with a minimum organic matter content of 10% dry weight in planting beds, and 5% organic matter content in lawn sod areas, and a pH from 6.0 to 8.0 or matching the pH of the adjacent undisturbed soil. The topsoil layer shall have a minimum depth of 8 inches, except where tree roots limit the depth of incorporation of amendments needed to meet the criteria. The subsoils below the topsoil layer shall be cultivated to a depth of 4 inches with some incorporation of the upper material to avoid stratified layers, where feasible. Cultivation of the soil shall be done by a method approved by the Engineer. This operation should be done at right angles to the natural flow of water on slopes. Remove rocks, roots, clods, stumps and debris over 2 inches in diameter. Lightly compact soil and establish a smooth and uniform finished grade that protects against obstruction to surface drainage and ponding. For bark mulched shrub and groundcover beds, finish grade prior to placement of bark shall be 2 inches below top of adjacent finish grade.

(August 2016, City of Auburn)

Add the following new section:

8-02.3(5)B Root Control Barrier

Root control material shall be CP-Series Root Barrier Panels as manufactured by Century Root Barrier, Universal Guide as manufactured by Deep Root, or Dual Purpose Panels as manufactured by Villa Root Barriers or approved alternate.

Install continuous section of root control material in all tree planting areas as shown on the Plans. Backfill with topsoil material being careful not to damage or displace root control material.

8-02.3(6) Soil Amendments

(January 2017, City of Auburn)

Supplement this section with the following:

GroCo (GroCo Inc. tel. 206-622-5141), Tagro (City of Tacoma Tel. 253-502-2150), or Cedar Grove Compost shall be mixed with native topsoil to produce a 75/25 mix ratio (topsoil 75 percent and amendment 25 percent).

8-02.3(7) Layout of Planting

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor is responsible for determining required quantities of plant material to complete the landscape plan as shown.

It is anticipated that some minor arranging of plant material will be necessary during the progress of work.

From the centerline of the first row of shrubs or ground covers to the edge of the planting bed shall be ½ the typical dimension shown on the Plans and details.

Plant trees a minimum of 3 feet from curbs and sidewalks when the space is available; otherwise they shall be centered in the available space. Trees in tree wells shall be centered within the tree grate and frame.

8-02.3(8) Planting

(January 2017, City of Auburn)

Supplement this section with the following:

Plant trees and shrubs in planting pits and install tree frames and grates as detailed on Plans.

Do not over excavate planting pit depth, however, over excavation of planting pit width is desirable.

Trees shall be handled by the rootball, not by the trunk. Burlap and wire shall remain intact until trees are set in their positions within each planting pit. Remove all wire, twine, and burlap from the top third of the rootball before backfilling. Plant trees and shrubs upright, rotating them to give the best placement to adjacent plants, topography, and structures. Hold plant rigidly in position until topsoil has been backfilled and tamped firmly around the ball or roots.

When the planting pit is backfilled halfway, place the specified quantity of fertilizer plant tablets and stakes, if necessary, as shown on the Plans. Evenly space the fertilizer tablets around the perimeter of and immediately adjacent to the root system. Carefully place, water, and compact planting topsoil filling all voids. Do not injure the root system.

When the planting pit is three-quarters (3/4) backfilled, fill with water and allow it to soak away. Fill pits with additional topsoil and continue backfilling as detailed on Plans. Ground bark shall be placed over all tree-planting saucers to a compact depth of 2 inches. Water trees immediately after planting.

The root systems of all bare root plant material shall be dipped in a slurry of silt and water immediately prior to planting.

8-02.3(10) Fertilizers

(January 2017, City of Auburn)

Supplement this section with the following:

Trees, shrubs, and groundcover shall be fertilized as follows:

Formula 4-2-2 "Transplanter" as manufactured by Pacific Agro Co., with Hercules nitroform and W.R. Grace's "Magamp" and trace elements. Apply at a rate of:

Trees	8 ounces
Shrubs	2 ounces
Groundcover	1 ounce

Agriform Tablets: Planting tablets, 21-ram size, as manufactured by Agriform International Chemicals, Inc., 20-10-5 analysis. Apply at a rate of:

Trees	4 tablets for every foot of rootball diameter
Shrubs	3 tablets
Groundcover	1 tablet

8-02.3(11) Bark or Wood Chip Mulch

(January 2017, City of Auburn)

Supplement this section with the following:

Ground bark shall be placed over all planting beds and over all tree-planting saucers to a compact depth of 2 inches. Ground bark shall be placed around existing trees and bushes disturbed by construction to a compact depth of 2 inches. Thoroughly water and hose down plants with a fine spray to wash the leaves of the plants immediately after bark application.

8-02.3(12) Completion of Initial Planting

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Upon completion of the initial planting and per the request of the Contractor the Engineer will make an inspection of all plant material and notify the Contractor, in writing, of any replacements or corrective action necessary to meet the Contract Document requirements. The Contractor shall replace all materials requested or missing and correct unsatisfactory conditions within 15 working days. The Engineer will provide the Contractor with written notification when the initial planting is accepted; at which time the plant establishment period shall begin.

Completion of initial planting includes the following:

1. Installation of root control barriers and watering systems for trees.
2. Installation of all required planting materials (trees, shrubs, and groundcovers).
3. Planting area cleanup.
4. Full operation of the irrigation system, complete bark mulch coverage, and all planting areas in a weed-free condition.
5. Approval of Plant Establishment Plan.

8-02.3(13) Plant Establishment

(May 2018D, City of Auburn)

Supplement this section with the following:

Plant establishment requirements outside the City of Auburn right of way shall be subject to the applicable agreements, easements, and permit conditions for the property on which they are associated.

The plant establishment period may be extended or shortened by the Engineer based on the Engineer's opinion of whether or not the plantings have been adequately established. Physical Completion and Final Acceptance will not be allowed until after the plant establishment period has begun. The Plant Establishment period may occur during the contract Guarantee Period specified in Section 1-05.10.

(August 2016, City of Auburn)

The second, third, and fourth paragraphs are replaced with the following:

The plant establishment period shall begin immediately upon written notification from the Engineer of the completion of the initial planting for the project. The Contractor shall maintain all plant materials for a period of 1-year after the Plant Establishment period has

begun. During this period, the Contractor shall maintain a healthy growing condition for all plant materials and water, prune, spray, weed, and perform other necessary maintenance operations. Planting beds shall be kept free of all weeds, grass and other undesirable vegetation. Plants shall be inspected by the Contractor at least monthly from October 1st to April 30th and at least once a week from May 1st to September 30th and maintenance performed promptly. Dead or impaired plants shall be promptly replaced during the planting season specified in Section 8-02.3(8) and all soil ridges shall be removed from around the watering basins before the end of the maintenance period. At the determination of the Engineer, replacement plants may require an additional acceptance and establishment period.

After completion of the landscape establishment period, the Contractor shall request an inspection by the Engineer. The Contractor shall correct all conditions unsatisfactory to the Engineer within a 10-day period, weather permitting, immediately following the inspection.

8-02.3(14) Plant Replacement

(January 2017, City of Auburn)

Supplement this section with the following:

Completion of the Plant Establishment period will be certified, in writing, by the Engineer.

8-02.3(16) Lawn Installation**8-02.3(16)A Lawn Installation**

(January 2017, City of Auburn)

Supplement this section with the following:

Except in areas where the Plans specify hydro-seed, lawn seeding will not be permitted on this project. "Lawn Sod" per Section 9-14.6(8) (Sod) shall be laid smoothly in place in accordance with the typical section(s) in the Plans.

Prior to installing "Lawn Sod" all dry soil shall be moistened by sprinkling with water. On sloped areas, the sod shall be laid with the long dimension parallel to the toe or top of slope. The "Lawn Sod" shall be rolled and heavily watered by sprinkler after placement.

8-02.3(16)B Lawn Establishment

(January 2017, City of Auburn)

Supplement this section with the following:

The lawn establishment period may be extended or shortened by the Engineer based on the Engineer's opinion of whether or not the lawn has been established. Physical Completion and Final Acceptance will not be allowed until after the lawn establishment period has ended.

Lawn establishment requirements outside the City of Auburn right of way shall be subject to the applicable agreements, easements, and permit conditions for the property on which they are associated.

8-02.3(16)C Lawn Mowing

(January 2017, City of Auburn)

Supplement this section with the following:

Lawn mowing beyond the mowing required during the lawn establishment period shall only be required when indicated in the Plans. Lawn mowing will not be required beyond the Physical Completion and Final Acceptance of the project.

(August 2016, City of Auburn)

Add the following new section:

8-02.3(16)D Fertilizer for Sodded Area

Prior to placing sod, a 10-2-10 fertilizer shall be rototilled into the top 3 inches of the soil at a rate of 4 pounds of available nitrogen per 1,000 square feet.

8-03 Irrigation Systems

8-03.1 Description

(January 2017, City of Auburn)

Supplement this section with the following:

This work also consists of the replacement and/or repair of existing irrigation systems.

8-03.2 Materials

(January 2017, City of Auburn)

Supplement this section with the following:

Irrigation conduit shall be PVC pipe and be in accordance with Section 9-15.1(2) (Polyvinyl Chloride Pipe and Fittings).

8-03.3(2) Excavation

(January 2017, City of Auburn)

Supplement this section with the following:

Backfilling shall be done when pipe is not in an expanded condition due to heat or pressure. Cooling of the pipe can be accomplished by operating the system for a short time before backfilling, or by backfilling in the early part of the morning before the heat of the day.

8-03.3(3) Piping

(January 2017, City of Auburn)

Supplement this section with the following:

Due to the nature of PVC pipe and fittings, the Contractor shall exercise care in handling, loading, unloading and storing to avoid damage. The pipe and fittings shall be stored under cover and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lay flat, so as not to be subject to undue bending or concentrated external load at any point. Any pipe that has been dented or damaged shall be set aside until such damage has been cut out and the pipe is rejoined with a coupling.

8-03.3(4) Jointing

(January 2017, City of Auburn)

Supplement this section with the following:

Solvent welded joints shall be given at least 15 minutes set-up time before moving or handling. Pipe shall be partially center loaded to prevent arching and slipping. No water shall be permitted in pipe until a period of at least 10 hours has elapsed for solvent weld setting and curing.

The Contractor shall take great care to insure that the inside of the pipe is absolutely clean. Any pipe ends not being worked on shall be protected and not left open.

No PVC pipe may be threaded or connected to a threaded fitting without an adapter.

8-03.3(6) Electrical Wire Installation

(January 2017, City of Auburn)

Supplement this section with the following:

Splices shall be made with a dry-splice wire connector, PVC construction body and snap-lock plug with copper crimp sleeve, three flapped openings for wires and sealer packet such as Rainbird ST-03UL/PT-55 Snap-Tite, UL Wire Connectors and PT-55 Sealer System, Glendora, California or equivalent. Install per manufacturer's specifications.

8-03.3(7) Flushing and Testing

(January 2017, City of Auburn)

Supplement this section with the following:

Before pressure testing, soluble weld joints shall be given at least 24 hours curing time. Before backfilling and installation of automatic valve, all sprinkler lines with risers installed and capped shall be flushed and pressure-tested. The final test must be performed and approved under the direction and supervision of the Engineer. The location, inspection and testing provisions of these specifications shall be strictly adhered to. Any part of the sprinkler system backfilled before location, testing, or approved inspection by the Engineer, will be completely uncovered and exposed until approved for backfilling by the Engineer.

8-03.3(9) Backfill

(January 2017, City of Auburn)

Supplement this section with the following:

Trenches under roads or paved areas shall be backfilled and tamped with a mechanical tamper in successive 6 inch lifts. Paving shall be replaced to the satisfaction of the Engineer. Jacking under paved areas will be allowed with Engineer's approval.

Unless otherwise specified, trenches shall be deep enough to allow 18 inches cover over sprinkler lines and 24 inches cover over supply lines. All trenches must be straight and not have abrupt changes in grade. Bedding for irrigation lines shall be washed sand from a minimum of 3-inches below to 3-inches above all irrigation lines. Native material may be used as backfill for the remainder of the trench when not in paved areas. Rocks larger than 3-inches in diameter shall be removed from any native material used as backfill.

8-03.3(11) System Operation

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor shall perform sprinkler coverage tests to determine if coverage and operation of the system is complete and satisfactory before the sprinkler system will be accepted. If any part of the system is inadequate because of Contractor workmanship or material, repairs or replacement shall be made at Contractor expense and the test repeated until accepted by the Engineer.

(August 2016, City of Auburn)

In the third paragraph, the last sentence is revised to read:

Potable water shall not flow through the cross-connection control device to any downstream component until tested and approved for use by the City in accordance with Section 8-03.3(12) (Cross Connection Control Device Installation).

8-03.3(12) Cross Connection Control Device Installation

(January 2017, City of Auburn)

Supplement this section with the following:

Backflow preventer assembly shall be installed at location(s) shown on the Plans.

8-03.3(13) Irrigation Water Service

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Water meter(s) will be installed at location(s) shown on the Plans in accordance with Section 7-15 (Service Connections).

8-03.3(14) Irrigation Electrical Service

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Electrical service and or wires will be installed at location(s) shown on the Plans in accordance with Section 8-20.3(10) (Services transformer, Intelligent Transportation System Cabinet).

8-04 Curbs, Gutters and Spillways

8-04.3 Construction Requirements

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

(January 2, 2018 WSDOT Amendment)

The first paragraph is supplemented with the following:

Roundabout truck apron cement concrete curb and gutter shall be constructed with air entrained concrete Class 4000 conforming to the requirements of Section 6-02.

(January 2017, City of Auburn)

Supplement this section with the following:

Reinforcing shall be constructed at catch basins in accordance with the applicable Standard Detail(s).

When slip-form equipment is used to place the curb and gutter, the concrete mix design may be modified as follows: The Grade No. 2 coarse aggregate (1½ inch minus) may be replaced by Grade No. 5 coarse aggregate (1 inch minus) when required to accommodate the equipment.

(August 2016, City of Auburn)

The fourth paragraph is replaced with the following:

Joints in the curb and gutter shall be spaced to match joints in the abutting driveways and sidewalks or cement concrete pavement. All expansion/through joints shall extend entirely through the curb and gutter section. Maximum joint spacing shall be as follows:

- A. ¾ inch expansion/through joints at 20-foot maximum spacing, or 3/8-inch expansion/through joints at 10-foot maximum spacing;
- B. 1/8 inch x 1 inch deep saw cut or scored joints per Standard Specification 8-04.3(1) (Cement Concrete Curbs, Gutters, and Spillways) at intervening 10-foot maximum spacing.

8-04.3(1)A Extruded Cement Concrete Curb

(January 2017, City of Auburn)

Supplement this section with the following:

“Extruded Cement Concrete Curb” shall be type 6 as detailed in the applicable Standard Plan.

8-05 Dewatering System

8-05.1 General

(August 2016, City of Auburn)

When dewatering trenches requires a dewatering system the Contractor shall design and provide a dewatering system using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. The Contractor shall design the system to prevent differential hydrostatic head that would result in floating out soil particles in a manner termed as a “quick” or “boiling” condition. The system shall not be dependent solely upon sumps or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation’s stability.

Where the Engineer determines that the Contractor cannot sufficiently dewater the trench using the “Normal Trench Dewatering” described in Section 7-08.3(2)L (Dewatering Trenches) of these Special Provisions, the Contractor shall provide a dewatering system of sufficient size and capacity to prevent ground and surface water flow into the excavation and to allow all work to be installed in a dry condition.

The Contractor shall control, by acceptable means, all water regardless of source and be fully responsible for disposal of the water.

The Contractor shall confine discharge piping and/or ditches to available easements or to additional easements obtained by Contractor and provide necessary permits and/or additional easements at no additional cost to the City.

The Contractor shall control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary to these purposes, the Contractor shall lower water levels in advance of excavation, utilizing wells, well points, jet educators, or similar positive methods. The water level as measured by piezometers shall be maintained a minimum of 2 feet below prevailing excavation level.

The Contractor shall commence dewatering prior to any appearance of water in excavation and continue until work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.

Open pumping with sumps and ditches shall be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes.

The Contractor shall install wells and/or well points, if required, with suitable screens and filters, so that continuous pumping of fines does not occur, arrange discharge to facilitate collection of samples by the City. During normal pumping, and upon development of well(s), levels of fine sand or silt in the discharge water shall not exceed 5 ppm. The Contractor shall install sand tester on discharge of each pump during testing to verify that levels are not exceeded.

The Contractor shall control grading around excavations to prevent surface water from flowing into excavation areas.

8-05.1(1) Design

(August 2016, City of Auburn)

Contractor shall designate and obtain the services of a qualified dewatering specialist to provide a dewatering plan as may be necessary to complete the work.

Contractor shall be responsible for the accuracy of the drawings, design data, and operational records required.

Contractor shall be solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system.

8-05.1(1)A Dewatering Discharge

(January 2018, City of Auburn)

Discharge Limits

1. Turbidity – less than 5 NTUs above background
2. Sand Content – less than 10 ppm
3. pH between 6.5 and 8.5
4. No visible sheen in the stormwater discharge or in the receiving water

Contractor shall conduct Daily Monitoring and provide records of:

PH

TSS (NTU)

Volume Discharged (gpd)

Water levels in monitoring wells

Sand content (first 5 days after startup)

Contractor shall conduct Weekly Monitoring and provide records of:

Sand Content

Sampling and Analysis

Preliminary testing of dewatering discharge will be conducted by the Contractor during the initial dewatering activities prior to discharging water to the City's stormwater system. Contractor shall use the preliminary water testing results to evaluate what treatment components, if any, will need to be added to the dewatering system. During initial dewatering activities, water will be pumped into a series of storage containers. Water will be sampled from the last tank in the series and analyzed for the constituents specified in the table above.

Contractor shall provide monitoring records to the City on a daily basis.

The total flow quantified by the flow totalizer and water levels in monitoring wells will be recorded on the daily contractor logs and at the time effluent water samples are collected. The total flow measurements will be included in the effluent sampling summary reports.

8-05.1(1)B Temporary Dewatering Plan

(May 2017, City of Auburn)

The Contractor shall submit a Temporary Dewatering Plan to the Engineer for review per Section 1-06.7 (Submittals). The Temporary Dewatering Plan shall be prepared by a Professional Engineer or Hydrogeologist who is licensed to practice in the State of Washington, and who has a minimum of five years of experience in the design of dewatering systems for similar projects.

The Temporary Dewatering Plan shall include:

- A narrative of the Contractor's proposed dewatering system methodology,
- Working drawings showing system layout and components including number and location of dewatering wells, wellpoints, and/or eductors with a well numbering system,
- Design calculations demonstrating system and equipment adequacy,
- Specifications of proposed materials and equipment, including pump curves,
- Pumps and sumps for removal of incidental seepage, perched groundwater, etc.
- Provision for the settlement and removal of sediments prior to discharge (e.g., settling tanks),
- Number and location of temporary monitoring wells to be installed (Note that one monitoring well is present on-site. However, this well will be impacted during construction activities and therefore cannot be used as one of the temporary monitoring wells used during dewatering efforts.),
- Dewatering schedule, including mobilization, installation, development, testing, water quality analysis, start-up, monitoring, operation, shutdown, decommissioning, clean-up, and removal,

- Describe how groundwater will be treated to meet the applicable discharge limits, and
- Proposed plans of operation.

Any changes to the proposed system shall be submitted to the Engineer for review prior to implementation.

In addition to the Temporary Dewatering Plan, the submittal shall include:

- A Contingency Plan for storm events or other conditions (including failure of the dewatering system) that could raise groundwater levels and overwhelm the capacity of the dewatering system pumps or discharge facilities. In the Contingency Plan, the Contractor should:
 - Make provision to suspend dewatering operations for anticipated events (e.g., storms) and unanticipated events that may occur prior to excavation work and that would require dewatering.
 - Provide methods to secure such items as the excavation, shoring, side slopes, equipment, dewatering system components, base of excavation, and any installed facilities from the adverse effects of elevated groundwater levels.
 - A Water Quality Sampling Plan

The Engineer's review of the Temporary Dewatering Plan shall not constitute approval nor relieve the Contractor from full responsibility for errors therein nor from the entire responsibility for complete and adequate groundwater level control and volume removal in the excavated areas; formation protection; and protection of existing and proposed structures to the extent specified herein. The Contractor shall be solely responsible for control of the groundwater levels and hydrostatic pressures to the depths herein specified and for avoiding settlement outside the excavation as herein specified. The Contractor shall bear sole responsibility for proper design, installation, operation, maintenance, and any failure of any component of the temporary dewatering system for the duration of the Contract.

8-05.1(2) Damages

(August 2016, City of Auburn)

Contractor shall be responsible for and shall repair without cost to the City, any damage to work in place, or other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources, habitat, existing wells, and the excavation, including, damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system.

The Contractor shall remove subgrade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to the Owner.

8-05.1(2)A Settlement Monitoring Program

(January 2018, City of Auburn)

Contractor shall develop and submit to the City a Settlement Monitoring Program for review and approval prior to beginning dewatering per Section 1-06.7 (Submittals).

Contractor shall establish a settlement monitoring program and perform all survey and inspections necessary for monitoring existing site features. All surveys shall be performed under the direction of a licensed land surveyor. Vertical and horizontal measurements shall be accurate to 0.01 feet or smaller.

Contractor shall set survey monuments on permanent structures, the roadway, and utilities. The survey monuments may consist of PK nails with a washer with an identification number. Contractor shall record the identification number, elevation, and coordinate location prior to initiating dewatering, and submit the baseline information to the Engineer. The method of installing survey monuments, and the locations and number of survey monuments shall be as approved by the Engineer. The Engineer shall be notified a minimum of one day prior to setting survey monumentation. **The initial survey to record the monuments baseline horizontal and vertical location shall be completed by conducting three separate level loops for each monument.** Each loop shall be run so that they start and stop at a different location each time. The intent of running multiple level loops on each monument is to catch potential survey errors.

Contractor shall perform an initial survey prior to commencement of the Work, daily for the first 5 days after the dewatering system is started up, subsequently two days per week when the dewatering system is active, and one day per week for a month after the dewatering system is turned off. If pumping or dewatering of excavations are interrupted or cannot be adequately maintained, the survey monuments and targets shall be checked a minimum of once every 24 hours for as long as the conditions exist.

Contractor shall immediately notify the Engineer of any cumulative change in elevation or location of any monument or target in excess of 1/4 inch. If the cumulative change in elevation or location exceeds 1/2 inch, the Contractor shall immediately notify the Engineer and resolve the problem using methods defined in the Contingency Plan or other reasonable methods.

The Contractor shall maintain in a log the survey data taken for each monument or target. A copy shall be sent to the Engineer after each addition of data.

Contingency Plan

Contractor shall prepare a Contingency Plan to mitigate the effects of excessive settlement or movement of existing Site features. The Contingency Plan is not to restrict the Contractor from using the best construction methods available to meet the conditions but is required to demonstrate a reasonable preparedness to mitigate the effects of excessive movement or settlement. The following are minimum requirements for a Contingency Plan:

1. The Contingency Plan shall outline steps to be taken to protect structures, buildings, and utilities and to stop excessive movement or settlement identified by the settlement monitoring program.
2. Contractor shall have all material, manpower, equipment, and other items identified in the Contingency Plan available at all times while excavations are ongoing or excavated areas are open.”

8-05.1(3) Maintaining Excavation in Dewatering Condition

(August 2016, City of Auburn)

Dewatering shall be a continuous operation. Interruptions due to power outages or any other reason will not be permitted.

The Contractor shall continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance.

The Contractor shall provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to City.

System maintenance shall include but not be limited to 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components and any other work required to maintain excavation in dewatered condition.

8-05.1(4) System Removal

(August 2016, City of Auburn)

The Contractor shall abandon and remove from the site, in accordance with WAC Chapter 173-160 and RCW Chapter 18.104, all groundwater control and monitoring system elements. The Contractor shall be, or employ the services of, a water well contractor licensed in the State of Washington to abandon all wells, and/or well points. The Contractor shall assume ownership and responsibility for the disposal of all removed groundwater control pumps, pipes, and other assorted system hardware.

The Contractor shall abandon and remove the groundwater control and monitoring systems in such a manner that groundwater does not flow or seep through groundwater control or monitoring system penetrations into any structure or facility. Wells decommissioned within roadways shall be capped beneath the roadway base course with at least 24-inches of class 3000 concrete. Beneath the concrete cap, the Contractor may utilize bentonite to fill the well per Department of Ecology requirements.

8-06 Cement Concrete Driveway Entrances

8-06.1 Description

(January 2017, City of Auburn)

Supplement this section with the following:

Driveway approaches shall be considered to be that portion of the private driveways, which require removal and replacement to transition between the new cement concrete driveway aprons and the existing private driveway. "Cement Concrete Driveway Approaches" shall be constructed and finished as specified for driveways, except they shall be 4-inch thick slabs and not reinforced.

8-06.2 Materials

(January 2017, City of Auburn)

Supplement this section with the following:

Materials shall meet the requirements of the following sections:

Wire Mesh (Welded Wire Fabric)	9-07.7
Concrete Curing Materials and Admixtures	9-23

8-06.3 Construction Requirements

(January 2017, City of Auburn)

Supplement this section with the following:

Concrete driveways shall be cured per methods described in Section 5-05.3(13) (Curing), with the following exceptions if the curing compound method is used:

- The Contractor shall use Type I clear curing compound per Section 9-23 (Concrete Curing Materials and Admixtures).
- The Contractor shall not use white pigmented curing compound.
- The curing agent shall be applied immediately after brushing and be maintained for a period of 5 calendar days.

The Contractor shall have readily available sufficient protective covering, such as waterproof paper or plastic membrane, to cover the pour of an entire day in event of rain or other unsuitable weather.

Additional requirements for curing in hot weather shall be as follows:

In periods of low humidity, drying winds, or high temperatures, a fog spray shall be applied to concrete after placement as soon as conditions warrant to prevent the formation of shrinkage cracks. The spray shall be continued until conditions permit the application of liquid curing membrane or other curing media.

Additional requirements for curing in cold weather shall be as outlined in Section 5-05.3(14) (Cold Weather Work).

8-07 Precast Traffic Curb

8-07.2 Materials

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Materials shall meet the requirements of the following sections:

Precast Traffic Curb	9-18.1
Epoxy	9-26.2
Paint	9-34.2
Raised Pavement Markers	9-21.2
Type 3 Delineators	Per Plan

8-07.3 Construction Requirements**8-07.3(1) Installing Curbs**

(January 2017, City of Auburn)

Delete the first paragraph and replace it with the following:

The curb shall be installed in accordance with the applicable City of Auburn Standard Detail.

The second sentence is revised to read:

Before the epoxy adhesive is applied, all dirt shall be cleaned from the pavement surface by washing.

The fourth paragraph is revised to read:

All joints between adjacent pieces of curb except joints for expansion and/or drainage shall be filled with epoxy.

8-09 Raised Pavement Markers**8-09.3 Construction Requirements****8-09.3(2) Surface Preparation**

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor shall pre-mark the layout of all channelization and receive approval from the Engineer before installing "Raised Pavement Markers" (RPM's). Pre-marks shall consist of painted spot markings or other approved methods. The Contractor shall request the Engineer's approval of the pre-mark for channelization at least 2 full working days prior to installation of the RPMs.

(August 2016, City of Auburn)

Add the following new section:

8-09.3(8) Remove Raised Pavement Markings

All raised pavement markings shall be removed before placing a new asphalt concrete pavement overlay. Removal of markers shall be conducted in a manner that prevents damage to existing pavement. Damage to the existing pavement caused by Contractor's negligence shall be repaired by the Contractor at the Contractor's expense. Repairs shall be to the satisfaction of the Engineer.

8-13 Monument Cases**8-13.1 Description**

(January 2017, City of Auburn)

Supplement this section with the following:

This work consists of constructing, or adjusting, monuments, to proper grade, and the furnishing and placing of materials and other related work for monuments.

8-13.2 Materials

(January 2017, City of Auburn)

Supplement this section with the following:

Monument cases and covers shall be in accordance with the applicable City of Auburn Standard Details. Concrete used for setting the monuments shall be Class 3000. Bronze plug markers will be furnished by the City and provided to the Contractor.

8-13.3 Construction Requirements

(January 2018, City of Auburn)

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

After the monument or monument case has been in place for a minimum of 3 calendar days, the roadway surface shall be patched in a workman like manner with Class ½ inch asphalt concrete pavement.

(January 2017, City of Auburn)

Supplement this section with the following:

The bronze plug marker shall be inserted in the concrete mix to the required line and grade. The concrete base shall be placed on a well-compacted foundation. When Type B monuments are installed, the monument case shall be placed in such a manner that will not disturb the bronze plug markers.

Where called for on the Plans, the Contractor shall adjust existing monuments to the grade as staked. The existing cast iron case and cover shall first be removed and thoroughly cleaned for reinstalling at the new grade.

(August 2016, City of Auburn)

Add the following new section:

8-13.3(1) Reference Points

The Engineer shall reference all monuments in advance of construction and shall reset the points and grades at the proper time.

It shall be the responsibility of the Contractor to furnish materials and install required castings in accordance with the Plans. The Contractor shall carefully protect all reference points to the monuments and shall give the Engineer reasonable notice of the schedule for monument work in order to avoid destruction of the points.

8-14 Cement Concrete Sidewalks

8-14.1 Description

(January 2017, City of Auburn)

Delete this section and replace it with the following:

This work shall consist of construction of cement concrete sidewalks, including curb ramps with detectable warning strips.

8-14.2 Materials

(January 2, 2018 WSDOT Amendment)

In the second paragraph, each reference to “Federal Standard 595” is revised to read “SAE AMS Standard 595”.

8-14.3 Construction Requirements**8-14.3(1) Excavation**

(January 2017, City of Auburn)

Supplement this section with the following:

Excavation for sidewalk and for curb ramps shall be in accordance with Section 2-03, (Roadway Excavation and Embankment).

Embankments shall be compacted by Method B as specified in Section 2-03.3(14)C (Compacting Earth Embankments). Approved tampers shall be used in areas inaccessible to normal compaction equipment.

The subgrade shall be graded to within 1 inch of established grade and the area between the sidewalk and the adjacent private property line shall be shaped to line, grade, and section shown on the Plans before the forms are set.

8-14.3(2) Forms

(January 2017, City of Auburn)

Supplement this section with the following:

Low areas in the subgrade shall be backfilled and compacted to the satisfaction of the Engineer. All high areas in the subgrade shall be cut down to meet the subgrade requirements.

8-14.3(3) Placing and Finishing Concrete

(August 2016, City of Auburn)

The fourth paragraph is revised to read:

Curb Ramps shall be constructed in accordance with the Plans. If any slope exceeds a maximum slope specified on the Standard Plans or Contract Plans or if any dimension is less than a minimum dimension specified on the Standard Plans or Contract Plans, the Contractor shall replace the curb ramp or a portion of the curb ramp as necessary and approved by the Engineer to bring the curb ramp into compliance.

(January 2017, City of Auburn)

Supplement this section with the following:

Expansion and contraction (dummy) joints shall be located and constructed in accordance with the Standard Details.

Expansion joints shall be formed by first cutting a groove in the concrete with a tee bar of a depth equal to, but not greater than the joint filler material, and then working the pre-

molded joint filler into the groove. Pre-molded joint filler used for expansion joints shall be normal to and flush with the surface of the sidewalk. All joints, expansion and dummy, shall be positioned in true alignment at right angles to the line of the sidewalk.

Where the sidewalk abuts a curb, or curb and gutter, the sidewalk shall be constructed with a thickened edge.

Joints and the sidewalk perimeter shall be edged with a 3/8 inch to 1/2 inch radius edger.

The surface of the sidewalks shall be brushed with a fiber hair brush of an approved type in a transverse direction except that at driveway and alley crossings it shall be brushed longitudinally.

(August 2016, City of Auburn)

Add the following new section:

8-14.3(3)A Special Sidewalk

(Main Street – Boardwalk)

Finishing of the “Special Boardwalk Cement Concrete Sidewalk” shall include 3/8 inch “V” grooves at random spacing of 12 inches to 24 inches on center with a rough broom surface finish as approved by the Engineer. A color additive shall be mixed with the concrete so that after curing, the “Special Boardwalk Cement Concrete Sidewalk” closely matches the color of the existing sidewalk on East Main Street from Auburn Avenue to Auburn Way. A “Special Boardwalk Cement Concrete Sidewalk” sample pour of a size designated by the Engineer shall be approved by the Engineer before placing the same mix at the location(s) shown on the Plans. The finished “Special Boardwalk Cement Concrete Sidewalk” shall match the approved sample panel throughout its entire area. The color admixture shall be CHROMIX brand color C-25 (Sombrero Buff) or approved equivalent.

(Downtown Sidewalk – 2x2 Scoring)

The “Special 2x2 Scored Cement Concrete Sidewalk” shall be concrete with 2 ft. x 2 ft. scoring pattern with a light broom finish.

(Downtown Street Corner Sidewalk - Brick)

The “Special Brick Sidewalk” at street corners as specified on the Plans shall be constructed of brick pavers in a rectangular pattern. The patterns shall extend from the back of curb to the building face or property line and minimum of 10 feet in either direction from the corner of the property lines. The brick pavers shall be Mutual Materials “Holland” 8cm, or approved equivalent and the color shall be per Plans.

8-14.3(4) Curing

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Concrete sidewalks shall be cured per methods described in Section 5-05.3(13) (Curing), with the following exceptions if the curing compound method is used:

- The Contractor shall use Type I clear curing compound per Section 9-23 (Concrete Curing Materials and Admixtures).
- The Contractor shall not use white pigmented curing compound.
- The curing agent shall be applied immediately after brushing and be maintained for a period of 5 calendar days.

The Contractor shall have readily available sufficient protective covering, such as waterproof paper or plastic membrane, to cover the pour of an entire day in event of rain or other unsuitable weather.

Additional requirements for curing in hot weather shall be as follows:

In periods of low humidity, drying winds, or high temperatures, a fog spray shall be applied to concrete after placement as soon as conditions warrant to prevent the formation of shrinkage cracks. The spray shall be continued until conditions permit the application of liquid curing membrane or other curing media.

Additional requirements for curing in cold weather shall be as outlined in Section 5-05.3(14) (Cold Weather Work).

8-18 Mailbox Supports

8-18.2 Materials

(January 2017, City of Auburn)

Supplement this section with the following:

Anchor Bolts, Nuts, and Washers for the Neighborhood Delivery and Collection Box Unit shall be in accordance with Section 9-06.5 (Bolts) and Section 9-06.22 (Bolts, Washers, and Other Hardware).

8-20 Illumination, Traffic Signal Systems, and Electrical

8-20.1(1) Regulations and Code

(April 2018, City of Auburn)

The fourth paragraph is revised to read:

Safe-wiring labels required by Labor and Industries shall apply on this project.

(January 2, 2018 WSDOT Amendment)

The last paragraph is revised to read:

Persons performing electrical Work shall be certified in accordance with and supervised as required by RCW 19.28.161. Proof of certification shall be worn at all times in accordance with WAC 296-46B-942. Persons failing to meet these certification requirements may not perform any electrical work, and shall stop any active electrical work, until their certification is provided and worn in accordance with this Section.

8-20.1(3) Permitting and Inspections

(April 2018, City of Auburn)

Supplement this section with the following:

The Contractor shall obtain electrical permit(s) from Washington State Department of Labor and Industries. Electrical Service inspection(s) will be performed by Labor and Industries. Obtaining the permit, requesting inspections, making corrections, and securing L&I approval is the responsibility of the Contractor.

8-20.2(2) Equipment List and Drawings

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Supplemental data for pole equipment, luminaries, splice kits, vehicle signal heads, pedestrian signal heads, pedestrian push button assemblies, video detectors, PTZ camera(s), junction boxes, conduit, conduit fittings, wiring, service/battery back-up cabinet, controller cabinet (including controller and all other associated equipment in the cabinet), preemption detectors and discriminators, and all other electrical materials to be used on this project shall be submitted for approval before being incorporated into the work. Quantity, pole height, davit arm length, and mast arm length shall be indicated and consistent with the Plans.

The Contractor shall submit supplemental data and material shop drawings for all structural items. The shop drawings and structural calculations shall clearly identify the type of equipment to be used and shall be stamped by a registered professional engineer registered. Shop drawings shall conform to the contract Plans.

All material to be reviewed for the signal system shall be submitted in a single package.

The City of Auburn reserves the right to inspect the manufacturing process of all materials. Final inspection and acceptance of the installed materials will not be given until final installation and testing has been completed on the system. Approval to install materials and equipment must be obtained from the Engineer at the job site, before installation.

8-20.3 Construction Requirements

(April 2018, City of Auburn)

Add the following new section:

8-20.3(1)A Order of Work

Except as specifically allowed in Section 8-20.3(1) (General), each element of existing signal, illumination, communication and ITS systems shall remain in operation until modified systems to replace such are operational and accepted by the Contracting Agency. This includes, but is not limited to temporary vehicle detection which shall be provided by the Contractor during construction to replace the function of existing vehicle detection systems prior to any project work that adversely impacts the function of existing detection systems. Temporary vehicle detection equipment shall be compatible with City signal cabinet and installation shall be coordinated with City traffic signal technicians. Contractor shall be responsible for ensuring temporary vehicle detection systems function properly at all times while in use.

Temporary video detection systems shall be in accordance with Section 8-20.3(14)I (Video Detection System) of these specifications.

8-20.3(4) Foundations

(January 2, 2018 WSDOT Amendment)

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

Concrete for Type II, III, IV, V, and CCTV signal standards and light standard foundations shall be Class 4000P and does not require air entrainment.

(April 2018 City of Auburn)

Supplement this section with the following:

Before placing the concrete, the Contractor shall block out around any other underground utilities that may lie in the excavated base to prevent foundation adherence to the utility line. Concrete foundations shall be troweled, brushed, and edged. Exposed anchor bolts and conduits shall be promptly cleaned of any concrete after installation.

Where no sidewalk is planned or exists, the top of the foundation shall be 12 inches above roadway centerline, unless otherwise noted on the Plans.

The joint between traffic signal cabinet and its foundation shall be sealed using a clear, waterproof, silicone caulk.

8-20.3(5) Conduit**8-20.3(5)A General**

(January 2, 2018 WSDOT Amendment)

The last two sentences of the last paragraph are deleted.

This section is supplemented with the following:

All conduits shall include a pull tape with the equipment grounding conductor. The pull tape shall be attached to the conduit near the end bell or grounded end bushing, or to duct plugs or caps if present, at both ends of the conduit.

(April 2018, City of Auburn)

Supplement this section with the following:

Unless specified on the Plans, metal conduit shall not be used.

Location wire placed for conduit containing, or that are to contain, fiber optic cable shall be 12 AWG.

Conduit shall be in accordance with all provisions of Section 9-29.1 (Conduit, Innerduct, and Outerduct).

Conduit runs installed entirely under sidewalk, driveways, and landscape areas may be Schedule 40 PVC unless otherwise noted on the Plans. The same type and schedule of conduit shall be used for the entire length of the run from outlet to outlet and from Schedule 80 PVC conduit crossing the roadway to the nearest junction box. Bends for conduits

serving existing or future interconnect and fiber optic cables shall be no less than 4 feet in diameter. All conduit ends shall have bell end PVC bushings.

Stubouts shall be installed as shown on the Plans.

A pull tape shall be installed in all spare conduits for future conductors. The pull tape shall have printed sequential measurement markings at least every 3 feet. At least 2 feet of pull tape shall be doubled back into the conduit at each termination. Conduits without conductors (spare conduits) shall be plugged on both ends with mechanical plugs. Locate wire shall be installed in all empty or spare conduits, not in joint trench with conductors.

Loop stubouts that are installed before the final lift of pavement shall be surrounded with a 6 inch PVC sleeve. This sleeve shall be extended below the top of the stubout and be flush with finished grade. All loop conduit shall be appropriately capped and sealed with a molded plug cap. Molded plug cap installation shall comply with manufacturer's installation and recommendations. With the exception of connections to HDPE conduit, joints shall be connected with medium grade gray cement solvent applied per the manufacturer's recommendations. The loop wires shall pass through a hole in the cap. The end of the conduit will also be sealed with moldable duct sealing compound. Sifted sand will be used to cover all exposed loop wires before final filling with loop sealant.

All conduit shall display the Underwriter Laboratories certification (UL Listed).

8-20.3(6) Junction Boxes, Cable Vaults, and Pull Boxes

(April 2018, City of Auburn)

Supplement this section with the following:

All lids shall open away from the traveled way. Prior to construction of finished grade, if cable vaults are installed or adjusted, pre-molded joint filler for expansion joints may be placed around the cable vaults. The joint filler shall be removed prior to adjustment to finished grade.

Junction boxes shall conform with all provisions of Section 9-29.2 (Junctions Boxes, Cable Vaults, and Pull Boxes). Junction Boxes shall be of the types indicated on the Plans. All Junction Boxes shall have slip-resistant surfaces, locking lids, and be equipped with Penta Head tamper resistant bolts as specified and detailed in the Plans.

6 inches of washed drain rock shall be placed inside the junction box and be spread evenly around all conduits.

All three-way service connections leading to luminaires, including street crossings and service cabinet junction boxes shall be made with a SEC Model 1791-DP or approved equivalent.

Box and vault lids shall be inscribed with a welded bead message with each letter being 4 inches tall and 3 inches wide as follows:

"LT" if used exclusively for lighting

"TS" if used exclusively for Traffic Signals

"TS" "LT" if jointly used for lighting and traffic signals

"COA COMM" if used for City of Auburn communications and/or for traffic signal interconnect.

The lids and frames shall be hot dipped galvanized after the welded bead legend is installed.

8-20.3(8) Wiring

(January 2, 2018 WSDOT Amendment)

The seventeenth paragraph is supplemented with the following:

Pulling tape shall meet the requirements of Section 9-29.1(10). Pull string may not be used.

(January 2017, City of Auburn)

Supplement this section with the following:

All cable entering cabinets shall be neatly bundled and wrapped.

The Contractor shall pull out and dispose of wire for the existing illumination system that is no longer needed. All costs for removal and disposal of wire shall be included in the unit contract price for "Illumination System Complete".

8-20.3(9) Bonding, Grounding

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor shall provide junction boxes or other Engineer approved cover over all grounding rods.

All junction boxes containing conductors carrying 120 volts or higher will have the lid and frame bonded to the system ground. The connections to the lid and frame will be made with approved compression type ring terminals. The braid will be of sufficient length so that the lid may be easily removed and placed next to the junction box. It will be routed around all cables so that it does not pass through any cable loops. In the case of Type 8 junction boxes, both lids shall be bonded.

When loop lead-in wires or interconnect wire are the only wires in the junction box, bonding is not required.

8-20.3(10) Service, Transformer, and Intelligent Transportation System (Its) Cabinets

(April 2018, City of Auburn)

Delete this section and replace it with the following:

A three-wire electrical service shall be used at 120/240 volts. Electrical service cabinets shall be per Section 9-29.24 (Service Cabinets) and shall be installed where shown on the Plans.

Power service cabinets shall be labeled by the Contractor to meet PSE Construction meter requirements: The label shall indicate the "City of Auburn" identification, the specific use of the service, and the general site address (example: City of Auburn, Street Lighting – 123 E Main St). The label shall be a permanent engraved phenolic nameplate or die-cut adhesive label at least 1 inch high. PSE will not provide the power meter without this permanent label.

Where underground power service is not utilized, overhead electrical service shall be brought to the power service cabinet through a conduit riser with a weather head on the

service pole. The service shall be split in the load center into a 120 VAC/240 VAC circuit for the traffic signal and street lighting systems.

The Contractor shall provide and install service wire and PVC conduit between the service cabinet and the point of power service location as shown in the Plans.

8-20.3(11) Testing

(August 2016, City of Auburn)

The last paragraph is revised to read:

Unless otherwise approved by the Engineer, signal turn-on will only be allowed Monday through Thursday (except for holidays or the day before a holiday), between the hours of 9:00 a.m. and 2:00 p.m.

(April 2018, City of Auburn)

Supplement this section with the following:

For traffic signal turn-on, City personnel will put the signal into operation. The Contractor shall be present during the turn-on with adequate equipment to repair any deficiencies of signal operation.

All newly installed signal and pedestrian heads and pedestrian pushbuttons shall be fully covered with black plastic or yellow nylon cloth that is firmly attached, until such time for the signal turn-on.

8-20.3(13) Illumination Systems**8-20.3(13)A Light Standards**

(April 2018, City of Auburn)

Supplement this section with the following:

The poles shall be plumb with no shims. The poles shall be plumbed on leveling nuts secured to the anchor bolts and locking nuts on top of the base flange. The side of the shaft opposite the load shall be plumbed using the leveling nuts.

The void between the foundation and the pole flange shall be no larger than 2 inches and shall be completely filled around the conduit(s) with dry pack mortar and neatly troweled. A ¼ inch weep hole shall be installed on the downward slope side of the pad.

The dry pack mortar consists of 1:2 cement to fine sand mixture with enough water to allow the mixture to stick together when molded into a ball by hand, but which will not exude water when pressed.

8-20.3(13)C Luminaires

(April 2018, City of Auburn)

Supplement this section with the following:

All luminaires, shall be in accordance with all provisions of Section 9-29.10 (Luminaires) and shall be installed according to the manufacturer's recommendations and as specified herein. Contractor shall furnish man-lift truck for use in final inspection of luminaire system. Luminaires shall be leveled in 2 planes. One plane perpendicular to the curb (parallel to davit arm), the other plane shall be 90 degrees to the first plane.

The luminaire shall be bolted to the davit arm by means of cast-in inserts and this detail shall be coordinated with the standard manufacturer to ensure proper fit. The terminal board shall have lugs of a 240-volt 3-wire power source. Terminals shall be labeled line-neutral-line. The neutral terminal shall be grounded to the metal housing of the luminaire.

All luminaires shall be provided with markers for positive identification of light source and wattage per Section 9-29.10 (Luminaires) of the Standard Specifications.

(August 2016, City of Auburn)

Add the following new section:

8-20.3(13)F Luminaire Fusing

Luminaire fusing and electrical connections at lighting standard bases shall be per Section 9-29.7 (Luminaire Fusing and Electrical Connections at Light Standard Bases, Cantilever Bases and Sign Bridge Bases) except that light standards shall be provided with 2 in-line fuse holders, per this section, with the fuses mounted inside the pole and readily accessible from the access hole, electrical splices shall be in the junction box near each pole in accordance with the applicable City of Auburn Standard Details.. All luminaries shall be fused in the pole base with a “Y” type quick disconnect fuse system.

(August 2016, City of Auburn)

Add the following new section:

8-20.3(13)G Photoelectric Controls

Photocells shall be installed on the service cabinet in conformance with Section 9-29.11(2) (Photoelectric Controls) of the Standard Specifications.

8-20.3(14) Signal Systems**8-20.3(14)B Signal Heads**

(January 2017, City of Auburn)

Supplement this section with the following:

Vehicular Signal Heads

All signal heads shall meet the requirements of Section 9-29.16(2) (Conventional Traffic Signal Heads). Lens sizes shall be as shown in Contract Plans, Signal Head Type Details.

Overhead mounted signals shall be adjusted in the field such that a person standing on the pavement can see the brightest image of all vehicle signal sections from a distance complying with current MUTCD standards. Signal heads shall be plumbed, and aiming shall be by reference to the RED signal section.

Masking of optically programmed signal heads shall take place just before “turn-on” and after all field adjustments have been made. After masking, no further head position adjustments shall be made without the approval of the Engineer. Any final adjustments required shall be made in the Engineer’s presence.

Pedestrian Signal Heads

Pedestrian signals shall be in accordance with all provisions of Section 9-29.20 (Pedestrian Signals).

Pedestrian signal heads shall be mounted with the bottom of the signal housing 8 feet above the sidewalk or ground surface.

8-20.3(14)C Induction Loop Vehicle Detectors

(April 2018, City of Auburn)

Supplement this section with the following:

Loops shall be wound clockwise and consist of 4 turns of loop conductor.

From the loops to the junction box, the loop wires shall be twisted two turns per foot and labeled at the junction box in accordance with the loop schematics included in the Plans. A 3/8-inch saw cut will be required for the twisted pair.

Loop wires shall be connected to the lead-in cable using compression sleeves and sealed with 2-inch wide rubber mastic tape. An extra 10 feet of both loop wires and lead-in cable shall be coiled neatly in the junction boxes for future work. Loops shall be round and saw cuts shall be 6-foot diameter and shall be constructed using equipment designed for cutting round loops. The equipment shall use a concave, diamond-segmented blade. The saw cuts shall be vertical and shall be a minimum of 0.25 inches wide. The saw cut depth shall be minimum of 2 ½ inches and maximum of 3 inches measured at any point along the perimeter. The bottom of the saw cut shall be smooth. No edges created by differences in saw cut depths will be allowed.

Unless shown otherwise shown on the Plans, the stop bar loops shall be spliced in series per lane, mid and advance loop wires shall be spliced in parallel per lane and system loops shall be spliced into individual home runs per lane.

8-20.3(14)E Signal Standards

(January 2017, City of Auburn)

Supplement this section with the following:

The poles shall be installed on leveling nuts secured to the anchor bolts and locking nuts on top of the base flange. The side of the shaft opposite the load shall be plumbed using the leveling nuts.

The void between the foundation and the pole flange shall be completely filled around the conduit(s) with dry pack mortar and neatly troweled. The distance between the foundation and the bottom of pole flange shall be less than 2 inches except for poles located within sloping portion of curb ramps where the distance may be up to 3 inches.

The dry pack mortar consists of 1:2 cement to fine sand mixture with enough water to allow the mixture to stick together when molded into a ball by hand but will not exude water when pressed.

The lower handhole cover shall be fastened with a tamperproof bolt.

(August 2016, City of Auburn)

Add the following new section:

8-20.3(14)F Emergency Vehicle Pre-EmptionDetector

The Contractor shall provide and install 3M Company 700 Series preemption detectors at locations as shown in the Plans. The emergency preemption detectors shall be solid-state devices in weather resistant housing. The detectors shall be capable of detecting an optical signal generated by an Opticom brand emitter (3M Company). The detectors shall detect the optical signals from the emitter, amplify the signal, and transmit it to the phase selector. The detectors shall have a range control capable of being adjusted up to a maximum of 1/3 mile. Detectors shall be installed in compliance with manufacturer installation instructions and recommendations.

Phase Selector

The Contractor shall provide phase discriminator units as required to obtain the necessary number of channels for each leg of the intersection. The phase discriminator shall be a solid state, rack mounted device which shall provide power to the detectors. The phase selector shall receive the amplified signal from the detector, verify it as valid, and send an input to the controller. This input shall be for the duration of the detected signal plus 8 to 10 seconds additional time after the signal is lost. Four channels shall be provided.

The phase selector shall also include the following features:

1. High and low priority discrimination,
2. Settable signal intensity threshold for up to at least 2,500 feet,
3. Computer based user interface,
4. Front panel switches and indicators for testing, and
5. 20,000 priority/ vehicle class/ vehicle code ID combinations.

Add the following new section:

8-20.3(14)G Interconnect Network

(August 2016, City of Auburn)

Traffic signal interconnect cable shall be installed as shown in the Plans and in accordance with all provisions of Section 9-29.3 (Fiber Optic Cable, Electrical Conductors, and Cable). All cable shall be installed in compliance with the manufacturer's installations and recommendations.

(August 2016, City of Auburn)

Add the following new section:

8-20.3(14)H Pedestrian Push Buttons and Signs

Push buttons shall be in accordance with Section 9-29.19 (Pedestrian Push Buttons) and installed per the manufacturer's directions and recommendations.

Pedestrian push button assemblies shall be securely fastened to the signal standard or pedestrian pole using stainless steel fasteners. Signal standards shall be drilled and tapped for mounting push buttons. Push buttons shall be installed 42-inches from the centerline of push buttons above sidewalk or ground level.

(April 2018, City of Auburn)

Add the following new section:

8-20.3(14)I Video Detection System

When video detection is shown in the Plans, the Contractor shall provide and install a fully functional Trafficon video detection camera system auxiliary equipment, cameras, housings, and mounts, and all required mounting hardware, cables, connectors, and wiring per Section 9-29.23 (Video Detection Cameras).

The Contractor shall allow two weeks to schedule a Kar-Gor representative to assist with the system installation and turn on. The representative from Kar-Gor will terminate all video wiring in the traffic cabinet and install and program the VIP units.

Final adjustment of the cameras shall be done by the Contractor in the presence and at the direction of the City of Auburn Traffic Signal Technician.

(April 2018, City of Auburn)

Add the following new section including subsections:

8-20.3(14)J Closed Circuit Television (CCTV) Camera System**8-20.3(14)J.1 Description**

(April 2018, City of Auburn)

This work consists of providing a television surveillance camera system to include provision and installation of camera assemblies (camera, lens, and housing), pan and tilt drives, Ethernet switch, cables, patch cords and other equipment necessary to provide a complete and operable fiber optic-based closed circuit television (CCTV) system. The CCTV camera or camera's shall be delivered to the City of Auburn Maintenance and Operations building for setup and testing.

8-20.3(14)J.2 Materials

(April 2018, City of Auburn)

CCTV system materials shall be per Section 9-29.27 (CCTV System). The CCTV camera shall be a Cohu RISE 4260. Unless otherwise indicated in the Plans or specified in the Special Provisions, all materials shall be new.

8-20.3(14)J.2(1) Mounting

(August 2016, City of Auburn)

Mounting of camera on luminaire/signal poles shall utilize Cohu pole mounts and equipment and hardware shown in the Plans.

8-20.3(14)J.3 Construction Requirements

(April 2018, City of Auburn)

For each new CCTV camera shown in the Plans, the Contractor shall furnish, install, and setup a CCTV camera system that includes the camera, mounting materials, cables, cable splices, Ethernet switch, and any additional equipment and hardware required for a complete and operational CCTV camera system, per Section 9-29.27 (CCTV SYSTEM).

8-20.3(14)J.3(1) General Cable Installation

(April 2018, City of Auburn)

The Contractor shall submit to the Engineer the method that is intended to be used to install the various cables. Any cable runs which have damaged jackets or do not pass the appropriate test will be rejected and shall be replaced by the Contractor at no additional cost to the City of Auburn.

Shielded cables terminated at a cabinet shall have their shields grounded at the cabinet at one end and insulated at the other. Insulated spade type terminals shall be used when connecting wire to terminal blocks.

Cables at the camera end shall be soldered to the connectors provided with the equipment using established techniques.

The rear connection area shall be filled with silicone rubber compound. The cables to the camera shall be encased in a flexible sheath to form one cable between the camera and the local control cabinet.

All cables shall be supported so that there is no weight being transferred from the camera cable to the entry points through poles or extrusions. All holes through poles shall be sealed with outdoor rated watertight grips.

All cables shall be tagged with permanent markers of PVC identifying their use. Cables shall be tagged at both ends and at every junction box location.

8-20.3(14)J.3(2) Camera Cable

(August 2016, City of Auburn)

Camera cables shall extend from the camera control receiver to the camera and pan/ tilt drive unit. These cables shall provide camera power, environmental housing heater power, pan/ tilt drive power and controls, camera lens controls, and additional wires for preset positioning of pan/ tilt and lens. The number and size of wires required in the camera cable is dependent upon the vendor selected for pan/tilt drives. The Contractor shall provide and install camera cables with the proper type and quantity of conductors to enable connection as recommended by the selected vendors and as required to provide for proper operation of the closed circuit television system.

Camera cables shall be as per the manufacturer's specifications and designed for long life operation under adverse weather conditions. Cable connectors at the camera housing and pan/tilt drive shall be waterproofed in accordance with vendor recommendations. Camera cables shall be terminated on terminals in the camera control cabinet.

8-20.3(14)J.3(3) CCTV System Test

(April 2018, City of Auburn)

The Contractor shall allow the City 2 weeks to setup and test the PTZ camera(s). If problems are found by the City during each testing phase, the Contractor shall repair, replace, or reconfigure each CCTV camera installation as necessary, at no additional cost to the Contracting Agency.

(August 2016, City of Auburn)

Add the following new section including subsections:

8-20.3(14)K Wireless Broadband Communications System

8-20.3(14)K.1 Description

(August 2016, City of Auburn)

The work specified in this section shall include the furnishing and installation of wireless interconnect communication system devices, cables, outdoor hardened Ethernet hub or switch, patch cords and associated components in accordance with the Plans and specifications.

The Contractor shall provide materials, equipment, labor and the expertise required for the construction of a traffic signal/ITS wireless broadband communication system to interconnect the proposed traffic signal and ITS equipment with the City of Auburn's existing ITS system infrastructure as shown in the Plans and in accordance with these Special Provisions. All equipment shall be installed in compliance with the manufacturer's installations and recommendations.

8-20.3(14)K.2 Wireless Broadband System Materials

(August 2016, City of Auburn)

The Contractor shall provide all products and materials required for the installation and splicing of the specified communications cables and associated interface devices.

8-20.3(14)K.3 Testing, Mounting and Wiring

(August 2016, City of Auburn)

Broadband radio/panel antenna units shall be mounted on signal mast-arms or signal poles as indicated in the Plans. All units shall be installed utilizing Pelco Products, Inc. Astro-Brac or approved equivalent mounts per the wireless equipment manufacturer's recommendations for outdoor pole-mounted applications. All mountings shall have stainless steel hardware and provide a weather-tight cable passage between the wireless unit and the pole.

All wireless AP, and Ethernet setup, configurations and testing shall be done in consultation with the City's IT department and the Engineer.

The Contractor shall drill a 1-inch-diameter hole in the pole, deburr and provide rubber grommet prior to pulling cables. Cables shall be routed through traffic signal system conduits and junction boxes as shown in the Plans and terminated in the local signal controller cabinet.

Sufficient cable, 10 feet where bending radius permits, shall be left in each cabinet to properly terminate the cables. No splicing of communication cables shall be allowed.

Ethernet cables shall be routed in the cabinet and be plugged into a Contractor-supplied RUGGEDCOM Ethernet switch. in the proposed signal cabinet and into the existing RUGGEDCOM rs900 switch in the existing signal cabinet.

8-21 Permanent Signing**8-21.3 Construction Requirements**

(January 2017, City of Auburn)

Supplement this section with the following:

Signs shall be manufactured and installed in accordance with the current edition of the Washington State Sign Fabrication Manual of the Department of Transportation, and the Manual on Uniform Traffic Control Devices, and all provisions of Section 9-28 (Signing Materials and Fabrication). Code numbers on the Plans are in reference to the Washington State Sign Fabrication manual.

Signs located in sidewalks or paved areas only shall be installed with Sono tubes. Relocated signs shall be installed on new posts unless otherwise specified. Postholes shall allow placement of backfill around the post.

8-21.3(4) Sign Removal

(January 2017, City of Auburn)

Supplement this section with the following:

Costs for removing existing signs shall be included in the lump sum contract price for "Permanent Signing".

8-21.3(9)F Foundations

(January 2, 2018 WSDOT Amendment)

Item number 3 of the twelfth paragraph is supplemented with the following new sentence:

Class 4000P concrete for roadside sign structures does not require air entrainment.

8-22 Pavement Marking**8-22.1 Description**

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor shall notify the Engineer of intention to receive approval of the channelization pre-mark at least 48 hours in advance.

8-23 Temporary Pavement Markings**8-23.1 Description**

(January 2017, City of Auburn)

Supplement this section with the following:

Short Term Temporary Pavement Markings shall only be used when the temporary striping is anticipated to last less than 6 months. Phasing that will require temporary alignment longer than 6 months should install striping per Section 8-22 (Pavement Marking).

8-24 Rock and Gravity Block Wall and Gabion Cribbing

8-24.2 Materials

(January 2017, City of Auburn)

Supplement this section with the following:

Materials shall meet the requirements of the following sections of the Standard Specifications or as noted.

Spall Backfill for Walls	9-13.1
Perforated PVC Underdrain Pipe	9-05.2(6)

Rock used for rock wall shall be sound, hard, durable, ledge rock of a uniform color and obtained from a commercial quarry. Rock is to be free of seams, cracks, loose stratification or other defects tending to destroy its resistance to weather. The rock shall have a density of at least 145 pounds per cubic foot.

All two-man rocks (200-600 pounds) shall be a minimum of 12 inches in the least dimension. All three-man rocks (600-1,000 pounds) shall be a minimum of 18 inches in the least dimension.

8-24.3 Construction Requirements

(January 2017, City of Auburn)

Supplement this section with the following:

The rock wall shall be constructed one course at a time. Rock selection and placement shall be such that at least 80% of the exposed face of the wall is rock.

Each horizontal row of rocks shall be seated and bedded by placing the specified backfill behind the rock to provide a stable condition for the entire wall. Each rock shall be keyed into adjacent rocks by utilizing the natural irregular shapes of the rocks. Voids larger than 2 inches shall be filled by wedging smaller rock of the same quality into the voids until the maximum remaining void is 2 inches or less.

(August 2016, City of Auburn)

Add the following new section including subsections:

8-30 Wood Fence and Gates

8-30.1 Description

(August 2016, City of Auburn)

This work shall consist of installing new "Wood Fence" and "Wood Gate" where shown and as detailed on the Plans.

8-30.2 Construction Requirements

(August 2016, City of Auburn)

All work shall be in accordance with the applicable portions of Section 6-04 (Timber Structures), 8-11 (Guardrail), 8-12 (Chain Link Fence and Wire Fence), 9-06 (Structural Steel and Related Materials), 9-09 (Timber and Lumber), and 9-16 (Fence and Guardrail) of the Standard Specifications and these Special Provisions.

All lumber shall be Douglas Fir Surfaced four side (S4S), Number 1 Structural per Western Lumber Grading Rules unless otherwise noted. All lumber shall be pressure treated with Chemonite™ or approved equivalent per AWPB-LP22. Fencing boards shall be tight knot western red cedar, Number 2 or better.

Metal fabrications, fasteners and hardware shall be in accordance with Section 9-06.22 (Bolts, Washers, and Other Hardware) of Standard Specifications.

Nail fasteners shall be galvanized standard wire nails.

Concrete shall be Cement Concrete Class 3000 in accordance with Section of 6-02 (Concrete Structures) of the Standard Specifications.

Supplement Division 8 with the following:

8-31 Fiber Optic Communications**8-31.1 Description**

(August 2016, City of Auburn)

The work specified in this section shall include the furnishing and installation of fiber optic cables, splices, splice enclosures, patch panels and associated components in accordance with the Contract Documents.

The Contractor shall provide materials, equipment, labor and the expertise required for the underground installation of fiber optic cables as components of the ITS network. Fiber optic communications materials shall be per Section 9-29.3 (Fiber Optic Cable, Electrical Conductors, and Cable).

8-31.2 Construction Requirements**8-31.2(1) Contractor Qualifications**

(August 2016, City of Auburn)

Installation and testing of fiber optic communications is a specialized trade that requires specific skills that can only be gained by experience. The City has determined that the successful completion of the fiber optic communications work specified in the Contract Documents require that the Contractor or its subcontractor, whichever shall be completing the fiber optic communications work, meet the following minimum qualification requirements: 5-years' experience installing fiber optic systems, including cable and splices, and fiber optic systems of similar type and size to those specified in the Contract Documents, ability to provide three (3), non-City of Auburn, public agency references that can provide verification of the Contractor's or subcontractor's experience and confirm that the Contractor or subcontractor successfully completed the installation and testing of fiber optic systems of similar type and size to those specified in the Contract Documents. The

Contractor or its subcontractor will not be allowed to begin work on fiber optic communications until the City has verified that the Contractor or its subcontractor satisfies these qualifications requirements.

8-31.2(2) Quality Assurance

(August 2016, City of Auburn)

All work described in this section shall meet or exceed the applicable provisions of the following documents:

1. ANSI/EIA/TIA-455, Standard Test Procedures for Fiber Optic Fibers, Cables, Transducers, Connecting and Terminating Devices, and Other Fiber Optic Components.
2. ANSI/TIA/EIA-526-7, Measurement of Optical Power loss of Installed Single-Mode Fiber Cable Plant.
3. ANSI/TIA/EIA-568-B, Commercial Building Telecommunications Cabling Standard
4. ANSI/TIA/EIA-569-A, Commercial Building Standard for Telecommunication Pathways and Spaces.
5. ANSI/TIA/EIA-598, Optical Fiber Cable Color Coding.
6. ANSI/TIA/EIA-607, Commercial Building Grounding and Bonding Requirements for Telecommunications.
7. ANSI/TIA/EIA-758, Customer-Owned Outside Plant Telecommunications Cabling Standard.
8. BICSI: BICSI Telecommunications Cabling Installation Manual (TCIM).
9. BICSI: BICSI Telecommunications Distribution Methods Manual.
10. BICSI: BICSI Customer-Owned Outside Plant Design Manual.

8-31.2(3) Fiber Optic Cable Installation

(August 2016, City of Auburn)

Fiber optic cables shall be installed in continuous lengths without intermediate splices throughout the entire project, except at the location(s) specified in the Plans. The cable installation personnel shall be familiar with the cable manufacturer's recommended procedures including but not limited to the following:

1. Proper attachment to the cable strength elements for pulling during installation.
2. Cable tensile limitations and the tension monitoring procedure.
3. Cable bending radius limitations.

The Contractor shall comply with the cable manufacturer's specifications.

To accommodate long continuous installation lengths, bi-directional pulling of the fiber optic cable is approved and shall be implemented as follows:

From the midpoint, pull the fiber optic cable into the conduit from the shipping reel. When this portion of the pull is complete, the remainder of the cable must be removed from the reel to make the inside end available for pulling in the opposite direction. This is accomplished by hand pulling the cable from the reel and laying into large figure eight loops on the ground. The purpose of the figure eight pattern is to avoid cable tangling and kinking. The loops must be laid carefully one upon the other (to prevent subsequent

tangling) and must be in a protected area. The inside reel end of the cable is then available for installation. In some cases, it may be necessary to set up the winch at an intermediate cable vault. The required length of cable is pulled to that point, and brought out of the cable vault and coiled into a figure eight. The figure eight is then turned over to gain access to the free cable end which can then be reinserted into the duct system for installation into the next section.

Installation shall involve the placement of the fiber optic cables in a specified innerduct or conduit as defined in the Plans. The Contractor shall ensure that innerducts are secured to prevent movement during the cable installation.

Prior to pulling fiber optic cables through existing conduits, the Contractor shall verify that the conduits are clear of any debris and that the conduits have enough room to accommodate the new fiber and any existing conductors (where present and not specified for removal). Where noted on the Plans, the Contractor shall remove the existing copper interconnect cable prior to installing the new fiber optic cable.

The pulling eye/sheath termination hardware on the fiber optic cables shall not be pulled over any sheaves.

When power equipment is used to install the fiber optic cables, it must be designed to be used with fiber optic cable. Low speeds shall be used, not to exceed 100 feet per minute. The equipment must show the rate of pull, tension and automatically shut down if any cable pulling parameters are exceeded. The tensile and bending limitation for fiber optic cables shall not be exceeded under any circumstances. The use of 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.

8-31.2(4) Fiber Optic Cable Splicing

(August 2016, City of Auburn)

This section describes minimum requirements for splicing and connecting of the specified fiber optic cables. Field splices for mainline to lateral cables and for end-to-end mainline cables shall be located as shown in the Plans. No additional splices shall be allowed without the approval of the Engineer

All fusion splicing equipment shall be in good working order, properly calibrated, and meet all industry standards and safety regulations. 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, 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 0.10 dB or less. 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 0.15 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.

All below ground splices shall be contained in re-enterable waterproof splice enclosures.

All splices shall be contained in splice trays utilizing strain relief, such as heat shrink wraps, as recommended by the splice tray manufacturer.

Upon sealing the splice closure, the Contractor shall show that the closure maintains 100 psi of pressure for a 24-hour period.

At all fiber optic splice locations, the Contractor shall neatly coil and secure a slack loop of fiber optic cable in a manner that is consistent with optical fiber specifications, including minimum bend radius.

8-31.2(5) Fiber Optic Cable Labeling

(August 2016, City of Auburn)

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 showing the cable segment, and the far end of the cable. The cable shall be labeled with non-fading permanent ink.

8-31.2(6) Fiber Optic Cable Racking in Cable Vaults

(August 2016, City of Auburn)

After the cables are installed and spliced, cables, and innerducts shall be racked with spare conduits and innerducts sealed. Since there is substantial risk of damage to optical fibers by careless handling of the cables, much care shall be exercised, especially with regard to observing the minimum bending limitations. Cables shall be racked in vertical figure eight loops, which shall permit pulling slack from the vault without introducing twist to the cable.

Lateral cables shall be placed behind the main cables when changing levels. Cables or innerducts shall be secured in racked position with outdoor rated cable ties.

City of Auburn identification/warning tags shall be securely attached to the cables or innerducts in at least two locations in each cable vault or pull box and once in every J-box passed through. The Identification Tag shall be a custom orange label saying "**COA Fiber Optic Cable, If Damaged Call 911**" and label origin and destination of the fiber identified.

All coiled cable shall be suitably protected to prevent damage to the cable and fibers. Racking shall include securing cables or innerducts to brackets (racking hardware) that extend from the side walls of the cable vault or pull box. The Contractor shall provide all required brackets and other racking hardware required for the fiber optic cable racking operations as specified. All racking hardware shall be stainless steel.

8-31.2(7) Fiber Optic Patch Panels

(August 2016, City of Auburn)

A fiber optic patch panel shall be installed in every signal controller cabinet where a new fiber optic connection is shown in the Plans per Section 9-29.13 (Traffic Signal Controllers).

The patch panel shall be attached to Contractor supplied ¼-inch aluminum plate attached to the signal side rails with spring nuts.

8-31.2(8) Fiber Optic Splice Case

(August 2016, City of Auburn)

Splice enclosures shall be supplied and installed where shown the Plans that specify installation of a new fiber optic connection in a Vault or Pull box per Section 9.29.3(1)A (Singlemode FiberOptic Cable) (SCF).

The SCF splice closures shall be available in canister (butt) and in-line styles to fit most applications. All end-caps feature two express ports for uncut feeder cables. QUICK-SEAL™ Mechanical Seal drop ports shall be utilized because they allow for rapid and easy installation during initial build or future expansions.

The Splice Closure Housing shall be non-metallic. It shall be resistant to solvents, stress cracking and creep. The housing materials shall also be compatible with chemicals and other materials to which they might be exposed in normal applications. The optical fiber closure shall be capable of accepting any optical fiber cable commonly used in interoffice, outside plant and building entrance facilities. As an option, the ability to double the cable capacity of an installed canister splice closure by use of a kit shall be available. Such a conversion shall not disturb existing cables or splices.

Encapsulation shall not be required to resist water penetration. The splice closure shall be re-enterable. The closure end-cap shall be capable of accepting additional cables without removal of the sheath retention or strength-member-clamping hardware on previously installed cables or disturbing existing splices. The optical fiber splice closure shall provide a clamping mechanism to prevent pistoning of the central member or strength members and to prevent cable sheath slip or pullout. The splice closure shall have appropriate hardware and installation procedures to facilitate the bonding and grounding of metal components in the closure and the armored cable sheath. The cable bonding hardware shall be able to accommodate a copper conductor equivalent to or larger than 6 AWG.

8-31.3 Fiber Optic Cable Testing

(August 2016, City of Auburn)

The Contractor shall provide certified documentation or test results that demonstrate that all fiber optic cables meet the specified optical and mechanical performance criteria before and after installation.

Upon completion of the fiber optic cable installation (and splicing) the Contractor shall perform testing specified herein. The Contractor shall provide the Engineer with a minimum of 7 calendar days prior notice of the start of testing. The installed optical fiber cable shall comply with the transmission requirements of this specification, the cable and hardware manufacturer's specifications, and prescribed industry standards and practices.

All backbone and horizontal cabling, which is terminated by the contractor, shall be tested to applicable EIA/TIA Standards.

Upon completion of the tests all fiber optic cable coils shall be secured with ends capped to prevent intrusion of dirt and water.

8-31.3(1) Insertion Loss Testing

(August 2016, City of Auburn)

Insertion loss testing shall be used to measure end-to-end attenuation on each new fiber installed between a field device and the City control facility.

The insertion loss for each mated fiber optic connector pair shall be ≤ 0.75 dB. Reflectance for single-mode single fiber UPC cable assemblies shall be ≤ -55 dB. Mated connector pair loss testing shall be based on one unidirectional optical time domain reflectometer (OTDR) inspection in accordance with the OTDR operating manual for systems greater than 300 feet.

In addition to connector insertion loss for each mated pair, the contractor shall perform end-to-end insertion loss testing for each multimode fiber at 850 nm and 1300 nm from one direction for each terminated fiber span in accordance with EIA/TIA-526-14A (OFSTP 14) and single-mode fibers at 1310 nm and 1550 nm from one direction for each terminated fiber span in accordance with TIA/EIA-526-7 (OFSTP 7). For spans greater than 300 feet, each tested span must test to a value less than or equal to the value determined by calculating a link loss budget. For horizontal spans less than or equal to 300 feet, each tested span must be < 2.0 dB.

The Contractor shall inspect each terminated multimode fiber span for continuity and anomalies with an OTDR at 1300 nm from one direction in accordance with the OTDR operating manual for systems greater than 300 feet. The Contractor shall inspect each terminated single-mode fiber span for continuity and anomalies with an OTDR at 1550 nm from one direction in accordance with OTDR operating manual for systems greater than 300 feet.

Prior to commencing testing, the Contractor shall submit the manufacturer and model number of the test equipment along with certification that it has been calibrated within 6 months of the proposed test dates.

The following information shall be documented for each fiber test measurement:

- Wavelength
- Fiber type
- Cable, tube and fiber IDs
- Near end and far end test locations
- End-to-End Insertion Loss Data
- Individual Splice Loss Data
- Date, time, and operator

8-31.3(2) Optical Time Domain Reflectometer (Otdr) Testing

(August 2016, City of Auburn)

A recording optical time domain reflectometer (OTDR) shall be utilized to test for end-to-end continuity and attenuation of each optical fiber. The OTDR shall be equipped with a 1,310 nm and 1,550 nm light source for single-mode optical fibers. The OTDR shall have an X-Y plotter to provide a hard copy record 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 OTDR with sufficient normalization to display the required cable section. A hard copy X-Y plot shall be provided for all fiber optic attenuation tests.

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 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. Splices to existing fibers shall also be measured and recorded.

The following information shall be documented for each fiber test measurement:

X-Y plot scaled for fiber length

Wavelength

Refraction index

Fiber type

Averaging time

Pulse width

Cable and fiber IDs

Near end and far end test locations

Date, time, and operator

Event table that includes: event ID, type, location, loss, and reflection.

8-31.3(3) Fiber Cable Testing Documentation

(August 2016, City of Auburn)

The Contractor shall submit the fiber test results to the Engineer for approval per Section 1-06.7 (Submittals). 1 licensed copy of the OTDR manufacturer's software shall be provided to the City of Auburn at the time the fiber test results are provided, for viewing and printing the OTDR results. The Contractor shall take corrective actions on portions of the fiber installation determined to be out of compliance with these specifications.

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. Manufacturer's test results of the cable as shipped.
4. Location of all splices.
5. OTDR test results.
6. End-to-End Insertion Loss Data.
7. Individual Splice Loss Data.
8. Connector Insertion Loss Data
9. "As Installed" Diagram

Supplement Division 8 with the following:

8-32 Bollards

8-32.1 Description

(January 2018, City of Auburn)

DIVISION 8:**MISCELLANEOUS CONSTRUCTION**

This work consists of building, furnishing, and installing bollards where shown on the Plans and as detailed in the Standard Detail(s).

8-32.2 Materials

Materials shall meet the requirements of the following sections:

Timber and Lumber	Section 6-04 (Timber Structures) and 9-09 (Timber and Lumber)
Structural Steel and Related Material	Section 9-06 (Structural Steel and Related Materials)

END OF DIVISION 8

Division 9 Materials**9-02 Bituminous Materials****9-02.1 Asphalt Material, General**

(January 2, 2018, WSDOT Amendment)

The second paragraph is revised to read:

The Asphalt Supplier of Performance Graded (PG) asphalt binder and emulsified asphalt shall have a Quality Control Plan (QCP) in accordance with WSDOT QC 2 "Standard Practice for Asphalt Suppliers That Certify Performance Graded and Emulsified Asphalts". The Asphalt Supplier's QCP shall be submitted and receive the acceptance of the WSDOT State Materials Laboratory. Once accepted, any change to the QCP will require a new QCP to be submitted for acceptance. The Asphalt Supplier of PG asphalt binder and emulsified asphalt shall certify through the Bill of Lading that the PG asphalt binder or emulsified asphalt meets the Specification requirements of the Contract.

9-02.1(4) Performance Graded Asphalt Binder (PGAB)

(January 2, 2018, WSDOT Amendment)

This section's title is revised to read:

Performance Graded (PG) Asphalt Binder

The first paragraph is revised to read:

PG asphalt binder meeting the requirements of AASHTO M 332 Table 1 of the grades specified in the Contract shall be used in the production of HMA. For HMA with greater than 20 percent RAP by total weight of HMA, or any amount of RAS, the new asphalt binder, recycling agent and recovered asphalt (RAP and/or RAS) when blended in the proportions of the mix design shall meet the PG asphalt binder requirements of AASHTO M 332 Table 1 for the grade of asphalt binder specified by the Contract.

The second paragraph, including the table, is revised to read:

In addition to AASHTO M 332 Table 1 specification requirements, PG asphalt binders shall meet the following requirements:

		Additional Requirements by Performance Grade (PG) Asphalt Binders			
Property	Test Method	PG58H-22	PG58V-22	PG64H-28	PG64V-28
RTFO Residue: Average Percent Recovery @ 3.2 kPa	AASHTO T 350 ¹		30% Min.	25% Min.	30% Min.
¹ Specimen conditioned in accordance with AASHTO T 240 – RTFO.					

The third paragraph is revised to read:

The RTFO $J_{nr diff}$ and the PAV direct tension specifications of AASHTO M 332 are not required.

9-02.1(6) Cationic Emulsified Asphalt

(January 2, 2018, WSDOT Amendment)

This section is revised to read:

Cationic Emulsified Asphalt meeting the requirements of AASHTO M 208 Table 1 of the grades specified in the Contract shall be used.

9-02.5 Warm Mix Asphalt (WMA) Additive

(January 2, 2018, WSDOT Amendment)

This section, including title, is revised to read:

9-02.5 HMA Additive

Additives for HMA shall be approved by the Engineer.

9-03 Aggregates

9-03.1(1) General Requirements

(January 2, 2018, WSDOT Amendment)

The second paragraph (up until the colon) is revised to read:

Aggregates for Portland Cement Concrete shall meet the following test requirements:

9-03.1(5)B Grading

(January 2, 2018, WSDOT Amendment)

In the last paragraph, “WSDOT FOP for WAQTC/AASHTO T 27/T 11” is revised to read “FOP for WAQTC/AASHTO T 27/T 11”.

9-03.4(1) General Requirements

(January 2, 2018, WSDOT Amendment)

The first paragraph (up until the colon) is revised to read:

Aggregate for bituminous surface treatment shall be manufactured from ledge rock, talus, or gravel, in accordance with Section 3-01. Aggregates for Bituminous Surface Treatment shall meet the following test requirements:

9-03.8(1) General Requirements

(January 2, 2018, WSDOT Amendment)

The first paragraph (up until the colon) is revised to read:

Aggregates for Hot Mix Asphalt shall meet the following test requirements:

9-03.8(7) HMA Tolerances and Adjustments

(January 2, 2018, WSDOT Amendment)

In the table in item number 1, the fifth row is revised to read:

Asphalt binder	-0.4% to 0.5%		±0.7%
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In the table in item number 1, the following new row is inserted before the last row:

Voids in Mineral Aggregate, VMA	-1.5%		
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9-03.9(1) Ballast

(January 2, 2018, WSDOT Amendment)

The second paragraph (up until the colon) is revised to read:

Aggregates for ballast shall meet the following test requirements:

9-04 Joint and Crack Sealing Materials

9-04.1(2) Premolded Joint Filler for Expansion Joints

(January 2, 2018, WSDOT Amendment)

In this section, each reference to “AASHTO T 42” is revised to read “ASTM D 545”.

9-04.2(1)A1 Hot Poured Sealant for Cement Concrete Pavement

(January 2, 2018, WSDOT Amendment)

This section is supplemented with the following:

Hot poured sealant for cement concrete pavement is acceptable for installations in joints where cement concrete pavement abuts a bituminous pavement.

9-04.2(1)A2 Hot Poured Sealant for Bituminous Pavement

(January 2, 2018, WSDOT Amendment)

This section is supplemented with the following:

Hot poured sealant for bituminous pavement is acceptable for installations in joints where cement concrete pavement abuts a bituminous pavement.

9-05 Drainage Structures and Culverts**9-05.7(1) Plain Concrete Storm Sewer Pipe**

(January 2017 City of Auburn)

Supplement this section with the following:

Concrete storm drainpipe shall conform to ASTM C14 Class 3.

9-05.7(2) Reinforced Concrete Storm Sewer Pipe

(January 2017, City of Auburn)

Supplement this section with the following:

Reinforced concrete storm drainpipe shall conform to ASTM C76, Class IV.

9-05.12 Polyvinyl Chloride (PVC) Pipe**9-05.12(1) Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Pipe, And Solid Wall PVC Sanitary Sewer Pipe**

(August 2016, City of Auburn)

Revise the first sentence of the second paragraph to the following:

Solid wall PVC pipe shall meet the requirements of ASTM D3034 for the class or SDR of pipe specified.

9-05.13 Ductile Iron Sewer Pipe

(August 2016, City of Auburn)

Delete the first sentence of the last paragraph and replace it with the following:

All fittings shall be ductile. All joints including fittings shall be push-on rubber gasket joints. Mechanical joints shall not be used.

9-06 Structural Steel and Related Materials**9-06.5 Bolts**

(January 2, 2018, WSDOT Amendment)

This section's title is revised to read:

Bolts and Rods

9-06.5(4) Anchor Bolts

(January 2, 2018, WSDOT Amendment)

This section, including title, is revised to read:

9-06.5(4) Anchor Bolts and Anchor Rods

(January 2, 2018, WSDOT Amendment)

Anchor bolts and anchor rods shall meet the requirements of ASTM F1554 and, unless otherwise specified, shall be Grade 105 and shall conform to Supplemental Requirements S2, S3, and S4.

Nuts for ASTM F1554 Grade 105 black anchor bolts and anchor rods shall conform to ASTM A563, Grade D or DH. Nuts for ASTM F1554 Grade 105 galvanized anchor bolts and anchor rods shall conform to either ASTM A563, Grade DH, or AASHTO M292, Grade 2H, and shall conform to the overtapping, lubrication, and rotational testing requirements in Section 9-06.5(3). Nuts for ASTM F1554 Grade 36 or 55 black or galvanized anchor bolts and anchor rods shall conform to ASTM A563, Grade A or DH. Washers shall conform to ASTM F436.

The bolts and rods shall be tested by the manufacturer in accordance with the requirements of the pertinent Specification and as specified in these Specifications. Anchor bolts, anchor rods, nuts, and washers shall be inspected prior to shipping to the project site. The Contractor shall submit to the Engineer for acceptance a Manufacturer's Certificate of Compliance for the anchor bolts, anchor rods, nuts, and washers, as defined in Section 1-06.3. If the Engineer deems it appropriate, the Contractor shall provide a sample of the anchor bolt, anchor rod, nut, and washer for testing.

All bolts, rods, nuts, and washers shall be marked and identified as required in the pertinent Specification.

9-14 Erosion Control and Roadside Planting

9-14.1 Soil

9-14.1(1) Topsoil Type A

(January 2017, City of Auburn)

Supplement this section with the following:

The topsoil shall be a loamy sandy loam textural class as determined by the U.S. Department of Agriculture Classification System, free from materials toxic to plant growth, noxious weed seeds, rhizomes, roots, subsoil, and debris. The contractor shall furnish sufficient quantities of topsoil for placement in all seeding areas (4 inch depth topsoil) and planting areas (6 inch depth topsoil) and for tree and shrub planting soil requirements, plus

a reserve quantity for restoring additional areas outside designated planting and seeding areas that are disturbed by the Contractor's activities.

9-14.1(3) Topsoil Type C

(January 2017, City of Auburn)

Supplement this section with the following:

Small tree/brush stumps and roots shall be removed and topsoil shall contain no more than two percent (2%) aggregate by weight remaining on a ½ inch sieve.

9-14.4 Mulch and Amendments

(January 2017, City of Auburn)

Supplement this section with the following:

Specific topsoil amendment and fertilizer specification for the plant types specified on the Plans shall be as per a certified soils laboratory recommendations from, representative topsoil samples furnished by the Contractor to the approved Soils Laboratory.

9-14.4(3) Bark or Wood Chips

(January 2017, City of Auburn)

Supplement this section with the following:

The Contractor shall submit sample of the bark or wood chips for approval before delivery to the job site. Bark shall be free from weed seeds, sawdust and splinters, and shall not contain wood fiber or other compounds detrimental to plant life. Source shall be from freshwater mill.

9-14.5(1) Polyacrylamide (PAM)

(January 2017, City of Auburn)

Supplement this section with the following:

PAM will only be used upon approval of the Engineer.

9-14.6 Plant Materials**9-14.6(4) Tagging**

(January 2017, City of Auburn)

Delete this section and replace it with the following:

All plant material except groundcover shall be legibly tagged. Tagging may be by species or variety with minimum of one tag per 10 trees or shrubs.

9-14.6(5) Inspection

(January 2017, City of Auburn)

Supplement this section with the following:

Samples may be submitted to the Engineer for approval as to size, grade, and overall specifications.

9-15 Irrigation System**9-15.1(2) Polyvinyl Chloride Pipe and Fittings**

(January 2017, City of Auburn)

Supplement this section with the following:

The triple-swing joint assembly shall be constructed as detailed with Schedule 80 PVC nipples and "Marlex" street ells as manufactured by "LASCO Fluid Distribution Products" or approved equivalent.

9-15.3 Automatic Controllers

(January 2017, City of Auburn)

Supplement this section with the following:

Controller shall be Weathermatic Valcon SL Series Controller with Remote Control Technology "FLM" Series Connector installed at controller for remote control operation from the City of Auburn central control station.

The automatic controller electrical enclosure shall be a Metered Cold Rolled Steel Vandal Resistant enclosure #SB-24CR/120V with CSA controller subassembly. Enclosure shall be installed on a concrete base and shall be prime-coated and painted with baked enamel finish; dark green color as selected by the Engineer as manufactured by "V.I.T. Product, Inc." or approved equivalent.

9-15.5 Valve Boxes

(January 2017, City of Auburn)

Supplement this section with the following:

Install a gravel sump at the bottom of each valve box.

The automatic control boxes shall be Model No. 1320 valve box with locking cover, and extensions as required as manufactured by "Carson Industries, Inc." or approved equivalent.

9-15.6 Gate Valves

(January 2017, City of Auburn)

Supplement this section with the following:

The gate valve boxes shall be 5 and ¼ inch Roadway Valve Box #111129-03 with cast iron "Water" cover #111026 as manufactured by "Ametek" or approved equivalent.

9-15.7(2) Automatic Control Valves

(January 2017, City of Auburn)

Supplement this section with the following:

Automatic control valves shall be Weathermatic 8200CR brass valves capable of communicating with the controller. Size as noted on drawing.

9-15.8 Quick Coupling Equipment

(January 2017, City of Auburn)

Supplement this section with the following:

The quick coupler valves shall be Buckner QB5LRC10 quick coupling valves with RC25001 valve keys or approved equivalent. Quick coupler valves shall be installed at the point of connection at the end of the main line, and at each cluster of automatic control valves.

The quick coupling valve boxes shall be Model 910-12B 10 inch Round Valve Box with locking green top extensions as manufactured by "Carson Industries, Inc." or approved equivalent.

9-15.9 Drain Valves

(January 2017, City of Auburn)

Supplement this section with the following:

Drain valves shall be 1 inch diameter.

The drain valve box shall be 5 and ¼ inch Roadway Valve Box #111129-03 with cast iron "Water" cover #111026 as manufactured by "Amtek" or approved equivalent.

9-15.11 Cross Connection Control Devices

(January 2017, City of Auburn)

Supplement this section with the following:

The Double check valve assembly shall be a Febco 805Y or approved equivalent sized to match the irrigation meter size.

The Double-Check Valve Backflow Assembly Vault for ¾ inch to 2 inch assemblies shall be a Carson molded box, or approved equivalent, and for assemblies larger than 2 inch a No. 25-TA Concrete Vault with Locking Metal Cover as manufactured by PIPE, Incorporated or approved equivalent.

9-15.17 Electrical Wire and Splices

(January 2018, City of Auburn)

Supplement this section with the following:

Electrical wire shall be #14 UF wire. Utilize direct bury underground splice kits. Do not splice or connect wires outside of valve boxes. Coil 3 feet length of wire at each connection.

Provide 4 extra valve wires (yellow) routed from the controller through each valve box to the farthest valve.

9-15.18 Detectable Marking Tape

(January 2017, City of Auburn)

Supplement this section with the following:

Detectable marking tape shall be 3-inch wide detectable tape on main lines only.

9-21 Raised Pavement Markers (RPM)**9-21.2 Raised Pavement Markers Type 2**

(January 2, 2018, WSDOT Amendment)

This section's content is deleted.

9-21.2(1) Physical Properties

(January 2, 2018, WSDOT Amendment)

This section, including title, is revised to read:

9-21.2(1) Standard Raised Pavement Markers Type 2

The marker housing shall contain reflective faces as shown in the Plans to reflect incident light from either a single or opposite directions and meet the requirements of ASTM D 4280 including Flexural strength requirements.

9-21.2(2) Optical Requirements

(January 2, 2018, WSDOT Amendment)

This section, including title, is revised to read:

9-21.2(2) Abrasion Resistant Raised Markers Type 2

Abrasion Resistant Raised Markers Type 2 shall comply with Section 9-21.2(1) and meet the requirements of ASTM D 4280 with the following additional requirement: The coefficient of luminous intensity of the markers shall be measured after subjecting the entire lens surface to the test described in ASTM D 4280 Section 9.5 using a sand drop apparatus. After the exposure described above, retroreflected values shall not be less than 0.5 times a nominal unblemished sample.

9-21.2(3) Strength Requirements

(January 2, 2018, WSDOT Amendment)

This section is deleted in its entirety.

9-28 Signing Materials and Fabrication**9-28.11 Hardware**

(January 2, 2018, WSDOT Amendment)

The last paragraph is revised to read:

All steel parts shall be galvanized in accordance with AASHTO M111. Steel bolts and related connecting hardware shall be galvanized in accordance with ASTM F 2329.

9-28.14(2) Steel Structures and Posts

(January 2, 2018, WSDOT Amendment)

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

Anchor rods for sign bridge and cantilever sign structure foundations shall conform to Section 9-06.5(4), including Supplemental Requirement S4 tested at -20°F.

In the second sentence of the fourth paragraph, "AASHTO M232" is revised to read "ASTM F 2329".

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

Except as otherwise noted, steel used for sign structures and posts shall have a controlled silicon content of either 0.00 to 0.06 percent or 0.15 to 0.25 percent.

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

If such modifications are contemplated, the Contractor shall submit a Type 2 Working Drawing of the proposed modifications.

9-29 Illumination, Signal, Electrical

9-29.1 Conduit, Innerduct, Outduct

(April 2018, City of Auburn)

Supplement this section with the following:

Traffic Signal, ITS, and Street light conduit shall be Schedule 80 PVC-ASTM D1785 and as shown on the Plans.

(January 2, 2018, WSDOT Amendment)

This section is supplemented with the following new subsection:

9-29.1(10) Pull Tape

Pull tape shall be pre-lubricated polyester pulling tape. The pull tape shall have a minimum width of ½-inch and a minimum tensile strength of 500 pounds. Pull tape may have measurement marks.

9-29.2 Junction Boxes, Cable Vaults, and Pull Boxes

(January 2017, City of Auburn)

Supplement this section with the following:

All junction boxes shall have a galvanized frames and lids with a slip-resistant coating and bonding screws. Both the slip-resistant lid and slip-resistant frame shall be treated with either Mebac#1 as manufactured by Harsco Industrial IKG, 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 $\frac{1}{8}$ inch line thickness formed with a stainless steel weld bead.

9-29.2(2)A Standard Duty Cable Vaults and Pull Boxes

(January 2, 2018, WSDOT Amendment)

In the table in the last paragraph, the fourth, fifth and sixth rows are revised to read:

Slip Resistant Lid	ASTM A36 steel
Frame	ASTM A36 steel
Slip Resistant Frame	ASTM A36 steel

9-29.3 Fiber Optic Cable, Electrical Conductors, and Cable

(April 2018, City of Auburn)

Supplement this section with the following:

Illumination

Wire conductors for underground feeder runs and for circuitry from the in-line fuse in the poles to the junction box shall be 600 volts (minimum rated at 75 degree C) # 8 AWG single conductor stranded-copper, U.S.E. insulated, in accordance with the Insulated Power Cable Engineer's Association Specifications. SPEC 2150.

Wire conductors inside the pole from the ballast to the in-line fuse, shall be 600 volt, pole and bracket cable, 2 conductor, stranded-copper No. 10, Type HMW grade or better. Conductor insulation shall consist of a 45-mil polyvinyl chloride with a 95-mil polyethylene jacket.

Single conductors for street lighting shall be stranded copper with insulation conforming to USE 600 volt minimum rated at 75 degree C and shall be color-coded in a consistent manner throughout the project.

A three-wire electrical service shall be used at 120/240 volts. The contractor shall have the service inspected by the Department of Labor and Industry and coordinated with the Power Company to have the service installed.

Overhead electrical service, when allowed, shall be brought to the load center through a conduit riser with a weather head on the service pole.

Traffic Signals

1. Loop Lead-In Cable shall be #14 AWG and Pedestrian Push Button cable shall be, #14 AWG, two conductor stranded copper, twisted approximately two turns per foot. The conductors shall be covered with a foil shield and protected with an outer jacket. The cable shall conform to IMSA Spec. No. 50-2.
2. Detector Loop Wire (sawcut) shall be No. 14 AWG class B stranded copper wire with cross-linked polyethylene type USE insulation and conform to IMSA Spec. 51-3.

3. The detector lead-in cable for Emergency Vehicle Preemption (EVP) shall be 3M OPTICOM Model 138 shielded detector cable or approved equivalent. No splicing will be allowed between the detector and the controller cabinet.

4. Signal Interconnect Cable shall be copper or fiber as shown in the Plans. For Copper the traffic signal interconnect system shall conform to REA Spec. PE-38 (self-supporting combination signal cable and messenger cable) or PE-39 for underground. The signal cable shall consist of 12 pair No. 19 AWG conductors. For fiber optic cable, the cable shall be single mode all dielectric gel free loose tube single mode fiber optic with a minimum of 48 count.

5. Traffic Video Detection Camera Cable shall be a parallel construction of one PVC-jacketed RG 59/U (Coaxial) and one PVC-jacketed five conductor (Power) 18 AWG cable under an oval black flame retardant polyvinyl chloride jacket meeting the requirements of the video detection system manufacturer's recommendations.

Video camera cable shall meet the following requirements, or approved equivalent meeting the requirements of the video detection system manufacturer's recommendations:

RG 59/U (Coaxial)

Conductor: 20 AWG solid bare copper 0.032".

Dielectric: 0.054" wall of gas injected foamed polyethelene to 0.140" nom.

Braid: 36 AWG bare copper with 95% coverage. Pull in aluminum/polyester tape under braid.

Jacket: 0.035" wall black 75 degrees C polyvinyl chloride to 0.232" nom.

18 AWG Cable (Power)

Conductor: 5-18 AWG bare copper 0.048".

Insulation: 0.012" wall polyvinyl chloride per the color code to 0.072" nom.

Cabling: Five 18 AWG conductors cabled together in a 3/4" left hand lay to a nom. diameter of 0.194".

Jacket: 0.025" wall black 75 degrees C polyvinyl chloride to 0.244" nom.

Color Code: White, Red, Black, Brown, Blue.

Rating: Multi-conductor leg is rated at 600V.

9-29.3(1)A Singlemode Fiber Optic Cable

(January 2017, City of Auburn)

Supplement this section with the following:

All fiber optic cable shall be ALTOS All-Dielectric Gel Free Cables by Corning, or approved equivalent, per the following schedule:

Fiber Count	Nominal Cable Weight (lb/1000ft)	Minimum Installed Bend Radius (in)
12	49	4.1
48	49	4.1
288	131	7.2

All optical fibers shall be identifiable by standard color codes as defined in ANSI/TIA/EIA-598.

Fiber optic cable shall be tested according to Section 8-31.3 (Fiber Optic Cable Testing).

Splice cases shall be Corning, Tyco or approved equivalent.

9-29.6 Light and Signal Standards

(January 2, 2018, WSDOT Amendment)

In the first sentence of the third paragraph, "AASHTO M232" is revised to read "ASTM F 2329".

Item number 2 of the last paragraph is revised to read:

2. The steel light and signal standard fabricator's shop drawing submittal, including supporting design calculations, submitted as a Type 2E Working Drawing in accordance with Section 8-20.2(1) and the Special Provisions.

9-29.6(1) Steel Light and Signal Standards

(January 2, 2018, WSDOT Amendment)

In the second paragraph, "AASHTO M232" is revised to read "ASTM F 2329".

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

Steel used for light and signal standards shall have a controlled silicon content of either 0.00 to 0.06 percent or 0.15 to 0.25 percent.

(April 2018, City of Auburn)

Add the following new section:

9-29.6(1)A Lighting & Signal Standards & Davit Arms

Lighting Standards

Lighting standards shall be aluminum, davit-style units in accordance with Section 9-29.6 (Light and Signal Standard) of the Standard Specifications and these special provisions.

Mounting heights for light fixtures shall be as noted on the Plans.

Lighting standards shall have 2 through-bolts where the davit arm intersects the pole in accordance with the applicable City of Auburn Standard Details. All poles to be furnished shall maintain a minimum safety factor of 4.28 on yield strength of weight load and 2.33 for basic wind pressure. All materials shall be natural polished aluminum color.

A grounding nut or provision in the handhole frame for accommodating a threaded bolt for the purpose of attaching a grounding connector shall be provided on the inside of the shaft. After fabrication, the handhole shall have the mechanical strength of not less than the temper of the material utilized for the manufacturer of the pole.

All bolts, nuts, screws, and washers, but not including anchor bolts and unless otherwise specifically designated herein, shall be stainless steel. Handhole bolts shall be tamperproof heads.

VMS Support Structure

VMS Support structure shall meet the above stated criteria for traffic signal standards and the dimensions and details included in the plans.

The following loads shall be used for design of the VMS sign pole and mast arm structure: dead loads shall consist of the weight of the sign times a safety factor of two; wind loads shall be taken as 30 PSF for the sign and 24 PSF for the supporting structure and, (including the effect of gust and shape factors), on the greatest area of signs and structure in any elevation view; live load may be omitted.

Signal Standard

A signal standard shall consist of the following components: a round tapered steel vertical pole shaft, a round tapered horizontal mast arm, a davit style luminaire arm attachment, anchor bolts with nuts, washers and all associated hardware.

The pole shaft and signal mast arm shall not vary in roundness more than 1/16 inch in straight sections.

Longitudinal seam welds shall have full penetration for not less than 60% of their full length. Butt welds in the shafts shall have back-up rings and full penetration for 100% of the circumference. All welds shall be deburred.

Materials, construction and assembly techniques shall be as specified on the [Standard Plans](#) and as shown in the Plans. All materials shall be hot-dipped galvanized after fabrication in accordance with ASTM A-123.

Design shall be in accordance with the requirements of the 2011AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and the values on the Detail Sheet as shown in the Plans. Sizes on the Detail Sheet as shown in the Plans shall govern in differences between the Standard Plan and the Detail Sheet as shown in the Plans.

The following loads shall be used: dead loads shall consist of the weight of the signals and signs times a safety factor of two; wind loads shall be taken as 30 PSF for the signals and signs and 24 PSF for the supporting structure, (including the effect of gust and shape factors), on the greatest area of signals, signs and structure in any elevation view; live load may be omitted.

Complete calculations for structural design shall be submitted with the shop drawings for approval before fabrication or ordering material. These calculations shall include the stresses in the pole and cantilever arms, the attachment of the signals and signs to the structure, the connection between the cantilever arms and vertical pole, pole section at handhole, base plate, anchor bolts and foundations.

Pole Shaft

The round tapered pole shaft shall be made of one-ply, hot-rolled basic open-hearth steel. Structural steel having a minimum yield point of 33,000 psi or more shall be used for all structural parts and shall be galvanized after fabrication in accordance with ASTM A-123.

A flange plate shall be attached to the vertical pole shaft for the purpose of mounting the mast arm. The flange plate shall be supported by side plates tangent to the shaft and gusset plates on top and bottom. A 3-inch wire way hole shall be provided (matching the wire way hole in the mast arm flange plate). Four holes for mounting the mast arm shall be drilled and tapped for high tensile bolts.

A 7" x 21" Internal Terminal Cabinet shall be constructed integral to the pole with a stainless steel hinged door and a best slam lock. It shall be no lower than 4 ft 6" from the ground. A 4-inch x 6½ inch reinforced hand hole frame and rain-tight cover with tamper resistant screws shall be provided. The frame shall be welded into the shaft 18 inch above the base plate on the opposite side of the mast arm attachment. A grounding nut or provision for accommodating a threaded bolt or stud shall be provided in the frame.

A second hand hole shall be provided and welded into the shaft directly opposite the mast arm mounting plate. A J-hook wire support shall be provided inside the pole shaft between the frame and mast arm mounting plate.

Vehicle Signal Mast Arm

The vehicle signal mast arm shall be sized as shown on the Plans.

End caps shall be supplied and be weather tight and all unused tenons or holes shall be plugged and sealed.

A mast arm flange plate matching the pole shaft flange plate shall be welded to the mast arm base segment. The flange plate shall have a hole cut in the center equal to the outside diameter of the mast arm base.

The flange plate shall be welded to the mast arm by two continuous arc welds, one on the outside and the other on the inside. The outside weld shall be on top face of the flange plate. The inside weld shall be in the gap between the bottom face of the mast arm and the inside face of the flange hole.

Four holes for high tensile bolts shall be drilled in the flange plate matching the four tapped holes in the pole shaft mast arm mounting flange plate.

For the purpose of mounting the traffic signal displays, 2 inch couplings shall be welded to the mast arm extension segment at the locations specified on the Detail Sheet as shown in the Plans. A ½ inch diameter hole shall be drilled in each coupling to allow for the thru-bolt.

Signal Pole Anchor Base

Four holes sized to receive the anchor bolts shall be drilled in the base. Slotted holes ¼ inch larger than the anchor bolt shall be permitted. Minimum bolt circle pattern shall be as specified in the Plans.

Four high-strength anchor bolts A307 shall be furnished with each pole. Each anchor bolt shall have an "L" bend at the bottom end or multiple anchor plates per the manufacturers recommendation, and shall have 7-inch minimum thread on top. Anchor bolt dimensions

shall be per Detail Sheet as shown in the Plans or per Manufacturer's recommendations whichever is larger. All anchor bolts shall be furnished with 2 heavy hex nuts, two standard washers, bolt covers and provisions for mounting with stainless steel screws. Threaded ends of bolts, nuts and washers shall be hot dipped galvanized in accordance with ASTM A-123. The anchor bolts shall be capable of resisting at yield strength stress the bending moment of this shaft at its yield strength stress.

Luminaire Attachment

Unless otherwise indicated in the Plans all traffic signal poles shall be equipped with davit style luminaire arms as shown in the Plans. The davit style arm shall be secured to the top of the pole shaft using a cone reducer providing a flush, smooth transition. From the cone reducer the luminaire shaft shall be continuously tapered at the same rate as the pole shaft while incorporating a 5-foot, 9-inch radius bend at the end. A pipe tenon of the diameter and length specified for the luminaire shall be provided in the end of the davit arm. The tenon shall be two degrees above level.

(August 2016, City of Auburn)

Add the following new section:

9-29.6(1)B Wrapping

The aluminum pole shaft and bracket arm assembly shall be entirely wrapped with a heavy, water-resistant paper for protection during shipment. Any marks or stain resulting from wrapping materials shall be cause for rejection. Scratching, marking, denting, or other damage to poles and fittings at the point of delivery shall also be cause for rejection.

(April 2018, City of Auburn)

Add the following new section:

9-29.6(2)A Anchor Bases

A one-piece anchor base of adequate strength, shape, and size shall be secured to the lower end of the shaft so that the base shall be capable of resisting the bending movement of the shaft at its yield-strength stress. The base shall be provided with 4 slotted or round holes to receive the anchor bolts. Bolt covers shall be provided with each pole. Base plates for Type II signal poles shall not exceed 18 ½ inches square.

9-29.6(4) Welding

(January 2017, City of Auburn)

Supplement this section with the following:

All welds shall be deburred.

9-29.6(5) Foundation Hardware

(January 2, 2018, WSDOT Amendment)

In the last paragraph, "AASHTO M232" is revised to read "ASTM F 2329".

(January 2017, City of Auburn)

Supplement this section with the following:

Four high-strength steel anchor bolts shall be furnished with the poles. Each anchor bolt shall have an "L" bend at the bottom end and threaded at the top end. Threaded ends and all nuts and washers shall be hot-dipped galvanized. The anchor bolts shall be capable of resisting at yield-strength stress the bending movement of the shaft at its yield-strength stress.

9-29.7 Luminaire Fusing & Electrical Connections at Light Standard Bases, Cantilever Bases and Sign Bridge Bases

(April 2018, City of Auburn)

Delete this section and replace it with the following:

Fuses shall be Bussmann Slow Blow or approved equivalent.

Fuse connector kits shall be SEC Model 1791-SF (2 each) or approved equivalent.

Connector kits to connect luminaires to the system in the junction box shall be SEC Model 1791-DP, or approved equivalent.

9-29.9 Ballast, Transformers

(January 2017, City of Auburn)

Supplement this section with the following:

The luminaire shall contain an integral high-power factor-regulator ballast suitable for 240-volt operation with a 10% voltage variation. The ballast shall be prewired to the lamp socket and terminal board, requiring only connection of the power supply leads to the terminal board.

9-29.10 Luminaires

(April 2018, City of Auburn)

Delete this section and replace it with the following:

The LED Street Light Shall meet the following specifications;

Housing

Luminaire housing shall be die cast aluminum with integral cooling fins universal four-bolt slip fitter for mounting to 1¹/₄" to 2" (1⁵/₈" to 2³/₈" O.D.) diameter mast arm. Housing must be similar shape to traditional cobra head. Housing meets ANSI C136.31-2001 and CalTrans 611 vibration standards. Conductors from power supply to terminal block and LED board must be spliced with quick style electrical disconnects Photocontrol receptacle is standard for ANSI C136.41-2013, 7-pin, photocell by others. Fixture must be capable of using either a 3-pin or 7-pin photocell with field adjustable drive current. Photocontrol shall be rotatable without tools. Housing shall have a leveling bubble for adjusting the head.

Light Emitting Diodes

Hi-flux/Hi-power white LEDs shall produce a minimum of 90% of initial intensity at 100,000 hours of life at 700mA, TM-21 Calculator required. LEDs shall be tested in accordance with IESNA LM-80 testing procedures. They shall have a mean correlated color temperature of 4000K (standard) ± 300K and a minimum CRI >70.

Optical Systems

Micro-lens optical systems shall produce IESNA Type 2, and 3 distributions. Fixture shall not use acrylic or plastic secondary exterior lens over the LEDs. Emitters shall be of single LED per die design. Luminaire shall be classified as "full-cutoff" and produce 0% total lumens above 90° with a BUG rating of U-0.

Electrical

The Driver shall be dimmable. The power supply shall have a minimum power factor of .90 and <20% Total Harmonic Distortion (THD). Power supply drive current shall be field adjustable without tools.

Finish

Housing shall receive a fade and abrasion resistant, epoxy polyester powder coat light gray finish standard.

Accessories

Optional flush mounted house side and cul-de-sac shield shall be available. The house side shield cuts off light at ½ mounting height behind the luminaire and the cul-de-sac shield cuts light off ½ mounting height behind and 1 ½ mounting height on either side of the pole. Both shields must be factory or field installable without the use of tools.

Listings/Ratings/Warranties

Luminaires shall be UL listed for use in wet locations in the United States and Canada. Optical systems shall maintain an IP66 rating. Ten-year limited warranty is required for all components. All units are listed by Design Lights Consortium (DLC).

Photometry

All luminaires shall be photometrically tested by certified independent testing laboratories in accordance with IESNA LM-79 testing procedures.

Warranty

All luminaires shall have a Ten-year manufacturer's product warranty to be free of defects in workmanship and/or material. This warranty includes all electrical and mechanical components including finish and gaskets. Failure of over 10% of the LEDs in the luminaire during the warranty period will constitute a luminaire "failure". Manufacturer will repair or replace any units found to be defective or that fail within this period.

Prior Approval

Fixtures submitted as an equal must be submitted for review no later than 10 working days prior the advertised bid date. Samples required at manufacturer cost. All samples must be working and accompanied with manufacture cut sheet, installation guide, IES files and photometric layouts per the City of Auburn Table 10-6 requirements.

Manufacturer must have resume of at least three US customers with over 10,000 fixtures of manufacturer's LED street lights installed.

All LED Roadway luminaires supplied to the project shall be of the same manufacturer and model line and shall be per the City of Auburn Street Lighting Lamp Schedule shown in the Plans.

9-29.11(2) Photoelectric Controls

(January 2017, City of Auburn)

Supplement this section with the following:

The photoelectric control shall be SST-IES or approved equivalent.

9-29.12(1) Illumination Circuit Splices

(January 2, 2018, WSDOT Amendment)

This section is revised to read:

Underground illumination circuit splices shall be solderless crimped connections capable of securely joining the wires, both mechanically and electrically, as defined in Section 8-20.3(8). Aerial illumination splices shall be solderless crimp connectors or split bolt vice-type connectors.

(January 2017, City of Auburn)

Supplement this section with the following:

Approved copper splice "C" crimp connectors shall be used to connect bonding wires.

9-29.12(1)A Heat Shrink Splice Enclosure

(January 2, 2018, WSDOT Amendment)

This section is deleted in its entirety.

9-29.12(1)B Molded Splice Enclosure

(January 2, 2018, WSDOT Amendment)

This section is deleted in its entirety.

9-29.12(2) Traffic Signal Splice Material

(January 2, 2018, WSDOT Amendment)

This section is revised to read:

Induction loop splices and magnetometer splices shall use an uninsulated barrel-type crimped connector capable of being soldered.

(January 2017, City of Auburn)

Supplement this section with the following:

Loop lead-in wires shall be spliced at the junction box; with a waterproof splice leaving 10 feet each of loop wire and loop lead-in cable for future work. The connection shall be made using compression sleeves sealed with black 50-mm wide, ethylene propylene rubber mastic tape.

(January 2, 2018, WSDOT Amendment)

Add the following new section:

9-29.12(3) Splice Enclosures**9-29.12(3)A Heat Shrink Splice Enclosure**

Heat shrink splice enclosures shall be medium or heavy wall cross-linked polyolefin, meeting the requirements of AMS-DTL-23053/15, with thermoplastic adhesive sealant. Heat shrink splices used for “wye” connections require rubber electrical mastic tape.

9-29.12(3)B Molded Splice Enclosure

Molded splice enclosures shall use epoxy resin in a clear rigid plastic mold. The material used shall be compatible with the insulation material of the insulated conductor or cable. The component materials of the resin insulation shall be packaged ready for convenient mixing without removing from the package.

(January 2, 2018, WSDOT Amendment)

Add the following new section:

9-29.12(4) Re-Enterable Splice Enclosure

Re-enterable splice enclosures shall use either dielectric grease or a flexible resin contained in a two-piece plastic mold. The mold shall either snap together or use stainless steel hose clamps.

(January 2, 2018, WSDOT Amendment)

Add the following new section:

9-29.12(5) Vinyl Electrical Tape for Splices

Vinyl electrical tape in splicing applications shall meet the requirements of MIL-I-24391C.

(August 2016, City of Auburn)

Add the following new section:

9-29.12(6) Sealants

Loop detector sealant specifically manufactured for loop wire shall be used to imbed the loop wire into the pavement and fill the sawcut to within 1/16 inch of the top of the pavement. Sealant shall completely cover the foam backer rod.

Loop Sealant shall be:

1. Crafcro Loop Detector Sealant 271;
2. Max Cutter Seal No. 3;
3. 3M Black 5000; or
4. Engineer approved equivalent.

Installation shall conform to the manufacturer recommendations.

9-29.13(2) Traffic Signal Controller Assembly Testing

(January 2017, City of Auburn)

Delete this section and replace it with the following:

The entire controller cabinet, complete with all auxiliary equipment, shall be delivered to the City of Auburn Maintenance & Operation facility, located at 1305 C Street SW, for testing in the Traffic Signal Shop. The period of testing shall be for a minimum of 2 weeks in duration and is intended to demonstrate the operation of all equipment. Any deficiencies or equipment failures discovered shall be corrected by the Contractor, at his expense.

In the event that it is not possible for the City and the Contractor to agree on the cause of a malfunction, the City's decision shall be binding.

The successful completion of the performance test will constitute acceptance of the equipment by the City.

9-29.13(3) Traffic Signal Controller

(January 2017, City of Auburn)

Delete this section and replace it with the following:

General

The traffic signal controller shall be the Cobalt model by Econolite.

9-29.13(6) Emergency Preemption

(January 2017, City of Auburn)

Supplement this section with the following:

Emergency Preemption System equipment shall be compatible with the operational requirements of the existing Opticom brand (3M Company) emitters, detectors, and phase selectors owned by the City.

9-29.13(10) NEMA, Type 170E, 2070 Controllers and Cabinets

(October 2016, City of Auburn)

Section 9-29.13(10) including title is replaced with the following:

9-29.13(10) Traffic Signal Controller Cabinet Unit

Controller cabinet furnished and installed by the Contractor shall be one of the following types, as specified in the Plans:

Western Systems Modified P plus Cabinet Requirements

Western Systems controller cabinets shall be NEMA Type 2 TS-1 P style cabinet per the City of Auburn approved Western Systems Part # 3012500000 with Alpha BBS. The cabinet shall be fully loaded with BIU's, MMU Smart Monitor, 16 detector cards, load switches, and a GTT 3M 764 Opticom.

Econolite P 44 Cabinet Requirements

Econolite controller cabinets shall be NEMA Type 2 TS-1 P style cabinet per City of Auburn approved Econolite part #166799B. The cabinet shall be fully loaded with

BIU's, MMU SmartMonitor, 16 detector cards, load switches, and a GTT 3M 764 opticom.

The cabinet shall meet the following additional requirements:

- Wired and tested to the 2003 NEMA Traffic Controller Assemblies specification with NTCIP Requirements Version 02.06 (as amended herein).
- Equipped with all auxiliary equipment and plug-ins required to operate 8 vehicle phases, 4 pedestrian phases and 4 overlap phases (NEMA TS-2, Type 1).
- Designed for 16 channel operation where each load switch socket can be configured for a vehicle phase, pedestrian phase or overlap operation. 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 sockets via a terminal block located on the front side of the load bay so as to allow checking voltage inputs to the load switch sockets without dropping the load bay.
- Wired for up to a minimum of (32) channels of detection, (4) channels of Opticom™ preemption.
- The complete cabinet assembly with electronics shall undergo complete input/output function testing by the manufacturer before being released to the City of Auburn.
- Field Terminal Labels
Field terminals shall be labeled with City of Auburn numbering as well as manufacturers.
- Device Labeling
Every module or device shall have affixed thereto; permanent nametags or nameplates stating the component's function within the composite signal control system. Specifically each loop detector unit shall be labeled, so as to indicate the loop numbers connected to each channel. The front of the shelf where each item is to be placed shall have a similar label so those items can be replaced during maintenance in an expedient fashion.
- Schematics, Software and Manuals
The controller cabinet shall have a waterproof envelope with a side access attached to the inside of the cabinet door. At the time of delivery, the envelope shall have one complete set of schematics and manuals for each assembly and subassembly located in the cabinet, and a complete wiring diagram for the cabinet and the controller assembly. In addition, a duplicate copy of the above shall be provided to the City of Auburn Traffic Engineering Section.

- Fiber Optic Patch Panels

Where fiber optic connections are shown in the Plans, the fiber patch panel shall be a pre-terminated Corning 12 port Single-Panel Housing (SPH-01P) with a 12 ct pigtail ordered to length or approved equivalent utilizing SC connectors.

9-29.16 Vehicular Signal Heads, Displays, and Housing

(August 2016 City of Auburn)

Replace the first sentence of the second paragraph with the following:

Backplates shall be constructed of 5-inch-wide, .050-inch-thick corrosion-resistant flat black finish, louvered aluminum, attached with stainless steel hardware.

9-29.16(2) Conventional Traffic Signal Heads

(January 2017 City of Auburn)

Supplement this section with the following:

Vehicle signal head housings shall be rigid mount type M.

9-29.16(2)A Optical Units

(April 2018 City of Auburn)

Supplement this section with the following:

The LED's shall have a 15 year manufacturer's warranty. The LED shall be Dialight Light Emitting Diode (LED). Part numbers for Dialight LEDs are as follows:

Size	Description	Part Number
12 inch	RED Ball	433-1210-003XL15
12 inch	AMBER Ball	433-3230-901XL15
12 inch	GREEN Ball	433-2220-001XL15
12 inch	RED Arrow	432-1314-001XOD15
12 inch	AMBER Arrow	431-3334-901XOD15
12 inch	GREEN Arrow	432-2374-001XOD15
12 inch	GREEN/AMBER Arrow	430-6370-001
12 inch	AMBER/AMBER Flashing Arrow)	430-6370-805

9-29.16(2)E Painting Signal Heads

(April 2018, City of Auburn)

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

Traffic signal heads shall be finished with two coats of dark green (SAE AMS Standard 595) oven baked powder coating comprised of resins and pigments.

9-29.17 Signal Head Mounting Brackets and Fittings

(January 2, 2018, WSDOT Amendment)

In the first paragraph, item number 2 under **Stainless Steel** is revised to read:

2. Bands or cables for Type N mount.

9-29.18 Vehicle Detector

(January 2017 City of Auburn)

Supplement this section with the following:

Vehicle detectors shall be 2 channel rack mount style and compliant with NEMA TS1 and TS2 standards. They shall be capable of auto tuning and be able to withstand temperatures ranging from minus 40 degrees to plus 80 degrees C. They shall have a minimum of 15 sensitivity levels, 4 frequencies plus sequential scanning to avoid crosstalk, and have pulse and short and long presence modes. They shall have separate detect and fault LED's on the front face.

9-29.19 Pedestrian Push Buttons

(April 2018 City of Auburn)

Replace the first paragraph with the following:

The Pedestrian Push Button Assembly shall be an Advisor AGPS manufactured by H.D. Campbell Company, 1486 NW 70th Street, Seattle, WA 98117 and shall be black in color with a white button.

Specifics of voice programming shall be provided as part of the submittal review and subject to the Engineer's approval prior to submittal acceptance.

APS push button stations shall include a control module that the Contractor shall install in corresponding pedestrian signal head and manufacturer-supplied multi-conductor interconnect cable that the Contractor shall install per the manufacturer's recommendations between the control module and push button station.

9-29.20 Pedestrian Signals

(January 2, 2018, WSDOT Amendment)

In item 2C of the second paragraph, "Federal Standard 595" is revised to read "SAE AMS Standard 595".

(January 2017 City of Auburn)

Supplement this section with the following:

Pedestrian signals shall be a LED, filled hand/walking person countdown display.

The maximum overall dimensions of the signal shall be 19 inch wide by 18¾ inch high by 8¾ inch deep, including the egg crate Z type visor and hinges. The signal shall be furnished complete and ready to operate. In order to facilitate installation and maintenance, the signal shall be designed so that all components are readily accessible from the front by opening the door.

Each signal shall be provided with an egg crate visor constructed of polycarbonate material. The egg crate or "Z" crate type sun shield, if used, shall be held in place by the use of stainless steel screws. The complete egg crate or "Z" crate assembly shall be 1½ inch deep.

The case shall be one-piece corrosion resistant aluminum alloy die-casting. Integrally cast hinge lug pairs, two at the top and two at the bottom of each case, shall be provided for operation of a swing door down. The unit shall be mounted with Type E mountings unless

indicated otherwise on the attached Plans. All terminal compartments shall be either ferrous metal or bronze.

Pedestrian signal heads shall be Dialight ITE compliant Light Emitting Diode (LED) or approved equivalents.

(August 2016 City of Auburn)

Add the following new section:

9-29.22 Rectangular Rapid Flashing Beacon (RRFB)

The contractor shall provide and install a hardwired 120 volt power Rectangular Rapid Flashing Beacon (RRFB) with hardwire communication between the multiple beacons. The beacons shall conform to the latest MUTCD.

(April 2018, City of Auburn)

Add the following new section:

9-29.23 Video Detection Cameras

The Video Detection System shall be Trafficon by Kargor the presence detector boards shall be Trafficon VIP3D.2, which monitors only two cameras.

The cameras shall be installed where indicated on the Plans. Cameras shall be mounted on signal mast arms as shown in the Plans utilizing Pelco Extended Tilt & Pan pole mount, for installation on the signal arm with cable mount and 72-inch tube or approved equivalent. The cable mount shall be suitable for the mast arm diameter at each camera installation location.

The camera housings and internal cameras shall be the latest approved models supplied by Trafficon. The Contractor shall provide a VIP set-up keypad and video monitor with a minimum of a 9-inch LCD. The Coaxial cable shall be 5 conductor cable ISDTEC X341667-00.

9-29.24 Service Cabinets

(January 2017 City of Auburn)

Supplement this section with the following:

Service cabinet shall be a metered aluminum Skyline Electric Series 47700-A1-R1, with Underwriters Laboratory label on the panel boards as in accordance with the applicable City of Auburn Standard Details. The service cabinet shall comply with all requirements of Puget Sound Energy and Washington State Labor and Industries. It shall be the Contractor's responsibility to obtain these requirements and ensure that the cabinet complies with the requirements. The service cabinet shall be equipped with a stainless steel handle, a three-point locking system, and a Best six-tumbler mortise cabinet lock with dead bolt.

Two copper ground rods shall be installed per WSDOT and the NEC.
The cabinet shall contain the following branch breakers as applicable:

20 AMP	2 pole	Lighting Circuit A
20 AMP	2 pole	Lighting Circuit B
20 AMP	1 pole	Traffic Signal
100 AMP	2 pole	Main

(October 2016 City of Auburn)

Add the following new section:

9-29.26 Traffic Signal Battery Backup System

All battery backup power units shall utilize the newest Alpha Inverter/Charger unit, complete with associated remote control display panel.

Batteries shall be connected utilizing approved quick-connect modular battery connectors. Battery cable sizing shall be appropriate for the type and quantity of batteries supplied.

Batteries shall be 12 Volts DC, 110 amp hour minimum, absorbed glass mat type, group 27. Batteries shall meet or exceed specification MIL B-8565J (Sec 4.6.22). There shall be 4 batteries supplied by the Contractor.

All battery backup power units shall possess an AC voltage bypass/disconnect switch or relay. The bypass/disconnect method shall couple the normal AC power source directly to the signal controller cabinet, while completely isolating the inverter/charger unit from the circuit.

(April 2018, City of Auburn)

Add the following new section:

9-29.27 CCTV System

CCTV cameras shall be Cohu Rise 1080P HD Hybrid camera model # 4260 with power over Ethernet and utilize a Cohu MS cable ordered to length. The Camera shall come with a Cohu supplied POE + injector.

The camera cable pigtail may have to be a custom length to construct the drip loop per the camera mounting details.

The ethernet switches shall be shelf mount Ruggedcom RS900G gigabit ethernet switches with SM fiber ports and necessary 120 volt power cords and ethernet cords and jumpers.

Camera mounting equipment shall be Pelco pole mounts and Tri-brac mast arm mounts and other equipment and hardware as shown in the plans and as required for a complete and operational CCTV camera system. The signal pole mount may have to be modified as shown in the plans.

(April 2018, City of Auburn)

Add the following new section:

9-29.28 Variable Message Sign System

Major elements of the variable message sign (VMS) system shall consist of the variable message sign, sign structure, foundation and ground-mounted VMS field cabinet including the VMS controller, fiber optic patch panel, ethernet switch, power supply, and associated equipment. Conduit, junction boxes and wiring/cabling to connect the sign, controller and various components of the system shall be per the manufacturer's requirements.

VMS Display and Housing

The sign display shall be supplied by one of the following vendors:

Daktronics, Inc.
331 32nd Ave.
P.O. Box 5128
Brookings, SD 57006-5128
Tel: (888) 325-8726
Email: transportation@daktronics.com

The sign display shall be a continuous matrix of amber LED pixels, with a minimum of 18 pixels high and 75 pixels wide with a pitch of 44 mm to 48 mm. Each pixel shall be made from a grouping of amber light emitting diodes and contain no moving parts. The matrix of pixels shall be capable of displaying a messages with 2 lines of 12-inch text, 12 characters long.. The sign display and other associated VMS components shall permit a test message using all pixels (1350 min.) simultaneously running at the maximum brightness and 100 percent duty.

The sign display shall provide front service for all LED display modules, electronics, power supplies, environmental control equipment, air filters, wiring, and other internal VMS components.

The nominal external dimensions of the sign shall not exceed 13.0 feet in width, 4.0 feet in height, and 1.5 feet in depth. The VMS back and side housing walls shall be vertical. Display modules shall be parallel to the front VMS wall, so that use of the LED viewing cone is optimized. The dead load of the housing and contents shall not exceed 600 lbs.

VMS housing exterior sheet material shall be 5052 aluminum alloy and shall have a minimum thickness of 0.125 inches. Exterior sheet seams shall be chemically bonded or continuously welded and waterproof. VMS housing structural frame members (I-beams, C-channels, Zee-extrusions, and bar stock) shall be aluminum alloy number 6061-T6.

VMS housings shall be constructed to present a clean, neat appearance, and the equipment located within shall be protected from rain, snow, dirt, and corrosion. Weep holes shall be fabricated in a manner which prevents the entrance of insects.

The front of the LED display matrix shall be completely covered with polycarbonate sheeting that is weather tight, ultraviolet (UV) light protected, non-glare, and which has a minimum thickness of 0.11 inches. To achieve maximum display contrast and legibility, the outside of the polycarbonate sign face shall be fully covered with a mask, which is formed from aluminum sheeting. The mask shall have a minimum thickness of 0.09 inches and shall contain a circular opening for each pixel. The openings shall not hinder the 15° half-angle LED viewing angle (30° inclusive viewing cone). All exposed metal on the VMS front face, which is visible to viewing motorists, shall be coated with black Kynar 500 resin or an

equivalent oven-fired fluoropolymer-based coating having a minimum outdoor service life of 20 years. This shall include the aluminum face mask, the aluminum border outside the LED display matrix, and all the mounting and assembly hardware.

All VMS equipment, components, modular assemblies and other non-structural elements of the sign shall be removable, transportable, and capable of being installed by a single technician utilizing a one-person aerial lift truck.

Ribbon cable shall be protected at all points of physical contact where it touches metallic frameworks. Either the ribbon cable or the frame, or both, shall be wrapped with a protective covering where the cable touches the framework, to prevent cable insulation rub-through from road induced vibration in the sign framework.

The interior VMS environment shall be monitored and controlled by the sign controller. Environmental control shall be designed to maintain the internal VMS temperature at or below +140°F when the outdoor ambient temperature is at or below +115°F. The VMS environmental control system shall consist of four primary subsystems as follows:

Internal Temperature Sensors and Cooling/Heating Systems

The VMS shall contain two internally-mounted temperature sensors which are equipped with external thermocouples and which the sign controller continuously monitors. This temperature information shall be used by the sign controller to determine when to activate and deactivate the environmental control systems described herein. Sensors shall be located on opposite ends of the upper 1/3 of the LED display matrix, and their external thermocouples shall be attached to and make contact with an LED pixel circuit board.

The thermocouple and LED board shall be easily detached, in the event that one of the units requires removal and replacement. Sensors shall be capable of measuring temperatures from -40°F to +185°F. The sign controller shall automatically shut down the LED display whenever one or both sensors indicate that LED board temperature has exceeded +140°F. The sign controller shall automatically restart the LED display whenever the suspect temperature falls below +130°F. Both shutdown and re-start temperature thresholds shall be user-programmable. Sensor temperatures and VMS shutdown/re-start events shall be reportable to the VMS Central Software.

LED Display Cooling System

The VMS shall contain a ventilation system to monitor and control internal cabinet temperature with user-programmable temperature thresholds. This system shall be comprised of fan-forced air to control ventilation in the cabinet. . The sign controller shall initially be programmed to activate the LED cooling fan system based on the manufacturer's recommendations for the application(s) on this project. Cooling fans shall be located so as not to hinder removal of LED display modules and driver boards.

Front Face Panel Defog/Defrost System - The VMS shall contain a defog/defrost system which circulates warm, fan-forced air across the inside of the polycarbonate front face whenever LED board temperature falls below a user-programmable threshold. The air source shall consist of a fan or fans that provide uniform airflow across the polycarbonate face panel.

The sign controller shall initially be programmed to activate the defog/defrost system whenever LED board temperature falls below +40°F and shall deactivate the defog/defrost system whenever LED board temperature exceeds +105°F. A 100-watt heating element shall be mounted in front of each defog/defrost fan and shall serve to warm the air directed

across the VMS face. Heating elements shall be on only when the defog/defrost fans are on.

VMS Mounting Hardware

A VMS, sign structure and foundation are included in the construction. The sign housing shall be provided with all necessary hardware including sign mounting beams, vertical and horizontal brackets, maintenance walkways, and all related hardware to install the VMS.

The VMS housing, structural framing, face covering, and mounting members shall be designed to withstand a wind velocity of 100 mph with a 30 percent gust factor and shall otherwise comply with the latest requirements of AASHTO's Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

VMS Sign Structure

The VMS sign structure shall be as specified for **VMS Support Structure** Special Provision 9-29.6(1)A.

Ground-mounted VMS Field Cabinet

The field cabinet shall be as specified in Section 9-29.13(10) and shall contain the VMS sign controller, ethernet switch and fiber optic patch panel for communication with the City of Auburn fiber optic ITS network.

VMS Sign Controller

Each VMS shall include an associated sign controller, which shall be installed in the field cabinet.

To support the VMS and VMS controller functions, they shall be provided with two serial communication ports.

One communication port shall be used to connect a laptop to the controller. The interface shall be wired as a 9-pin, EIA-232 DCE port. The port shall connect to a laptop computer using a straight-through 9-pin cable. One cable shall be supplied for each VMS installed in this contract.

The second communication port is for remote control of the sign from the central computer. The interface shall be wired as a 9-pin, EIA-232 DTE serial port. This port shall be connected to a communication interface (modem) specified elsewhere in this contract. A cable shall be supplied to connect the VMS communication port to the modem port (the modem port may be a non-standard pin-out and require a custom-made cable).

The sign controller hardware and software shall support all VMS communication, control, and diagnostic features as listed herein.

Memory

Sign controllers shall have both permanent and semi-permanent memory. Permanent memory shall be EE-PROM integrated circuits and shall contain the executable sign controller software. Semi-permanent memory shall be RAM integrated circuits with a battery backup that retains the data in memory for a minimum of one year following a power failure. Semi-permanent memory shall contain the library of messages, the message display schedule and programmable operating parameters. Each message shall have the capability to be defined and stored as a three-page message.

Power Interruptions

Contents of the sign controller's memory shall be preserved by battery backup during AC power interruptions and the controller shall automatically resume operation once AC power is restored. Upon recovering from a power interruption, the sign controller shall display the message identified by the Power Recovery Message parameter. The sign controller shall report to the central computer that it has recovered from a power interruption.

Sign Controller Software

The sign controller shall cause the desired message to be displayed on the VMS. The sign shall display alphanumeric character fonts. The sign controller shall provide a default value for each NTCIP object supported.

Message Selection

The central computer or laptop computer shall cause the sign controller to implement a message selected from those stored in controller memory, or a new message entered via the communication port.

The sign controller shall incorporate CRC checks to verify MULTI strings. The sign shall not display a message unless the MessageActivationCode CRC matches the MessageCRC.

A message shall remain displayed on the sign until either a command to change the current message or a command to blank the display is received. A command to display a message shall not succeed if the activation priority is less than the run time priority of the message currently displayed.

Data Transmission Requirements

Each sign controller shall contain two communication ports. Each communication port shall be labeled ("Local" or "Central") and shall be set to 9600 baud at the factory. Each port shall operate independently at baud rates of 1200, 2400, 9600, and 19,200 bits per second. The user shall select the baud rate for each port via a DIP switch.

Communication

The sign controller hardware and software shall communicate with the central computer in a polled multi-drop operation. In the polled multi-drop operation, several sign controllers shall share the same communication channel, with each controller assigned a unique ID number. Controller ID numbers shall conform to the NTCIP requirements for address numbers. A sign controller shall only reply to messages labeled with its ID. In polled multi-drop mode, sign controllers never initiate communication, but merely transmit their responses to messages from the central computer.

A laptop computer connected to the sign controller's local communication port shall have the same control and diagnostic capabilities as the central computer. However, local laptop control capability shall be limited to the VMS which is directly connected to that sign controller.

NTCIP Requirements

The sign controller software shall comply with the National Transportation Communications for ITS Protocol (NTCIP) documents and all related errata sheets published before July 1, 1999 and as referenced herein.

The sign controller software shall support the following standards:

1. NTCIP 1101, *Simple Transportation Management Framework (STMF)*, Conformance Level 1 (Simple Network Management Protocol (SNMP))
2. NTCIP 2001, *Class B Profile*. All serial ports on the device shall support communications according to these standards.
3. NTCIP 2101, *SP-PMPP/RS232 Point-to-Multi-Point Protocol (PMPP)*
4. NTCIP 2201, *NTCIP TP-Null Transport Profile Null (TP-NULL)*

The sign controller software shall implement all mandatory objects of all mandatory conformance groups as defined in NTCIP 1201, *Global Object Definitions*, and NTCIP 1203, *Object Definitions for Dynamic Message Signs*. Software shall implement the following conformance groups:

NTCIP 1203, Object Definitions for DMS

1. VMS Sign Configuration
2. MULTI Configuration
3. Default Message Control
4. Pixel Service Control
5. MULTI Error Control
6. Sign Status
7. Status Error
8. Pixel Error Status
9. Lamp Error Status
10. Fan Error Status
11. Power Status
12. Temperature Status

The software shall implement the following optional objects:

NTCIP 1203, Object Definitions for DMS

1. dmsMessageBeacon
2. dmsMessagePixelService
3. dmsCommunicationsLossMessage
4. dmsPowerLossMessage
5. dmsTimeCommLoss
6. dmsMultiOtherErrorDescription
7. dmsStatDoorOpen
8. fanFailures
9. fanTestActivation
10. lineVolts
11. tempMaxSignHousing

Objects required by these specifications shall support all values within its standardized range. The standardized range is defined by a size, range, or enumerated listing indicated in the object's SYNTAX field and/or through descriptive text in the object's description field. The following list indicates the modified object requirements for these objects.

Object Name	Object ID	Minimum Requirements
Number of Fonts	numFonts	9
Maximum Characters per Font	maxFontCharacters	255
Default Background Color	defaultBackgroundColor	0
Default Foreground Color	defaultForegroundColor	9
Default Justification Line	defaultJustificationLine	2, 3, and 4
Default Justification Page	defaultJustificationPage	2, 3, and 4
Number of Permanent Msgs.	DmsNumPermanentMsg.	2
Maximum No. Changeable Msg.	DmsMaxChangeableMsg.	8
Maximum Number Volatile Msg. *	dmsMaxVolatileMsg.	8
Control Mode	dmsControlMode	2, 4, and 5

* Changeable messages in excess of the minimum requirement are considered to meet the specification for an equivalent number of Volatile messages.

The first permanent message shall be used to blank the sign display. The second permanent message shall be the diagnostic message.

Sign controller software shall implement the following tags (opening and closing where defined) of the Mark-Up Language for Transportation Information (MULTI) as defined in NTCIP 1203:

1. Flash
2. Font
3. Justification Line
4. Justification Page
5. Moving Text
6. New Line
7. New Page
8. Page Time

Documentation

Software shall be supplied with all documentation on 1.44Mb IBM-compatible diskette(s). ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format shall be provided on CD-ROM:

1. The official MIB Module referenced by the device functionality.
2. A manufacturer-specific version of the official MIB Module with the non-standardized range indicated in the SYNTAX field. The filename shall match the official MIB Module, with the extension “spc”.
3. A MIB Module of all manufacturer-specific objects supported by the device with accurate and meaningful DESCRIPTION fields and the supported ranges indicated in the SYNTAX field.

Control Software

This work shall consist of furnishing Variable Message Sign (VMS) control software. The control software shall be a 32-bit application, designed to operate on Microsoft® Windows NT™, 98™, or 2000™ operating system. The control software shall provide for command and control of the following functions:

VMS Control

Software shall retrieve, display, update and download/upload the following functional parameters to the local sign controller in response to user-initiated instructions. The sign controller shall not perform pixel service tests when VMS are displaying messages. Software shall perform the following operations in conjunction with its monitoring and logging functions:

- Display a message
- Blank the current message
- Change message priority
- Pixel service, lamp and fan tests
- Set time and date in the sign controller
- Retrieve sign controller ID, type, and manufacturer

Communications

Communications between the control software and sign controller shall be NTCIP compliant, as indicated in the Special Provision for Variable Message Sign System.

The control software shall verify all communications for errors. If a response from a sign controller contains a communication error, or if there is no response, the Control Software shall re-establish communications.

Data Collection

The control software shall retrieve errors detected, message number currently being displayed, and current message priority. Using different commands, the software shall retrieve message MULTI strings, a map of defective pixels, the time and date, the event schedule, and configuration parameters.

Message Library

The control software shall store messages and transfer messages to a sign for storage and/or display. When a user desires to send a message to a sign, the control software shall offer as choices only those messages compatible with the sign in question. The control software shall allow message names of up to 25 characters in length. If the selected name already exists, the software shall notify the user and give the option of replacing the existing message or selecting another name.

The control software shall display all character fonts supported by the Variable Message Sign System. Messages shall be displayed on the computer monitor in exactly the same format (font, text centering and justification) as on the Variable Message Sign.

Software Duplication Rights

The City of Auburn shall have the right to duplicate the Variable Message Sign Control Software as needed for use in controlling signs under its jurisdiction.

Documentation

The Contractor shall furnish 1 copy of the Control Software user manuals to the Engineer. In addition, 2 sets of the software, installation program, instructions and user manual shall be furnished on CD ROM or diskettes to the Engineer.

9-30 Water Distribution Materials**9-30.1 Pipe****9-30.1(1) Ductile Iron Pipe**

(February 2018, City of Auburn)

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

All other ductile iron pipe shall be Special Thickness Class 52.

9-30.2 Fittings**9-30.2(1) Ductile Iron Pipe**

(January 2017, City of Auburn)

Supplement this section with the following:

All pipe fittings, adapters and joints for ductile iron pipe shall be ductile iron designed to AWWA Specification (unless otherwise approved in writing by the Engineer) with sufficient tangent at the ends to allow for proper joint connections and shall be coated to give protection to them equal to that given the pipe. Field fabrication fittings will not be permitted. Flexible couplings shall be of the style as required for specific application.

9-30.2(6) Restrained Joints

(August 2017, City of Auburn)

Delete this section and replace it with the following:

Bolted restrained joint (R.J.) fittings shall be Megalug Romagrip, Star, or approved alternate. All welding associated with the restraint system shall be performed in the pipe manufacturer's shop. No field welding will be permitted.

Mechanical joint restrain systems shall meet the following requirements:

Restrainers shall be manufactured of ductile iron and shall meet or exceed all the requirements of ANSI A21.11 (AWWA C111) and ASTM A536. The restrainer system shall provide anchoring ductile iron pipe and fittings, valves and PVC pipe to mechanical joint pipe or fittings, or bell to spigot PVC pipe joints. The restrainer shall accommodate the full working pressure rating of the pipe plus surge allowance. In the assembly of the restrain device, the contractor shall tighten the bolts to the correct torque range as recommended by the restraint manufacturer. The restrainers shall be painted black for ductile iron pipe and painted red for PVC pipe applications. The restraining device shall not damage or lower the working pressure of the pipe installed. Restrainers shall be properly stored to

minimize sand and debris build-up. Specifically, the twist-off-screws and associated threads shall be clean (free of sand) prior to installation.

Restrainer specifically for DI pipe may be restrained by utilizing a joint restraint gasket which includes a stainless steel locking segment vulcanized into the rubber gasket. The gasket shall be rated for operating pressures up to 250 psi based on the performance requirements of ANSI/ AWWA C111/ A21.11.

9-30.3 Valves

9-30.3(1) Gate Valves (3-inches to 16-inches)

(January 2017, City of Auburn)

Delete this section and replace it with the following:

Resilient wedge gate valves shall be used on all 16" and smaller water lines and shall be manufactured by Clow, Kennedy, American Flow Control, Waterous, Dresser, M&H or Mueller with epoxy-coated valve interiors. The valves shall conform to ANSI/AWWA Specifications C509 or C515 with a 200-psi working pressure rating (minimum). They shall be iron bodied, bronze-mounted, non-rising stem and counterclockwise opening with a 2 inch square operating nut. All valves on the fire hydrant line(s) shall be 6-inch diameter mechanical joint by flange. All other valves shall be either mechanical joint by flange or Mechanical joint shackled to tees or crosses. Valve stems shall be provided with O-ring seals.

9-30.3(4) Valve Boxes

(February 2018, City of Auburn)

Supplement this section with the following:

Valve boxes shall be two-piece, adjustable, cast-iron (with additional extension pieces, if necessary), as manufactured by the Olympic Foundry Company, East Jordan Iron Works, or approved equivalent, with a minimum inside diameter of 5 inch. The word "WATER" shall be cast in relief on the top of all valve box covers. In addition, the letters "NC" shall be cast in place on valve box covers for those valves that are normally closed. Valve box covers shall have a deep skirt..

9-30.3(8) Tapping Sleeve and Valve Assembly

(January 2017, City of Auburn)

Supplement this section with the following:

Tapping sleeves and valves shall conform to the following:

1. For wet taps on mains 12 inch diameter and larger or size-on-size, the tapping sleeve shall be the full M.J. type, cast-iron, twin seal as manufactured by Mueller, Tyler, Taylor, M&H, or epoxy-coated fabricated-steel, as manufactured by JCM, Rockwell or approved equivalent;
2. For wet taps on mains 10 inch diameter and smaller, or at least 2 inch diameter smaller than the main size, the tapping sleeve shall be the wraparound style, stainless steel or epoxy-coated fabricated-steel, or cast-

iron M.J. as manufactured by Romac, Ford, M&H, Rockwell, Smith Blair, or approved equivalent.

9-30.5 Hydrants

(January 2017, City of Auburn)

Supplement this section with the following:

Fire hydrants shall have two 2½-inch hose ports (National Standard Thread) and one 4½-inch pumper port (National Standard Thread) with caps and no chains, 1¼ inch pentagonal operating nut (counterclockwise) opening, O-ring-type stuffing box, automatic barrel drain, and 5¼ inch valve opening. Hydrants shall be equipped with a 5” Storz adapter with blind cap, or approved equivalent. Hydrants shall conform to the latest revision of AWWA Standard Specification No. C-502 for dry-barrel fire hydrants for ordinary water service. Hydrants shall be Mueller “Centurion” #A-423, M&H Style 929 Reliant (Brass-to-Brass Seats), or American AVK 2780.

9-34 Pavement Marking Material

9-34.2(2) Color

(January 2, 2018, WSDOT Amendment)

Each reference to “Federal Standard 595” is revised to read “SAE AMS Standard 595”.

9-34.2(5) Low VOC Waterborne Paint

(January 2, 2018, WSDOT Amendment)

The heading “Standard Waterborne Paint” is supplemented with “Type 1 and 2”.

The heading “High-Build Waterborne Paint” is supplemented with “Type 4”.

The heading “Cold Weather Waterborne Paint” is supplemented with “Type 5”.

In the row beginning with “° @90°F”, each minimum value is revised to read “60”.

In the row beginning with “Fineness of Grind, (Hegman Scale)”, each minimum value is revised to read “3”.

The last four rows are replaced with the following:

Vehicle Composition	ASTM D 2621	100% acrylic emulsion	100% cross-linking acrylic ⁴	100% acrylic emulsion
Freeze-Thaw Stability, KU	ASTM D 2243 and D 562	@ 5 cycles show no coagulation or change in viscosity greater than ± 10 KU	@ 5 cycles show no coagulation or change in viscosity greater than ± 10 KU	@ 3 cycles show no coagulation or change in viscosity greater than ± 10 KU
Heat Stability	ASTM D 562 ²	± 10 KU from the initial viscosity	± 10 KU from the initial viscosity	± 10 KU from the initial Viscosity
Low Temperature Film Formation	ASTM D 2805 ³	No Cracks*		No Cracks

Cold Flexibility ⁵	ASTM D522	Pass at 0.5 in mandrel*		
Test Deck Durability ⁶	ASTM D913	≥70% paint retention in wheel track*		
Mud Cracking	(See note 7)	No Cracks	No Cracks	

After the preceding Amendments are applied, the following new column is inserted after the “Standard Waterborne Paint Type 1 and 2” column:

Semi-Durable Waterborne Paint Type 3			
White		Yellow	
Min.	Max.	Min.	Max.
Within ± 0.3 of qualification sample			
80	95	80	95
60		60	
77		77	
	65		65
43		43	
	1.25		1.25
3		3	
0.98		0.96	
88		50	
100°		100°	
9.5		9.5	
	10		10
100% acrylic emulsion			
@ 5 cycles show no coagulation or change in viscosity greater than ± 10 KU			
± 10 KU from the initial viscosity			
No Cracks			
Pass at 0.25 in mandrel			
≥70% paint retention in wheel track			
No Cracks			

The footnotes are supplemented with the following:

⁴Cross-linking acrylic shall meet the requirements of federal specification TT-P-1952F Section 3.1.1.

⁵Cold Flexibility: The paint shall be applied to an aluminum panel at a wet film thickness of 15 mils and allowed to dry under ambient conditions (50±10% RH and 72±5 °F) for 24 hours. A cylindrical mandrel apparatus (in accordance with ASTM D522 method B) shall be put in a 40°F refrigerator when the paint is drawn down. After 24 hours, the aluminum panel with dry paint shall be put in the 40°F refrigerator with the mandrel apparatus for 2 hours. After 2 hours, the panel and test apparatus shall be removed and immediately tested to according to ASTM D522 to evaluate cold

flexibility. Paint must show no evidence of cracking, chipping or flaking when bent 180 degrees over a mandrel bar of specified diameter.

⁶NTPEP test deck, or a test deck conforming to ASTM D713, shall be conducted for a minimum of six months with the following additional requirements: it shall be applied at 15 wet mils to a test deck that is located at 40N latitude or higher with at least 10,000 ADT and which was applied during the months of September through November.

⁷Paint is applied to an approximately 4"x12" aluminum panel using a drawdown bar with a 50 mil gap. The coated panel is allowed to dry under ambient conditions (50±10% RH and 72±5 °F) for 24 hours. Visual evaluation of the dry film shall reveal no cracks.

9-34.3 Plastic

(January 2, 2018, WSDOT Amendment)

In the first sentence of the last paragraph, "Federal Standard 595" is revised to read "SAE AMS Standard 595".

9-34.3(2) Type B – Pre-Formed Fused Thermoplastic

(January 2, 2018, WSDOT Amendment)

In the last two paragraphs, each reference to "Federal Standard 595" is revised to read "SAE AMS Standard 595".

9-34.7(1) Requirements

(January 2, 2018, WSDOT Amendment)

The first paragraph is revised to read:

Field performance evaluation is required for low VOC solvent-based paint per Section 9-34.2(4), Type A – liquid hot applied thermoplastic per Section 9-34.3(1), Type B – preformed fused thermoplastic per Section 9-34.3(2), Type C – cold applied preformed tape per Section 9-34.3(3), and Type D – liquid applied methyl methacrylate per Section 9-34.3(4).

The last paragraph is deleted.

9-34.7(1)C Auto No-Track Time

(January 2, 2018, WSDOT Amendment)

The first paragraph is revised to read:

Auto No-Track Time will only be required for low VOC solvent-based paint in accordance with Section 9-34.2(4).

The second and third sentences of the second paragraph are deleted.

Supplement Division 9 with the following:

9-37 Filter Fabric**9-37.1 Filter Fabric for Infiltration Systems**

(August 2016, City of Auburn)

Filter fabric for permanent infiltration systems shall be a non-woven polypropylene geotextile fabric, Contech C45-NW as manufactured by Contech Construction Products Inc., or approved equivalent.

Supplement Division 9 with the following:

9-38 Submittal Approval**9-38.1 Submittals**

(February 2018, City of Auburn)

This section applies to all items that are required to be submitted to the Engineer for review, approval, and acceptance, including, but not limited to:

- Non-Material Submittals (i.e haul routes, Traffic Control Plans (TCP's), requests for substitution, breakdown of lump sum items, schedules, road closure requests, material product samples, color palettes or swatches, warranty documentation, Operations and Maintenance (O&M) manuals, Spill Prevention, Control, and Countermeasure (SPCC) Plan, Stormwater Pollution Prevention (SWPP) Plan, schedule of submittals, etc.);
- Material Submittals (i.e. Request for Approval of Material (RAM) or Request for use of an item on the WSDOT Qualified Product List (QPL)); and
- Material Acceptance Documentation (i.e. Certification of Material Origin (CMO), Manufacturer's Certificate of Compliance (MCC), miscellaneous certificates of compliance, mill and test reports, Catalog Cuts, Shop Drawings, Visual Acceptance, Reduced Acceptance Criteria, Sampling and Testing, etc.).

9-38.1(1) Submittal Transmittal Procedures

(August 2018D, City of Auburn)

All submittals shall be made electronically and shall be transmitted via e-mail to devsubmittals@auburnwa.gov. The e-mail subject line of electronic submittals shall include the following: <<<Project Number>>>, <<<Project Name>>> - <<<Submittal Title>>>. Each electronic email shall be limited to 7 MB's in size. All electronic submittals shall be clear, sharp high contrast electronic files provided in Microsoft Word 2016, Microsoft Excel 2016, PDF, or other Engineer approved formats.

In the event the Contractor cannot meet the 7 MB's size limit for a specific submittal, the Contractor may submit the individual submittal to the City as a hardcopy. Hardcopy submittals shall be either mailed to the City of Auburn Public Works Department at 25 West Main St, Auburn, WA 98001 or dropped off at the City of Auburn Customer Service Center located on the 2nd floor of the One East Main St, Auburn WA 98001 building.

The Contractor may request to produce all submittals in hardcopy format instead of electronic format. Such requests shall be made in writing and include an explanation of why the Contractor is requesting to make hardcopy submittals. It will be at the Engineer's sole discretion whether the request to submit hard copy submittals is approved and no additional compensation or time extension shall be granted in relation to the Engineer's decision.

**9-38.1(2) Request for Submittal Approval (RSA) Form
Instructions**

(February 2018, City of Auburn)

All submittals shall accompany a City of Auburn "Request for Submittal Approval" (RSA) form as a cover letter.

The City provided RSA form is a writable Portable Document Format (PDF) form and shall remain writable until the City returns the signed reviewed submittal. Any submittals made without this form or without all of the required information on the form filled out by the Contractor shall be rejected without review. No additional compensation or time extension shall be granted for a Contractor not supplying this form as a cover letter for their submittals or for an improperly filled out form.

The RSA form shall be completed by the Contractor as follows:

1. For any item being submitted to the City for review and approval for the first time, check the "New Submittal" box. The City will assign the item a submittal number. For items that have been previously submitted and require a re-submittal, check the "Re-submittal of No. ____" box and fill in the submittal number that was assigned by the City to the original submittal. For submittals that are providing Material Acceptance Documentation for a submittal that has been previously made, the Contractor shall check the "Material Acceptance Documentation for Submittal No. ____" box and fill in the submittal number that was assigned by the City for which the Contractor is supplying the acceptance documentation for.
2. Fill in the FAC or Permit Number and Project Name;
3. Fill in the Date the Submittal was transmitted to the City;
4. Provide the Contractor's name and, if applicable, the name of Subcontractor or supplier who prepared the submittal;
5. The Contractor is strongly encouraged to submit only one material or item per RSA form, however if more than one material or item is listed on the form then provide a General Submittal Title that is applicable to the group. If only one material or item is submitted on the form then provide the same name described in bullet point number 8 for the General Submittal Title.
 - Do not group non-like materials or items on the same form.
 - Do not group multiple bid item numbers for the same material. In instances where a material is applicable to multiple bid item numbers, then list that material for as many times as there are bid item numbers (For instance, if Crushed Surfacing Top Course is the material being submitted on, and this

material is applicable to bid item numbers 27 and 56, then this material shall be listed twice on the RSA form).

6. When applicable, provide the Bid Item number the submittal is referencing;
7. Provide a submittal description (be specific). For material submittals, provide the Type of Material, the Manufacturer's Product/Type, or the trade name of the product;
8. When applicable, provide the Name and the Location of the Fabricator or the Manufacturer's name or the Pit Number. This should be the actual manufacturer, not the supplier or distributor,
9. Provide the Construction Standards Specification section number(s) or the page number the submittal material is referencing, or you can list the Plan Sheet number; and
10. For material submittals, indicate whether the submittal is requesting use of the WSDOT Qualified Product List (QPL) or if the submittal is a Request for Approval of Material (RAM) that is not in the QPL, by checking the appropriate box. For non-material submittals and for material acceptance documentation these boxes shall be left blank. If the Contractor elects to use a product listed in the QPL, the submittal documentation shall be prepared in accordance with the instructions in the WSDOT QPL program and shall be the most current list available at the time the product is proposed to be used. If the Contractor elects not to use the QPL or if the material is not listed in the QPL, then supporting documentation for the RAM shall be submitted for review and approval per Section 9-38.1(3) (Request for Approval of Material (RAM) Submittal Content).

9-38.1(3) Request For Approval Of Material (RAM) Submittal Content

(February 2018, City of Auburn)

This Section covers content for Requests for Approval of Material (RAM). RAM submittals shall include the following, where applicable:

1. Each submittal shall include all of the items and materials required for a complete assembly, system or Specification Section.
2. Submittals shall contain all of the physical, technical and performance data required by the specifications or necessary to demonstrate conclusively that the items comply with the requirements of the Contract Documents.
3. Include information on characteristics of electrical or utility service required and verification that such requirements have been coordinated with service provided by the work and by other interconnected elements of the work.
4. Provide verification that the physical characteristics of items submitted, including size, configurations, clearances, mounting points, utility connection points and service access points, are suitable for the space provided and are compatible with other interrelated items that are existing or have or will be submitted.
5. Label each Product Data submittal with the information required in this Section. Highlight or mark every page of all Product Data submittals to show

the specific items being submitted and all options included or choices offered.

6. Label each Shop Drawing and Sample with the information required in this Section. Highlight or mark every page of every copy of all Product Data submittals to show the specific items being submitted and all options included or choices offered.
7. Additional requirements for submittals are contained in the Technical Specification sections.
8. Designation of work as Not in Contract (NIC) or “by others” shown on the Shop Drawings, shall mean that the work will be the responsibility of the Contractor rather than the subcontractor or supplier who has prepared the Shop Drawings.

A separate letter explaining deviations shall accompany any submittal(s) that contain deviations from the requirements of the Contract Documents. The Contractor’s letter shall:

1. Cite the specific Contract requirement, including the Specification Section and paragraph number, for which approval of a deviation is sought.
2. Describe the proposed alternate material, item or construction and explain its advantages and/or disadvantages to the City.
3. State the reduction in Contract Price, if any, that is offered to the City.

9-38.1(4) Shop Drawings, Product Samples, and Operation and Maintenance Manuals

(February 2018, City of Auburn)

This section covers Shop Drawings, Product Samples, Color Swatches, and Operation and Maintenance (O&M) Manuals that are required to be submitted in hard copy format for review and approval.

1. Shop Drawings: Submit 3 copies, 1 of which will be marked, stamped and returned to the Contractor. The Contractor is responsible for making and distributing the required number of additional copies of the City returned hardcopy submittals to its superintendent, subcontractors and suppliers.
2. Product Samples and Color Swatches/Palettes: Unless stated otherwise in each individual specification section referencing a product where a sample is requested, the Contractor shall submit 3 labeled product sample(s) or 3 sets of manufacturers’ full range of colors and finishes as ordered by the Engineer and at no additional cost to the Contracting Agency. Product samples or manufacturer color swatches/palettes will not be returned to the Contractor.
3. O&M Manuals: Submit 3 copies, 1 of which will be marked, stamped and returned to the Contractor. The Contractor is responsible for making and distributing the required number of additional copies of the City returned hardcopy submittals to its superintendent, subcontractors and suppliers.

Submit 1 copy of each O&M Manual electronically on CD. CD copies of O&M Manuals will not be returned to the Contractor.

9-38.1(5) Engineer's Submittal Review

(February 2018, City of Auburn)

Submittals will be reviewed and approved by the Engineer per the following:

- For all Non-Material Submittals, the Engineer will mark the RSA form with one of the 'Submittal Approval Codes' listed under column 'A' on the form.
- For Material Submittals requesting the use of the QPL, the Engineer will mark the RSA form with the appropriate QPL approval code found on the QPL form. The QPL approval code is represented by a four digit number.
- For Material Submittals requesting a RAM, the Engineer will mark the RSA form with one of the 'Material Acceptance Codes' listed under column 'B' on the form. If a RAM is submitted for a material that is found on the QPL, the Engineer may mark the RAM with the appropriate QPL code for that material.
- For Material Acceptance Documentation, the Engineer will mark the RSA form with one of the 'Submittal Approval Codes' listed under column 'A' on the form.

The City will return an electronic signed copy of each reviewed submittal to the Contractor at the email address on record with the City. The Contractor is responsible for distributing the electronic copies or making the required number of hard copies of City returned submittals to its superintendent, subcontractors and suppliers.

9-38.1(6) Submittal Approval and Acceptance Codes

(February 2018, City of Auburn)

This section covers the definitions of the 'Submittal Approval' codes and 'Material Acceptance' codes found on the RSA form.

Submittal Approval Codes will indicate:

1. "NET" (NO EXCEPTIONS TAKEN) – The submittal is approved subject to its compatibility with future submissions and additional partial submissions for portions of the work not covered in this submission. Does not constitute approval or deletion of specified or required items not shown in the partial submission.
2. "MCN" (MAKE CORRECTIONS NOTED (NO RESUBMISSION REQUIRED)) – The submittals is approved subject to minor corrections that shall be made by the Contractor and subject to its compatibility with future submissions and additional partial submissions for portions of the work not covered in this submission. Does not constitute approval or deletion of specified or required items not shown in the partial submission. No resubmission is required.
3. "AR" (AMEND AND RESUBMIT) – The submittal is rejected because of major inconsistencies or errors which shall be resolved or corrected by the Contractor prior to subsequent submittal. An amended resubmission is required.

4. “RR” (REJECTED – RESUBMIT) – The submittal does not conform to the Contract Plans and Specifications in major respect. A new submission is required.
5. “NR” (NOT REVIEWED) – The submitted information is not required on project and was not reviewed by the Engineer.

The ‘Material Acceptance Code’ will indicate the required documentation for the material to be accepted for use on the project:

- Code 1. Acceptance based upon a “Satisfactory” Test Report for samples of materials to be incorporated into project for acceptance – Material is approved and requires certified testing for acceptance.
- Code 2. Submit a Manufacturer’s Certificate of Compliance (MCC) for “Acceptance” prior to use of material – Material is approved and requires a MCC for acceptance.
- Code 3. Submit Catalog Cuts for acceptance prior to use of material – Material is approved and requires a catalog cut(s) prior to acceptance.
- Code 4. Submit Shop Drawings for “Approval” prior to fabrication of material – Material requires approved shop drawing(s) for acceptance.
- Code 5. Only “Approved for Shipment,” “WSDOT Inspected,” or “Fabrication Approval decal” material shall be used. (*Federal Projects Only*)- Fabricated material that requires a WSDOT inspected stamp or marking for acceptance.
- Code 6. Submit a Certificate of Materials Origin (CMO). (*Federal Projects Only*)- Iron or steel material and requires a CMO for acceptance.
- Code 7. N/A – This code is not used for material acceptance.
- Code 8. Source Approved: - Material may be proprietary. Material requires a visual inspection upon arrival to the job site for acceptance.
- Code 9. Approval Withheld: Submit samples for preliminary evaluation. – Material approval is withheld pending review of product samples or manufacturer’s color palettes.
- Code 10. Approval Withheld: (See City remarks on the Form)
- Code 11. Miscellaneous Acceptance Criteria: - Material is approved and conditionally accepted as noted.
- Code 12. LAG – Approved Catalog Cut Documented with: Mfg. Cert. of Comp. Visual Inspection - Material is approved with a Catalog Cut and requires either a Manufacturer’s Certificate of Compliance or a Visual Inspection for acceptance.

When a material is marked as approved, it does not necessarily constitute acceptance of the material for incorporation into the work. All of the additional acceptance actions, as noted on the RSA form or on the QPL must be completed prior to the material being accepted for use.

Change orders or force account work requires the same material approval and acceptance as any other bid item.

9-38.2 Schedule of Submittals

(February 2018, City of Auburn)

The Contractor shall submit a preliminary Schedule of Submittals. The Schedule of Submittals shall include the intended dates for which each submittal required by the Contract Documents will be made. Identify the items that will be included in each submittal by listing the item or group of items and the specification section and paragraph number under which they are specified. Indicate whether the submittal is required for product review of proposed equivalents, Shop Drawings, Product Data or Samples or required for product information only. It is the Contractors responsibility to anticipate and provide all submittals required for the project.

The time required to evaluate and review requests for submittals is not the same for all submittals. The Contractor shall allow a minimum of 10calendar days, unless otherwise noted, for the Engineer's review. The Contractor shall also allow adequate time for manufacturer delivery at the construction site without causing delay to the work. All submittals shall be in accordance with the approved Schedule of Submittals. Submittals shall be made early enough to allow for unforeseen delays such as:

1. Failure to obtain favorable review because of inadequate or incomplete submittal or because the item submitted does not meet the requirements of the Contract Documents.
2. Delays in manufacture.
3. Delays in delivery.

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