



February 2024

City of Auburn
Engineering Services
Public Works Department
25 West Main Street
Auburn, WA 98001-4998

Approved By:



Jacob Sweeting, P.E.
Assistant Director of Engineering Services/City Engineer

2/15/2024

Date

This page intentionally left blank.

PREFACE FOR THE CITY OF AUBURN TECHNICAL SPECIAL PROVISIONS

Per Auburn City Code (ACC) 12.04.020, all public work construction contracts of the City, including but not limited to streets and sidewalks, storm water and sanitary sewer systems, and water systems, and all work within City public right-of-way performed by the City and others shall conform to the Engineering Construction Standards (ECS). The ECS apply to City capital projects and to work performed by developers and others under construction permits (CON), grading permits (GRA), storm permits (STM), other utility permits, and public facility extensions (FAC). The City of Auburn has adopted the ECS to require the standardization of design and construction elements for consistency, to assure that public safety needs are met, and to comply with Local, State, and Federal regulations.

The Technical Special Provisions is a sub-part of the ECS and includes the following elements:

- A) By reference, Divisions 2 through 9 of the Washington State Department of Transportation's (WSDOT) Standard Specifications (M41-10) for Road, Bridge and Municipal Construction, 2024 edition publication (Standard Specifications). The Standard Specifications are available at <https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/manuals/standard-specifications-road-bridge-and-municipal-construction>. Terms and conditions in the Standard Specifications that reference the following elements apply only to City Contracts and do not apply to CON, GRA, or FAC work: Bidding, Award, Claims, Payment, Measurement, Liquidated Damages, Compensation, Sales Tax, Requests to Sublet, and other terms and conditions that are specific a contractual obligations between the City and Contractor.
- B) Special Provisions are adopted by the City that supplement, delete, replace, and revise the Standard Specifications. The Special Provisions include references that indicate the applicability of the special provision, the date it was last updated, and the source of the special provision contents:

("Applicability", "Month" "Year" "Specification Source")

Where "Applicability" indicates "City Contracts" the specification applies only to capital projects under contract with the City. Where applicability indicates "Non-City Contracts" the specification only applies to projects and work that is not a capital project under contract with the City. Where "Applicability" is omitted, the specification applies to all work.

- C) Additional special provisions may be adopted on a project specific basis and provided separately with the specific project and/or permit that they apply to and are referred to as Project Specific Special Provisions.

This page intentionally left blank.

TABLE OF CONTENTS

DIVISION 2 Earthwork	15
2-01 Clearing, Grubbing and Roadside Cleanup	15
2-01.1 Description	15
2-01.2 Disposal of Usable Material and Debris.....	15
2-01.3 Construction Requirements	15
2-02 Removal of Structures and Obstructions	15
2-02.1 Description	15
2-02.3 Construction Requirements	16
2-02.4 Measurement	18
2-02.5 Payment	18
2-03 Roadway Excavation And Embankment	19
2-03.1 Description	19
2-03.3 Construction Requirements	19
2-03.4 Measurement	20
2-03.5 Payment.....	21
2-04 Haul	21
2-04.2 Hauling on other than City Streets	21
2-04.4 Measurement	21
2-04.5 Payment.....	22
2-06 Subgrade Preparation	22
2-06.3 Construction Requirements	22
2-06.5 Measurement and Payment	23
2-07 Watering	23
2-07.3 Construction Requirements	23
2-07.4 Measurement	23
DIVISION 3 Aggregate Production and Acceptance	25
3-04 Acceptance of Aggregate	25
3-04.3 Construction Requirements	25
DIVISION 4 Bases	26

DIVISION 5 Surface Treatments and Pavements	27
5-04 Hot Mix Asphalt.....	27
5-04.1 Description	27
5-04.2 Materials.....	27
5-04.3 Construction Requirements	30
HMA Tolerances and Adjustments.....	40
5-04.4 Measurement	58
5-04.5 Payment.....	58
5-05 Cement Concrete Pavement	62
5-05.4 Measurement	65
5-05.5 Payment.....	65
5-06 Pervious Concrete Pavement	66
5-06.1 Description	66
5-06.2 Materials.....	66
5-06.3 Construction Requirements	66
5-06.4 Measurement	75
5-06.5 Payment.....	75
5-07 Textured Asphalt	76
5-07.1 Description	76
5-07.2 Materials.....	76
5-07.3 Construction Requirements	76
5-07.4 Measurement	79
5-07.5 Payment.....	79
5-08 Stamped Colored Cement Concrete	80
5-08.1 Description	80
5-08.2 Materials.....	80
5-08.3 Construction Requirements	81
5-08.4 Measurement	82
5-08.5 Payment.....	82
5-09 Slurry Seal Surface Treatment	82
5-09.1 Description	82
5-09.2 Materials.....	83
5-09.3 Construction Requirements	84

5-09.4	Measurement	87
5-09.5	Payment.....	87
5-10 Non-Woven Fabric for Pavement Overlays		87
5-10.1	Description	87
5-10.2	Materials.....	87
5-10.3	Construction Requirements	87
5-10.4	Measurement	89
5-10.5	Payment.....	89
5-11 High Friction Surface Treatment		89
5-11.1	Description	89
5-11.2	Materials.....	90
5-11.3	Construction Requirements	92
5-11.4	Measurement	100
5-11.5	Payment.....	100
DIVISION 6	Structures	101
6-02 Concrete Structures		101
6-02.1	Description	101
6-02.4	Measurement	101
6-02.5	Payment.....	101
6-07 PAINTING		101
6-07.1	Description	101
6-07.2	Materials.....	101
6-07.5	Payment.....	103
DIVISION 7 Drainage Structures, Storm Sewers, Sanitary Sewers, Water Mains and Conduits ...		104
7-01 Drains		104
7-01.2	Materials.....	104
7-01.3	Construction Requirements	104
7-01.5	Payment.....	104
7-04 Storm Sewers		105
7-04.2	Materials.....	105
7-04.3	Construction Requirements	105
7-04.4	Measurement	105

7-04.5	Payment.....	106
7-05	Manholes, Inlets, Catch Basins, and Drywells.....	106
7-05.2	Materials.....	106
7-05.3	Construction Requirements	107
7-05.4	Measurement	109
7-05.5	Payment.....	109
7-07	Cleaning Existing Drainage Structures	110
7-07.5	Payment.....	110
7-08	General Pipe Installation Requirements.....	110
7-08.1	Description	110
7-08.2	Materials.....	110
7-08.3	Construction Requirements	111
7-08.4	Measurement	114
7-08.5	Payment.....	114
7-09	Water Mains.....	115
7-09.1	Description	115
7-09.2	Materials.....	115
7-09.4	Measurement	118
7-09.5	Payment.....	118
7-12	Valves for Water Mains	119
7-12.3	Construction Requirements	119
7-12.5	Payment.....	120
7-14	Hydrants	120
7-14.3	Construction Requirements	120
7-14.5	Payment.....	121
7-15	Service Connections	122
7-15.2	Materials.....	122
7-15.3	Construction Requirements	122
7-15.5	Payment.....	123
7-17	Sanitary Sewers	124
7-17.2	Materials.....	124
7-17.3	Construction Requirements	124
7-17.4	Measurement	126

7-17.5	Payment.....	126
7-18	Side Sewers.....	127
7-18.3	Construction Requirements	127
7-19	Sewer Cleanouts.....	128
7-19.3	Construction Requirements	128
DIVISION 8 Miscellaneous Construction		129
8-01	Erosion Control and Water Pollution Control.....	129
8-01.3	Construction Requirements	129
8-01.4	Measurement.....	134
8-01.5	Payment.....	134
8-02	Roadside Restoration.....	135
8-02.1	Description.....	135
8-02.3	Construction Requirements	135
8-02.4	Measurement.....	141
8-02.5	Payment.....	141
8-03	Irrigation Systems	142
8-03.1	Description	142
8-03.2	Materials.....	142
8-03.4	Measurement.....	144
8-03.5	Payment.....	144
8-04	Curbs, Gutters and Spillways.....	145
8-04.3	Construction Requirements	145
8-04.4	Measurement.....	145
8-04.5	Payment.....	146
8-05	VACANT	146
8-05	Dewatering System.....	146
8-05.1	General	146
8-05.2	Vacant	149
8-05.3	Construction Requirements	149
8-05.4	Measurement.....	151
8-05.5	Payment.....	152
8-06	Cement Concrete Driveway Entrances.....	152

8-06.1	Description	152
8-06.2	Materials.....	153
8-06.3	Construction Requirements	153
8-06.4	Measurement	153
8-06.5	Payment.....	153
8-07 Precast Traffic Curb		154
8-07.2	Materials.....	154
8-07.3	Construction Requirements	154
8-07.4	Measurement	155
8-07.5	Payment.....	155
8-09 Raised Pavement Markers		155
8-09.3	Construction Requirements	155
8-09.4	Measurement	156
8-09.5	Payment.....	156
8-12 Chain Link and Wire Fence.....		156
8-12.2	Materials.....	156
8-12.4	Measurement	157
8-12.5	Payment.....	157
8-13 Monument Cases		157
8-13.1	Description	157
8-13.2	Materials.....	157
8-13.3	Construction Requirements	157
8-13.4	Measurement	158
8-13.5	Payment.....	158
8-14 Cement Concrete Sidewalks.....		159
8-14.1	Description	159
8-14.3	Construction Requirements	159
8-14.4	Measurement	161
8-14.5	Payment.....	161
8-18 Mailbox Supports.....		161
8-18.2	Materials.....	161
8-18.4	Measurement	161
8-18.5	Payment.....	162

8-20	Illumination, Traffic Signal Systems, Intelligent Transportation Systems, and Electrical	162
8-20.1	Description	162
8-20.3	Construction Requirements	163
8-20.4	Measurement	173
8-20.5	Payment.....	173
8-21	Permanent Signing	175
8-21.3	Construction Requirements	175
8-21.4	Measurement	175
8-21.5	Payment.....	175
8-22	Pavement Marking	176
8-22.1	Description	176
8-23	Temporary Pavement Markings	176
8-23.1	Description	176
8-24	Rock and Gravity Block Wall and Gabion Cribbing	176
8-24.2	Materials.....	176
8-24.3	Construction Requirements	177
8-24.4	Measurement	177
8-24.5	Payment.....	177
8-32	Fiber Optic Communications.....	178
8-32.1	Description	178
8-32.2	Construction Requirements	178
8-32.3	Fiber Optic Cable Testing	182
8-32.4	Measurement.....	184
8-32.5	Payment.....	184
8-33	Bollards	185
8-33.1	Description	185
8-33.2	Materials.....	185
8-33.4	Measurement	185
8-33.5	Payment.....	185
8-34	Wood Fence and Gates	186
8-34.1	Description	186
8-34.2	Construction Requirements	186

8-34.4	Measurement	186
8-34.5	Payment.....	186
DIVISION 9 Materials		187
9-05 Drainage Structures and Culverts		187
9-05.7	Concrete Storm Sewer Pipe.....	187
9-05.12	Polyvinyl Chloride (PVC) Pipe.....	187
9-05.13	Ductile Iron Sewer Pipe	187
9-14 Erosion Control and Roadside Planting.....		187
9-14.2	Topsoil	187
9-14.5	Mulch and Amendments	188
9-14.7	Plant Materials	188
9-15 Irrigation System		189
9-15.3	Automatic Controllers.....	189
9-15.5	Valve Boxes	189
9-15.6	Gate Valves	189
9-15.8	Quick Coupling Equipment.....	189
9-15.9	Drain Valves	190
9-15.11	Cross Connection Control Devices	190
9-15.17	Electrical Wire and Splices	190
9-15.18	Detectable Marking Tape	190
9-29 Illumination, Signal, Electrical.....		191
9-29.1	Conduit, Innerduct, Outerduct.....	191
9-29.2	Junction Boxes, Cable Vaults, and Pull Boxes.....	191
9-29.3	Fiber Optic Cable, Electrical Conductors, and Cable.....	191
9-29.7	Luminaire Fusing & Electrical Connections at Light Standard Bases, Cantilever Bases and Sign Bridge Bases.....	197
9-29.9	Ballast, Transformers	197
9-29.10	Luminaires	197
9-29.16	Vehicular Signal Heads, Displays, and Housing.....	201
9-29.18	Vehicle Detector.....	202
9-29.19	Pedestrian Push Buttons	202
9-29.20	Pedestrian Signals	202
9-29.22	Rectangular Rapid Flashing Beacon (RRFB).....	203

9-29.23	Video Detection Cameras.....	203
9-29.24	Service Cabinets.....	204
9-29.26	Traffic Signal Battery Backup System.....	204
9-29.27	CCTV System	204
9-29.28	Variable Message Sign System.....	205
9-30	Water Distribution Materials	212
9-30.1	Pipe	212
9-30.2	Fittings	212
9-30.3	Valves.....	213
9-30.5	Hydrants	214
9-30.6	Water Service Connections (2 inches and Smaller)	214
9-37	VACANT	214
9-37	Filter Fabric	215
9-37.1	Filter Fabric for Infiltration Systems.....	215
9-38	Submittal Approval.....	215
9-38.1	Submittals.....	215
9-38.2	Schedule of Submittals.....	221

This page intentionally left blank.

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

(December 2016 City of Auburn GSP)

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 GSP)

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 GSP)

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 GSP)

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**2-02.1 Description**

(January 2018 City of Auburn GSP)

Supplement this section with the following:

Items in the Plans designated to be removed are to be included in the lump sum bid price for "Removal of Structures and Obstructions." If the Plans or other Contract Documents

provide quantities, they are estimates only and are provided for Contractor convenience as a basis for bidding only. The Contractor shall verify the listed items and quantities, as shown on the Plans, before bidding. When included in the Proposal, The lump sum bid price for "Removal of Structures and Obstructions" shall include all work specified in Section 2-02 (Removal of Structures and Obstructions), unless there is a separate and applicable pay item included in the Proposal.

Removal of all asphalt and/or cement concrete pavement, cement and/or asphalt flatwork (including sidewalks, driveways, and ramps), and curb and gutter, is included in the bid item price for "Roadway Excavation, Incl. Haul", unless specified otherwise.

2-02.3 Construction Requirements

2-02.3(2) Removal of Bridges, Box Culverts, and other Drainage Structures

(January 2017 City of Auburn GSP)

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(3) Removal of Pavement, Sidewalks, Curbs and Gutters

(City Contracts, December 2016 City of Auburn GSP)

Supplement this section with the following:

Saw cutting costs shall be included in the bid item for which the sawcut is being made and no separate payment for saw cutting shall be made.

(January 2018, City of Auburn GSP)

Add the following new section including subsections:

2-02.3(4) Removal and Resetting of Miscellaneous Items

(August 2016, City of Auburn GSP)

The Contractor shall remove and reset miscellaneous items as described in the Plans. Unless a separate and applicable pay item is included in the Proposal, removal and resetting of miscellaneous items shall be paid under the lump sum bid item "Removal and Resetting of Miscellaneous Items". When included in the Proposal ,Items listed in the Plans to be removed and reset are to be included in the lump sum bid price for "Removal and Resetting of Miscellaneous Items." If the Plans or other contract documents provide quantities, they are estimates only and are provided for Contractor convenience as a basis for bidding only. The Contractor shall verify the listed items and quantities, as shown on the Plans, before bidding.

2-02.3(4)A Remove and Reset Fencing

(January 2018 City of Auburn GSP)

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 GSP)

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 GSP)

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.

(September 2019 City of Auburn GSP)

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 Facility (1305 "C" Street SW) in their existing condition.

Items have been identified in the Plans.

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

All costs for salvaging and delivering salvaged items to the City shall be included in the appropriate unit Bid prices for the work involved and no further compensation will be paid.

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 Facility. 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.

2-02.4 Measurement

(City Contracts, April 2022 City of Auburn GSP)

Supplement this section with the following:

Removal of cement concrete or asphalt flatwork will be measured by the square yard.

Removal of asphalt pavement will be measured by the square yard.

Removal of pipe will be measured by the linear foot of pipe removed outside the limits of other trench excavations.

Removal of curb and gutter will be measured by the linear foot.

Removal and reset fence will be measured by the linear foot.

Removal of catch basin will be measured per each.

Remove and reset private sign will be measured per each.

Removal of manhole will be measured per each.

2-02.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

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

"Remove and Reset Miscellaneous Items", Per Lump Sum

"Remove and Reset Fencing", Per Lineal Foot

"Remove and Reset Private Sign", Per Each

"Removal of Cement Concrete of Asphalt Flat Work", Per Square Yard

"Removal of Curb and Gutter", Per Lineal Foot

"Removal of Asphalt Pavement", Per Square Yard

"Removal of Pipe", Per Lineal Foot

"Remove Manhole", Per Each

"Remove Catch Basin", Per Each

The Contract price for "Remove and Reset Fencing" and "Remove and Reset Private Sign" shall be full pay for all labor, tools, and equipment to complete the work outlined in according to the Construction Plans and these Specifications.

The unit Contract price for "Removal of Cement Concrete of Asphalt Flat Work" shall be full pay for all labor, tools, and equipment to remove and dispose of the concrete flat work, including industrial or commercial driveways, saw cutting and any dowel bars or reinforcing steel, at the locations shown on the Contract plans.

Removal items include all applicable costs including, but not limited to, sawcutting, excavation, stockpiling, haul, disposal, furnishing (when the backfill material is not included in the Proposal) and installing backfill as specified, and protecting adjacent items to remain.

2-03 Roadway Excavation And Embankment

2-03.1 Description

(City Contracts, August 2016 City of Auburn GSP)

The second paragraph is revised as follows:

The work excludes these items if they are listed as individual bid items in the Proposal or if the specifications indicate the payment for these items is included with any other item(s) listed in the Proposal:

1. Haul.
2. Excavation for structures and ditches.
3. Removal of unsuitable materials.
4. Removal Items being separately paid for under Section 2-02 of these contract documents.

(December 2016 City of Auburn GSP)

Supplement this section with the following:

Any excavation beyond the set limits, unless ordered by the Engineer in writing, shall not be paid for. The Contractor, at Contractor expense, shall provide all work and material required to return these over excavated areas to their set limits or original conditions.

2-03.3 Construction Requirements

2-03.3(3) Excavation Below Subgrade

(January 2018 City of Auburn GSP)

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**

(February 2023 City of Auburn GSP)

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(7) (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. Time lost by failure to satisfy these requirements shall be insufficient reason for granting extensions of Contract time.

(City Contracts, February 2023 City of Auburn GSP)

Supplement this section with the following:

6. Failure to comply with the above requirements shall be grounds to withhold payment of money due until such time as the requirements have been satisfied;

2-03.3(14) Embankment Construction

(December 2016 City of Auburn GSP)

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).

2-03.4 Measurement

(City Contracts, February 2023 City of Auburn GSP)

All references in this section to measurement of roadway excavation are replaced with the following:

Excavation that is not classified as Structure Excavation under Section 2-09 (Structure Excavation) and is not included under other bid items listed in the Proposal shall be measured and paid at the unit contract price per cubic yard for "Roadway Excavation Including Haul".

The original ground elevation will be determined only once on this project. Measurement for Roadway Excavation and Embankment will be based on the original ground elevations recorded before the award of this Contract, and the alignment, profile, grade, and roadway section as shown in the Plans. Control stakes will be set during construction to provide the Contractor with alignment, slope, and grade information for the construction of excavation and embankments.

If discrepancies are discovered in the ground elevations that will change the original bid quantities of earthwork by more than 25%, the original computations of earthwork quantities will be adjusted accordingly.

Earthwork quantities will be computed, either manually or electronically, by using the average end area method.

With at least 2 business days advance request to the Engineer, electronic copies of the ground cross-section notes will be made available for the bidder's inspection before the opening of bids at the City of Auburn Public Works Department, Customer Service Center, One East Main Street, Auburn, Washington. Upon award of the Contract, copies of the original ground cross-sections will be furnished the successful bidder upon request to the Engineer.

"Gravel Backfill for Roadway Subgrade" will be measured per ton of material placed and compacted as roadway subgrade.

2-03.5 Payment

(City Contracts, January 2018 City of Auburn GSP)

Supplement this section with the following:

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

"Gravel Backfill for Roadway Subgrade", Per Ton

Payment for "Gravel Backfill for Roadway Subgrade" shall include all costs to remove and dispose of material that is unsuitable for the roadway subgrade and all costs to furnish and install crushed surfacing base course. When a bid item is not included in the proposal for channel excavation or ditch excavation all costs shall be included in the bid item price for 'Roadway Excavation, Including Haul'.

2-04 Haul

2-04.2 Hauling on other than City Streets

(January 2017 City of Auburn GSP)

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.

2-04.4 Measurement

(City Contracts, December 2016 City of Auburn GSP)

Delete this section and replace it with the following:

No measurement shall be made for hauling.

2-04.5 Payment

(City Contracts, December 2016 City of Auburn GSP)

Delete this section and replace it with the following:

All costs associated with hauling materials of any description to, from, and within the project site shall be included in the appropriate unit Bid prices in the Proposal and no further compensation will be paid.

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

(September 2020 City of Auburn GSP)

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 and compacted as directed by the Engineer prior to 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 recompacted.

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.

2-06.5 Measurement and Payment

(City Contracts, March 9, 2016 APWA GSP)

Supplement this section with the following:

Measurement for Subgrade for Permeable Pavement will be in accordance with 2-06.5.

2-06.5(1) Subgrade Constructed Under Same Contract

(City Contracts, January 2018 City of Auburn GSP)

The second sentence of the first paragraph is deleted.

Supplement this section with the following:

“Subgrade Preparation,” for building a Subgrade for surfacing or treated base, will be measured by the square yard of full depth (subgrade to surface) roadway constructed or re-constructed. Quantities for “Subgrade Preparation” will be measured at a width of 1 foot beyond the outside face of curbs or 18-inches beyond the edge of pavement where no curbs are installed.

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

“Subgrade Prep”, Per Square Yard

2-07 Watering**2-07.3 Construction Requirements**

(December 2016 City of Auburn GSP)

Supplement this section with the following:

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

2-07.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Delete this section and replace it with the following:

No Measurement for water will be made.

(February 2023 City of Auburn GSP)

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 Contractor shall complete a hydrant permit application

at MyBuildingPermit.com. The Contractor shall pay all permit fee(s) and deposit(s). The deposit 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 deposit will then be refunded to the Contractor. The Contractor shall pay a base fee for a 3" meter size per month and all water usage will be paid by the applicant at the commercial customer class rate per hundred cubic feet. Fees, deposits, and rates shall be as published in Auburn City Code 13.06.511 and 13.06.360 at the time of hydrant permit application submission.

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).

(City Contracts, February 2023 City of Auburn GSP)

Supplement this section with the following:

The Contractor shall be responsible to contact the City and verify hydrant fee and water usage rates when preparing the bid. Adjustment of these rates by the City will not be the basis for any contract unit price adjustment.

END OF DIVISION 2

DIVISION 3 Aggregate Production and Acceptance

3-04 Acceptance of Aggregate

3-04.3 Construction Requirements

3-04.3(8) Price Adjustment for Quality of Aggregate

(December 2016 City of Auburn GSP)

Delete this section and replace it with the following:

No aggregate compliance price adjustments shall be made.

END OF DIVISION 3

DIVISION 4 Bases

No Revisions.

END OF DIVISION 4

DIVISION 5 Surface Treatments and Pavements**5-04 Hot Mix Asphalt**

(July 18, 2018 APWA GSP)

Delete Section 5-04 and amendments, Hot Mix Asphalt and replace it with the following:

5-04.1 Description

This Work shall consist of providing and placing one or more layers of plant-mixed hot mix asphalt (HMA) on a prepared foundation or base in accordance with these Specifications and the lines, grades, thicknesses, and typical cross-sections shown in the Plans. The manufacture of HMA may include warm mix asphalt (WMA) processes in accordance with these Specifications. WMA processes include organic additives, chemical additives, and foaming.

HMA shall be composed of asphalt binder and mineral materials as may be required, mixed in the proportions specified to provide a homogeneous, stable, and workable mixture.

(January 2017, City of Auburn GSP)

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.

(Non-City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following:

The Contractor shall be responsible for performing all sampling, testing, and reporting described throughout Section 5-04 at its own cost.

5-04.2 Materials

(July 18, 2018 APWA GSP)

Materials shall meet the requirements of the following sections:

Asphalt Binder	9-02.1(4)
Cationic Emulsified Asphalt	9-02.1(6)
Anti-Stripping Additive	9-02.4
HMA Additive	9-02.5
Aggregates	9-03.8
Recycled Asphalt Pavement	9-03.8(3)B
Mineral Filler	9-03.8(5)
Recycled Material	9-03.21
Portland Cement	9-01

Sand	9-03.1(2)
(As noted in 5-04.3(5)C for crack sealing)	
Joint Sealant	9-04.2
Foam Backer Rod	9-04.2(3)A

The Contract documents may establish that the various mineral materials required for the manufacture of HMA will be furnished in whole or in part by the Contracting Agency. If the documents do not establish the furnishing of any of these mineral materials by the Contracting Agency, the Contractor shall be required to furnish such materials in the amounts required for the designated mix. Mineral materials include coarse and fine aggregates, and mineral filler.

The Contractor may choose to utilize recycled asphalt pavement (RAP) in the production of HMA. The RAP may be from pavements removed under the Contract, if any, or pavement material from an existing stockpile.

The Contractor may use up to 20 percent RAP by total weight of HMA with no additional sampling or testing of the RAP. The RAP shall be sampled and tested at a frequency of one sample for every 1,000 tons produced and not less than ten samples per project. The asphalt content and gradation test data shall be reported to the Contracting Agency when submitting the mix design for approval on the QPL. The Contractor shall include the RAP as part of the mix design as defined in these Specifications.

The grade of asphalt binder shall be as required by the contract. Blending of asphalt binder from different sources is not permitted.

The Contractor may only use warm mix asphalt (WMA) processes in the production of HMA with 20 percent or less RAP by total weight of HMA. The Contractor shall submit to the Engineer for approval the process that is proposed and how it will be used in the manufacture of HMA.

Production of aggregates shall comply with the requirements of Section 3-01.

Preparation of stockpile site, the stockpiling of aggregates, and the removal of aggregates from stockpiles shall comply with the requirements of Section 3-02.

(January 2018, City of Auburn GSP)

Supplement this section with the following:

The crack sealant material shall be rubberized asphalt per Section 9-04.2(1) (Hot Poured Joint Sealants).

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

(July 18, 2018 APWA GSP)

If the contractor wishes to submit a mix design for inclusion in the Qualified Products List (QPL), please follow the WSDOT process outlined in Standard Specification 5-04.2(1).

5-04.2(1)A Vacant**5-04.2(2) Mix Design – Obtaining Project Approval**

(July 18, 2018 APWA GSP)

No paving shall begin prior to the approval of the mix design by the Engineer.

Nonstatistical evaluation will be used for all HMA not designated as Commercial HMA in the contract documents.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores, prelevel, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Project Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Project Engineer. The Proposal quantity of HMA that is accepted by commercial evaluation will be excluded from the quantities used in the determination of nonstatistical evaluation.

Nonstatistical Mix Design. Fifteen days prior to the first day of paving the contractor shall provide one of the following mix design verification certifications for Contracting Agency review;

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

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

Mix designs for HMA accepted by Nonstatistical evaluation shall;

- Have the aggregate structure and asphalt binder content determined in accordance with WSDOT Standard Operating Procedure 732 and meet the requirements of Sections 9-03.8(2), except that Hamburg testing for ruts and stripping are at the discretion of the Engineer, and 9-03.8(6).
- Have anti-strip requirements, if any, for the proposed mix design determined in accordance with AASHTO T 283 or T 324, or based on historic anti-strip and aggregate source compatibility from previous WSDOT lab testing.

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

Commercial Evaluation Approval of a mix design for "Commercial Evaluation" will be based on a review of the Contractor's submittal of WSDOT Form 350-042 (For commercial mixes, AASHTO T 324 evaluation is not required) or a Mix Design from the current WSDOT QPL or from one of the processes allowed by this section. Testing of the HMA by the Contracting Agency for mix design approval is not required.

For the Bid Item Commercial HMA, the Contractor shall select a class of HMA and design level of Equivalent Single Axle Loads (ESAL's) appropriate for the required use.

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

(July 18, 2018 APWA GSP)

The Contractor may 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 more than allowed in Section 5-04.3(6) in the production of mixtures.
- Before using additives, obtain the Engineer's approval using WSDOT Form 350-076 to describe the proposed additive and process.

5-04.3 Construction Requirements

5-04.3(1) Weather Limitations

(July 18, 2018 APWA GSP)

Do not place HMA for wearing course on any Traveled Way beginning October 1st through March 31st of the following year without written concurrence from the Engineer.

Do not place HMA on any wet surface, or when the average surface temperatures are less than those specified below, or when weather conditions otherwise prevent the proper handling or finishing of the HMA.

Minimum Surface Temperature for Paving

Compacted Thickness (Feet)	Wearing Course	Other Courses
Less than 0.10	55°F	45°F
0.10 to .20	45°F	35°F
More than 0.20	35°F	35°F

5-04.3(2) Paving Under Traffic

(July 18, 2018 APWA GSP)

When the Roadway being paved is open to traffic, the requirements of this Section shall apply.

The Contractor shall keep intersections open to traffic at all times except when paving the intersection or paving across the 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 mixture. In hot weather, the Engineer may require the application of water to the pavement to accelerate the finish rolling of the pavement and to shorten the time required before reopening to traffic.

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

During paving operations, temporary pavement markings shall be maintained throughout the project. Temporary pavement markings shall be installed on the Roadway prior to opening to traffic. Temporary pavement markings shall be in accordance with Section 8-23.

All costs in connection with performing the Work in accordance with these requirements, except the cost of temporary pavement markings, shall be included in the unit Contract prices for the various Bid items involved in the Contract.

5-04.3(3) Equipment**5-04.3(3)A Mixing Plant**

(July 18, 2018 APWA GSP)

Plants used for the preparation of HMA shall conform to the following requirements:

1. **Equipment for Preparation of Asphalt Binder** – Tanks for the storage of asphalt binder shall be equipped to heat and hold the material at the required temperatures. The heating shall be accomplished by steam coils, electricity, or other approved means so that no flame shall be in contact with the storage tank. The circulating system for the asphalt binder shall be designed to ensure proper and continuous circulation during the operating period. A valve for the purpose of sampling the asphalt binder shall be placed in either the storage tank or in the supply line to the mixer.
2. **Thermometric Equipment** – An armored thermometer, capable of detecting temperature ranges expected in the HMA mix, shall be fixed in the asphalt binder feed line at a location near the charging valve at the mixer unit. The thermometer location shall be convenient and safe for access by Inspectors. The plant shall also be equipped with an approved dial-scale thermometer, a mercury actuated thermometer, an electric pyrometer, or another approved

thermometric instrument placed at the discharge chute of the drier to automatically register or indicate the temperature of the heated aggregates. This device shall be in full view of the plant operator.

3. **Heating of Asphalt Binder** – The temperature of the asphalt binder shall not exceed the maximum recommended by the asphalt binder manufacturer nor shall it be below the minimum temperature required to maintain the asphalt binder in a homogeneous state. The asphalt binder shall be heated in a manner that will avoid local variations in heating. The heating method shall provide a continuous supply of asphalt binder to the mixer at a uniform average temperature with no individual variations exceeding 25°F. Also, when a WMA additive is included in the asphalt binder, the temperature of the asphalt binder shall not exceed the maximum recommended by the manufacturer of the WMA additive.
4. **Sampling and Testing of Mineral Materials** – The HMA plant shall be equipped with a mechanical sampler for the sampling of the mineral materials. The mechanical sampler shall meet the requirements of Section 1-05.6 for the crushing and screening operation. The Contractor shall provide for the setup and operation of the field testing facilities of the Contracting Agency as provided for in Section 3-01.2(2).
5. **Sampling HMA** – The HMA plant shall provide for sampling HMA by one of the following methods:
 - a. A mechanical sampling device attached to the HMA plant.
 - b. Platforms or devices to enable sampling from the hauling vehicle without entering the hauling vehicle.

5-04.3(3)B Hauling Equipment

(July 18, 2018 APWA GSP)

Trucks used for hauling HMA shall have tight, clean, smooth metal beds and shall have a cover of canvas or other suitable material of sufficient size to protect the mixture from adverse weather. Whenever the weather conditions during the work shift include, or are forecast to include, precipitation or an air temperature less than 45°F or when time from loading to unloading exceeds 30 minutes, the cover shall be securely attached to protect the HMA.

The contractor shall provide an environmentally benign means to prevent the HMA mixture from adhering to the hauling equipment. Excess release agent shall be drained prior to filling hauling equipment with HMA. Petroleum derivatives or other coating material that contaminate or alter the characteristics of the HMA shall not be used. For live bed trucks, the conveyor shall be in operation during the process of applying the release agent.

5-04.3(3)C Pavers

(July 18, 2018 APWA GSP)

HMA pavers shall be self-contained, power-propelled units, provided with an internally heated vibratory screed and shall be capable of spreading and finishing courses of HMA plant mix material in lane widths required by the paving section shown in the Plans.

The HMA paver shall be in good condition and shall have the most current equipment available from the manufacturer for the prevention of segregation of the HMA mixture installed, in good condition, and in working order. The equipment certification shall list the make, model, and year of the paver and any equipment that has been retrofitted.

The screed shall be operated in accordance with the manufacturer's recommendations and shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, segregating, or gouging the mixture. A copy of the manufacturer's recommendations shall be provided upon request by the Contracting Agency. Extensions will be allowed provided they produce the same results, including ride, density, and surface texture as obtained by the primary screed. Extensions without augers and an internally heated vibratory screed shall not be used in the Traveled Way.

When specified in the Contract, reference lines for vertical control will be required. Lines shall be placed on both outer edges of the Traveled Way of each Roadway. Horizontal control utilizing the reference line will be permitted. The grade and slope for intermediate lanes shall be controlled automatically from reference lines or by means of a mat referencing device and a slope control device. When the finish of the grade prepared for paving is superior to the established tolerances and when, in the opinion of the Engineer, further improvement to the line, grade, cross-section, and smoothness can best be achieved without the use of the reference line, a mat referencing device may be substituted for the reference line. Substitution of the device will be subject to the continued approval of the Engineer. A joint matcher may be used subject to the approval of the Engineer. The reference line may be removed after the completion of the first course of HMA when approved by the Engineer. Whenever the Engineer determines that any of these methods are failing to provide the necessary vertical control, the reference lines will be reinstalled by the Contractor.

The Contractor shall furnish and install all pins, brackets, tensioning devices, wire, and accessories necessary for satisfactory operation of the automatic control equipment.

If the paving machine in use is not providing the required finish, the Engineer may suspend Work as allowed by Section 1-08.6. Any cleaning or solvent type liquids spilled on the pavement shall be thoroughly removed before paving proceeds.

(January 2018, City of Auburn GSP)

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

(October 2019, City of Auburn GSP)

A Material Transfer Device/Vehicle (MTD/V) only applies to paving on State Routes and within the right of way of the State, unless other-wise required by the contract.

When used, the MTD/V shall mix the HMA after delivery by the hauling equipment and prior to laydown by the paving machine. Mixing of the HMA shall be sufficient to obtain a uniform temperature throughout the mixture. If a windrow elevator is used, the length of the windrow may be limited in urban areas or through intersections, at the discretion of the Engineer.

To be approved for use, an MTV:

1. Shall be self-propelled vehicle, separate from the hauling vehicle or paver.
2. Shall not be connected to the hauling vehicle or paver.
3. May accept HMA directly from the haul vehicle or pick up HMA from a windrow.
4. Shall mix the HMA after delivery by the hauling equipment and prior to placement into the paving machine.
5. Shall mix the HMA sufficiently to obtain a uniform temperature throughout the mixture.

To be approved for use, an MTD:

1. Shall be positively connected to the paver.
2. May accept HMA directly from the haul vehicle or pick up HMA from a windrow.
3. Shall mix the HMA after delivery by the hauling equipment and prior to placement into the paving machine.
4. Shall mix the HMA sufficiently to obtain a uniform temperature throughout the mixture.

5-04.3(3)E Rollers

(July 18, 2018 APWA GSP)

Rollers shall be of the steel wheel, vibratory, oscillatory, or pneumatic tire type, in good condition and capable of reversing without backlash. Operation of the roller shall be in accordance with the manufacturer's recommendations. When ordered by the Engineer for any roller planned for use on the project, the Contractor shall provide a copy of the manufacturer's recommendation for the use of that roller for compaction of HMA. The number and weight of rollers shall be sufficient to compact the mixture in compliance with the requirements of Section 5-04.3(10). The use of equipment that results in crushing of the aggregate will not be permitted. Rollers producing pickup, washboard, uneven compaction of the surface, displacement of the mixture or other undesirable results shall not be used.

5-04.3(4) Preparation of Existing Paved Surfaces

(July 18, 2018 APWA GSP)

When the surface of the existing pavement or old base is irregular, the Contractor shall bring it to a uniform grade and cross-section as shown on the Plans or approved by the Engineer.

Preleveling of uneven or broken surfaces over which HMA is to be placed may be accomplished by using an asphalt paver, a motor patrol grader, or by hand raking, as approved by the Engineer.

Compaction of preleveling HMA shall be to the satisfaction of the Engineer and may require the use of small steel wheel rollers, plate compactors, or pneumatic rollers to avoid bridging across preleveled areas by the compaction equipment. Equipment used for the compaction of preleveling HMA shall be approved by the Engineer.

Before construction of HMA on an existing paved surface, the entire surface of the pavement shall be clean. All fatty asphalt patches, grease drippings, and other objectionable matter shall be entirely removed from the existing pavement. All pavements or bituminous surfaces shall be thoroughly cleaned of dust, soil, pavement grindings, and other foreign matter. All holes and small depressions shall be filled with an appropriate class of HMA. The surface of the patched area shall be leveled and compacted thoroughly. Prior to the application of tack coat, or paving, the condition of the surface shall be approved by the Engineer.

A tack coat of asphalt shall be applied to all paved surfaces on which any course of HMA is to be placed or abutted; except that tack coat may be omitted from clean, newly paved surfaces at the discretion of the Engineer. Tack coat shall be uniformly applied to cover the existing pavement with a thin film of residual asphalt free of streaks and bare spots at a rate between 0.02 and 0.10 gallons per square yard of retained asphalt. The rate of application shall be approved by the Engineer. A heavy application of tack coat shall be applied to all joints. For Roadways open to traffic, the application of tack coat shall be limited to surfaces that will be paved during the same working shift. The spreading equipment shall be equipped with a thermometer to indicate the temperature of the tack coat material.

Equipment shall not operate on tacked surfaces until the tack has broken and cured. If the Contractor's operation damages the tack coat it shall be repaired prior to placement of the HMA.

The tack coat shall be CSS-1, or CSS-1h emulsified asphalt. The CSS-1 and CSS-1h emulsified asphalt may be diluted once with water at a rate not to exceed one part water to one part emulsified asphalt. The tack coat shall have sufficient temperature such that it may be applied uniformly at the specified rate of application and shall not exceed the maximum temperature recommended by the emulsified asphalt manufacturer.

(January 2017, City of Auburn GSP)

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**

(November 2019 City of Auburn GSP)

When the Proposal includes a pay item for crack sealing, seal all cracks ¼ inch in width and greater.

Cleaning: Ensure that cracks are thoroughly clean, dry and free of all loose and foreign material when filling with crack sealant material. Use a hot compressed air lance to dry and warm the pavement surfaces within the crack immediately prior to filling a crack with the sealant material. Do not overheat pavement. Do not use direct flame dryers. Routing cracks is not required.

Hot Poured Sealant: For cracks that are to be filled with hot poured sealant, apply the material in accordance with these requirements and the manufacturer's recommendations. Furnish a Type 1 Working Drawing of the manufacturer's product information and recommendations to the Engineer prior to the start of work, including the manufacturer's recommended heating time and temperatures, allowable storage time and temperatures after initial heating, allowable reheating criteria, and application temperature range. Confine hot poured sealant material within the crack. Clean any overflow of sealant from the pavement surface. If, in the opinion of the Engineer, the Contractor's method of sealing the cracks with hot poured sealant results in an excessive amount of material on the pavement surface, stop and correct the operation to eliminate the excess material.

5-04.3(4)B Soil Residual Herbicide

(November 2019 City of Auburn GSP)

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

Use herbicide registered with the Washington State Department of Agriculture for use under pavement. Before use, obtain the Engineer's approval of the herbicide and the proposed rate of application. Include the following information in the request for approval of the material:

- Brand Name of the Material;
- Manufacturer;
- Environmental Protection Agency (EPA) Registration Number;
- Material Safety Data Sheet; and
- Proposed Rate of Application

5-04.3(4)C Pavement Repair

(July 18, 2018 APWA GSP)

The Contractor shall excavate pavement repair areas and shall backfill these with HMA in accordance with the details shown in the Plans and as marked in the field. The Contractor

shall conduct the excavation operations in a manner that will protect the pavement that is to remain. Pavement not designated to be removed that is damaged as a result of the Contractor's operations shall be repaired by the Contractor to the satisfaction of the Engineer at no cost to the Contracting Agency. The Contractor shall excavate only within one lane at a time unless approved otherwise by the Engineer. The Contractor shall not excavate more area than can be completely finished during the same shift, unless approved by the Engineer.

Unless otherwise shown in the Plans or determined by the Engineer, excavate to a depth of 1.0 feet. The Engineer will make the final determination of the excavation depth required. The minimum width of any pavement repair area shall be 40 inches unless shown otherwise in the Plans. Before any excavation, the existing pavement shall be sawcut or shall be removed by a pavement grinder. Excavated materials will become the property of the Contractor and shall be disposed of in a Contractor-provided site off the Right of Way or used in accordance with Sections 2-02.3(3) or 9-03.21.

Asphalt for tack coat shall be required as specified in Section 5-04.3(4). A heavy application of tack coat shall be applied to all surfaces of existing pavement in the pavement repair area.

Placement of the HMA backfill shall be accomplished in lifts not to exceed 0.35-foot compacted depth. Lifts that exceed 0.35-foot of compacted depth may be accomplished with the approval of the Engineer. Each lift shall be thoroughly compacted by a mechanical tamper or a roller.

(April 2020, City of Auburn GSP)

Supplement this section with the following:

HMA for pavement repair shall be HMA Class 1/2-inch PG 58H-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(5) Producing/Stockpiling Aggregates and RAP

(July 18, 2018 APWA GSP)

Aggregates and RAP shall be stockpiled according to the requirements of Section 3-02. Sufficient storage space shall be provided for each size of aggregate and RAP. Materials shall be removed from stockpile(s) in a manner to ensure minimal segregation when being moved to the HMA plant for processing into the final mixture. Different aggregate sizes shall be kept separated until they have been delivered to the HMA plant.

5-04.3(5)A Vacant

5-04.3(6) Mixing*(July 18, 2018 APWA GSP)*

After the required amount of mineral materials, asphalt binder, recycling agent and anti-stripping additives have been introduced into the mixer the HMA shall be mixed until complete and uniform coating of the particles and thorough distribution of the asphalt binder throughout the mineral materials is ensured.

When discharged, the temperature of the HMA shall not exceed the optimum mixing temperature by more than 25°F as shown on the reference mix design report or as approved by the Engineer. Also, when a WMA additive is included in the manufacture of HMA, the discharge temperature of the HMA shall not exceed the maximum recommended by the manufacturer of the WMA additive. A maximum water content of 2 percent in the mix, at discharge, will be allowed providing the water causes no problems with handling, stripping, or flushing. If the water in the HMA causes any of these problems, the moisture content shall be reduced as directed by the Engineer.

Storing or holding of the HMA in approved storage facilities will be permitted with approval of the Engineer, but in no event shall the HMA be held for more than 24 hours. HMA held for more than 24 hours after mixing shall be rejected. Rejected HMA shall be disposed of by the Contractor at no expense to the Contracting Agency. The storage facility shall have an accessible device located at the top of the cone or about the third point. The device shall indicate the amount of material in storage. No HMA shall be accepted from the storage facility when the HMA in storage is below the top of the cone of the storage facility, except as the storage facility is being emptied at the end of the working shift.

Recycled asphalt pavement (RAP) utilized in the production of HMA shall be sized prior to entering the mixer so that a uniform and thoroughly mixed HMA is produced. If there is evidence of the recycled asphalt pavement not breaking down during the heating and mixing of the HMA, the Contractor shall immediately suspend the use of the RAP until changes have been approved by the Engineer. After the required amount of mineral materials, RAP, new asphalt binder and asphalt rejuvenator have been introduced into the mixer the HMA shall be mixed until complete and uniform coating of the particles and thorough distribution of the asphalt binder throughout the mineral materials, and RAP is ensured.

5-04.3(7) Spreading and Finishing*(July 18, 2018 APWA GSP)*

The mixture shall be laid upon an approved surface, spread, and struck off to the grade and elevation established. HMA pavers complying with Section 5-04.3(3) shall be used to distribute the mixture. Unless otherwise directed by the Engineer, the nominal compacted depth of any layer of any course shall not exceed the following:

HMA Class 1"	0.35 feet
HMA Class ¾" and HMA Class ½"	
wearing course	0.30 feet
other courses	0.35 feet

HMA Class $\frac{3}{8}$ "

0.15 feet

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the paving may be done with other equipment or by hand.

When more than one JMF is being utilized to produce HMA, the material produced for each JMF shall be placed by separate spreading and compacting equipment. The intermingling of HMA produced from more than one JMF is prohibited. Each strip of HMA placed during a work shift shall conform to a single JMF established for the class of HMA specified unless there is a need to make an adjustment in the JMF.

(November 2019 City of Auburn GSP)

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 $\frac{1}{2}$ -inch lifts.

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

(July 18, 2018 APWA GSP)

For HMA accepted by nonstatistical evaluation the aggregate properties of sand equivalent, uncompacted void content and fracture will be evaluated in accordance with Section 3-04. Sampling and testing of aggregates for HMA accepted by commercial evaluation will be at the option of the Engineer.

5-04.3(9) HMA Mixture Acceptance

(July 18, 2018 APWA GSP)

Acceptance of HMA shall be as provided under nonstatistical, or commercial evaluation.

Nonstatistical evaluation will be used for the acceptance of HMA unless Commercial Evaluation is specified.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores, prelevel, temporary pavement, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Engineer.

The mix design will be the initial JMF for the class of HMA. The Contractor may request a change in the JMF. Any adjustments to the JMF will require the approval of the Engineer and may be made in accordance with this section.

HMA Tolerances and Adjustments

1. **Job Mix Formula Tolerances** – The constituents of the mixture at the time of acceptance shall be within tolerance. The tolerance limits will be established as follows:

For Asphalt Binder and Air Voids (Va), the acceptance limits are determined by adding the tolerances below to the approved JMF values. These values will also be the Upper Specification Limit (USL) and Lower Specification Limit (LSL) required in Section 1-06.2(2)D2

Property	Non-Statistical Evaluation	Commercial Evaluation
Asphalt Binder	+/- 0.5%	+/- 0.7%
Air Voids, Va	2.5% min. and 5.5% max	N/A

For Aggregates in the mixture:

- a. First, determine preliminary upper and lower acceptance limits by applying the following tolerances to the approved JMF.

Aggregate Percent Passing	Non-Statistical Evaluation	Commercial Evaluation
1", ¾", ½", and 3/8" sieves	+/- 6%	+/- 8%
No. 4 sieve	+/- 6%	+/- 8%
No. 8 Sieve	+/- 6%	+/- 8%
No. 200 sieve	+/- 2.0%	+/- 3.0%

- b. Second, adjust the preliminary upper and lower acceptance limits determined from step (a) the minimum amount necessary so that none of the aggregate properties are outside the control points in Section 9-03.8(6). The resulting values will be the upper and lower acceptance limits for aggregates, as well as the USL and LSL required in Section 1-06.2(2)D2.
2. **Job Mix Formula Adjustments** – An adjustment to the aggregate gradation or asphalt binder content of the JMF requires approval of the Engineer. Adjustments to the JMF will only be considered if the change produces material of equal or better quality and may require the development of a new mix design if the adjustment exceeds the amounts listed below.
 - a. **Aggregates** – 2 percent for the aggregate passing the 1½", 1", ¾", ½", ⅜", and the No. 4 sieves, 1 percent for aggregate passing the No. 8 sieve, and 0.5 percent for the aggregate passing the No. 200 sieve. The adjusted JMF shall be within the range of the control points in Section 9-03.8(6).
 - b. **Asphalt Binder Content** – The Engineer may order or approve changes to asphalt binder content. The maximum adjustment from the approved mix design for the asphalt binder content shall be 0.3 percent

5-04.3(9)A Vacant

5-04.3(9)B Vacant

5-04.3(9)C Mixture Acceptance – Nonstatistical Evaluation

(July 18, 2018 APWA GSP)

HMA mixture which is accepted by Nonstatistical Evaluation will be evaluated by the Contracting Agency by dividing the HMA tonnage into lots.

5-04.3(9)C1 Mixture Nonstatistical Evaluation – Lots and Sublots

(July 18, 2018 APWA GSP)

A lot is represented by randomly selected samples of the same mix design that will be tested for acceptance. A lot is defined as the total quantity of material or work produced for each Job Mix Formula placed. Only one lot per JMF is expected. A subplot shall be equal to one day's production or 800 tons, whichever is less except that the final subplot will be a minimum of 400 tons and may be increased to 1200 tons.

All of the test results obtained from the acceptance samples from a given lot shall be evaluated collectively. If the Contractor requests a change to the JMF that is approved, the material produced after the change will be evaluated on the basis of the new JMF for the remaining sublots in the current lot and for acceptance of subsequent lots. For a lot in progress with a CPF less than 0.75, a new lot will begin at the Contractor's request after the Engineer is satisfied that material conforming to the Specifications can be produced.

Sampling and testing for evaluation shall be performed on the frequency of one sample per subplot.

5-04.3(9)C2 Mixture Nonstatistical Evaluation Sampling

(July 18, 2018 APWA GSP)

Samples for acceptance testing shall be obtained by the Contractor when ordered by the Engineer. The Contractor shall sample the HMA mixture in the presence of the Engineer and in accordance with AASH-TO T 168. A minimum of three samples should be taken for each class of HMA placed on a project. If used in a structural application, at least one of the three samples shall to be tested.

Sampling and testing HMA in a Structural application where quantities are less than 400 tons is at the discretion of the Engineer.

For HMA used in a structural application and with a total project quantity less than 800 tons but more than 400 tons, a minimum of one acceptance test shall be performed. In all cases, a minimum of 3 samples will be obtained at the point of acceptance, a minimum of one of the three samples will be tested for conformance to the JMF:

- If the test results are found to be within specification requirements, additional testing will be at the Engineer's discretion.
- If test results are found not to be within specification requirements, additional testing of the remaining samples to determine a Composite Pay Factor (CPF) shall be performed.

5-04.3(9)C3 Mixture Nonstatistical Evaluation – Acceptance Testing

(July 18, 2018 APWA GSP)

Testing of HMA for compliance of V_a will at the option of the Contracting Agency. If tested, compliance of V_a will use WSDOT SOP 731.

Testing for compliance of asphalt binder content will be by WSDOT FOP for AASHTO T 308.

Testing for compliance of gradation will be by FOP for WAQTC T 27/T 11.

5-04.3(9)C4 Mixture Nonstatistical Evaluation – Pay Factors

(July 18, 2018 APWA GSP)

For each lot of material falling outside the tolerance limits in 5-04.3(9), the Contracting Agency will determine a Composite Pay Factor (CPF) using the following price adjustment factors:

Table of Price Adjustment Factors	
Constituent	Factor “f”
All aggregate passing: 1½", 1", ¾", ½", ⅜" and No.4 sieves	2
All aggregate passing No. 8 sieve	15
All aggregate passing No. 200 sieve	20
Asphalt binder	40
Air Voids (V_a) (where applicable)	20

Each lot of HMA produced under Nonstatistical Evaluation and having all constituents falling within the tolerance limits of the job mix formula shall be accepted at the unit Contract price with no further evaluation. When one or more constituents fall outside the nonstatistical tolerance limits in the Job Mix Formula shown in Table of Price Adjustment Factors, the lot shall be evaluated in accordance with Section 1-06.2 to determine the appropriate CPF. The nonstatistical tolerance limits will be used in the calculation of the CPF and the maximum CPF shall be 1.00. When less than three sublots exist, backup samples of the existing sublots or samples from the Roadway shall be tested to provide a minimum of three sets of results for evaluation.

5-04.3(9)C5 Vacant

5-04.3(9)C6 Mixture Nonstatistical Evaluation – Price Adjustments

(July 18, 2018 APWA GSP)

For each lot of HMA mix produced under Nonstatistical Evaluation when the calculated CPF is less than 1.00, a Nonconforming Mix Factor (NCMF) will be determined. The NCMF equals the algebraic difference of CPF minus 1.00 multiplied by 60 percent. The total job mix compliance price adjustment will be calculated as the product of the NCMF, the quantity of HMA in the lot in tons, and the unit Contract price per ton of mix.

If a constituent is not measured in accordance with these Specifications, its individual pay factor will be considered 1.00 in calculating the Composite Pay Factor (CPF).

5-04.3(9)C7 Mixture Nonstatistical Evaluation – Retests

(July 18, 2018 APWA GSP)

The Contractor may request a subplot be retested. To request a retest, the Contractor shall submit a written request within 7 calendar days after the specific test results have been received. A split of the original acceptance sample will be retested. The split of the sample will not be tested with the same tester that ran the original acceptance test. The sample will be tested for a complete gradation analysis, asphalt binder content, and, at the option of the agency, V_a . The results of the retest will be used for the acceptance of the HMA in place of the original subplot sample test results. The cost of testing will be deducted from any monies due or that may come due the Contractor under the Contract at the rate of \$500 per sample.

5-04.3 (9)D Mixture Acceptance – Commercial Evaluation

(July 18, 2018 APWA GSP)

If sampled and tested, HMA produced under Commercial Evaluation and having all constituents falling within the tolerance limits of the job mix formula shall be accepted at the unit Contract price with no further evaluation. When one or more constituents fall outside the commercial tolerance limits in the Job Mix Formula shown in 5-04.3(9), the lot shall be evaluated in accordance with Section 1-06.2 to determine the appropriate CPF. The commercial tolerance limits will be used in the calculation of the CPF and the maximum CPF shall be 1.00. When less than three sublots exist, backup samples of the existing sublots or samples from the street shall be tested to provide a minimum of three sets of results for evaluation.

For each lot of HMA mix produced and tested under Commercial Evaluation when the calculated CPF is less than 1.00, a Nonconforming Mix Factor (NCMF) will be determined. The NCMF equals the algebraic difference of CPF minus 1.00 multiplied by 60 percent. The Job Mix Compliance Price Adjustment will be calculated as the product of the NCMF, the quantity of HMA in the lot in tons, and the unit Contract price per ton of mix.

If a constituent is not measured in accordance with these Specifications, its individual pay factor will be considered 1.00 in calculating the Composite Pay Factor (CPF).

5-04.3(10) HMA Compaction Acceptance

(July 18, 2018 APWA GSP)

HMA mixture accepted by nonstatistical evaluation that is used in traffic lanes, including lanes for intersections, ramps, truck climbing, weaving, and speed change, and having a specified compacted course thickness greater than 0.10-foot, shall be compacted to a specified level of relative density. The specified level of relative density shall be a Composite Pay Factor (CPF) of not less than 0.75 when evaluated in accordance with Section 1-06.2, using a LSL of 92.0 (minimum of 92 percent of the maximum density). The maximum density shall be determined by WSDOT FOP for AASHTO T 729. The specified level of density attained will be determined by the evaluation of the density of the pavement. The density of the pavement shall be determined in accordance with WSDOT FOP for WAQTC TM 8, except that gauge correlation will be at the discretion of the Engineer, when using the nuclear density gauge and WSDOT SOP 736 when using cores to determine density.

Tests for the determination of the pavement density will be taken in accordance with the required procedures for measurement by a nuclear density gauge or roadway cores after completion of the finish rolling.

If the Contracting Agency uses a nuclear density gauge to determine density the test procedures FOP for WAQTC TM 8 and WSDOT SOP T 729 will be used on the day the mix is placed and prior to opening to traffic.

Roadway cores for density may be obtained by either the Contracting Agency or the Contractor in accordance with WSDOT SOP 734. The core diameter shall be 4-inches minimum, unless otherwise approved by the Engineer. Roadway cores will be tested by the Contracting Agency in accordance with WSDOT FOP for AASHTO T 166.

If the Contract includes the Bid item "Roadway Core" the cores shall be obtained by the Contractor in the presence of the Engineer on the same day the mix is placed and at locations designated by the Engineer. If the Contract does not include the Bid item "Roadway Core" the Contracting Agency will obtain the cores.

For a lot in progress with a CPF less than 0.75, a new lot will begin at the Contractor's request after the Engineer is satisfied that material conforming to the Specifications can be produced.

HMA mixture accepted by commercial evaluation and HMA constructed under conditions other than those listed above shall be compacted on the basis of a test point evaluation of the compaction train. The test point evaluation shall be performed in accordance with instructions from the Engineer. The number of passes with an approved compaction train, required to attain the maximum test point density, shall be used on all subsequent paving.

HMA for preleveling shall be thoroughly compacted. HMA that is used for preleveling wheel rutting shall be compacted with a pneumatic tire roller unless otherwise approved by the Engineer.

Test Results

For a subplot that has been tested with a nuclear density gauge that did not meet the minimum of 92 percent of the reference maximum density in a compaction lot with a CPF below 1.00 and thus subject to a price reduction or rejection, the Contractor may request that a core be used for determination of the relative density of the subplot. The relative density of the core will replace the relative density determined by the nuclear density gauge for the subplot and will be used for calculation of the CPF and acceptance of HMA compaction lot.

When cores are taken by the Contracting Agency at the request of the Contractor, they shall be requested by noon of the next workday after the test results for the subplot have been provided or made available to the Contractor. Core locations shall be outside of wheel paths and as determined by the Engineer. Traffic control shall be provided by the Contractor as requested by the Engineer. Failure by the Contractor to provide the requested traffic control will result in forfeiture of the request for cores. When the CPF for the lot based on the results of the HMA cores is less than 1.00, the cost for the coring will be deducted from any monies due or that may become due the Contractor under the Contract at the rate of \$200 per core and the Contractor shall pay for the cost of the traffic control.

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

(July 18, 2018 APWA GSP)

Compaction shall take place when the mixture is in the proper condition so that no undue displacement, cracking, or shoving occurs. Areas inaccessible to large compaction equipment shall be compacted by other mechanical means. Any HMA that becomes loose, broken, contaminated, shows an excess or deficiency of asphalt, or is in any way defective, shall be removed and replaced with new hot mix that shall be immediately compacted to conform to the surrounding area.

The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor's option, provided the specified densities are attained. Unless the Engineer has approved otherwise, rollers shall only be operated in the static mode when the internal temperature of the mix is less than 175°F. Regardless of mix temperature, a roller shall not be operated in a mode that results in checking or cracking of the mat. Rollers shall only be operated in static mode on bridge decks.

5-04.3(10)B HMA Compaction – Cyclic Density

(July 18, 2018 APWA GSP)

Low cyclic density areas are defined as spots or streaks in the pavement that are less than 90 percent of the theoretical maximum density. At the Engineer's discretion, the Engineer may evaluate the HMA pavement for low cyclic density, and when doing so will follow WSDOT SOP 733. A \$500 Cyclic Density Price Adjustment will be assessed for any 500-foot section with two or more density readings below 90 percent of the theoretical maximum density.

5-04.3(10)C Vacant**5-04.3(10)D HMA Nonstatistical Compaction****5-04.3(10)D1 HMA Nonstatistical Compaction – Lots and Sublots**

(July 18, 2018 APWA GSP)

HMA compaction which is accepted by nonstatistical evaluation will be based on acceptance testing performed by the Contracting Agency dividing the project into compaction lots.

A lot is represented by randomly selected samples of the same mix design that will be tested for acceptance. A lot is defined as the total quantity of material or work produced for each Job Mix Formula placed. Only one lot per JMF is expected. A subplot shall be equal to one day's production or 400 tons, whichever is less except that the final subplot will be a minimum of 200 tons and may be increased to 800 tons. Testing for compaction will be at the rate of 5 tests per subplot per WSDOT T 738.

The subplot locations within each density lot will be determined by the Engineer. For a lot in progress with a CPF less than 0.75, a new lot will begin at the Contractor's request after the Engineer is satisfied that material conforming to the Specifications can be produced.

HMA mixture accepted by commercial evaluation and HMA constructed under conditions other than those listed above shall be compacted on the basis of a test point evaluation of the compaction train. The test point evaluation shall be performed in accordance with instructions from the Engineer. The number of passes with an approved compaction train, required to attain the maximum test point density, shall be used on all subsequent paving.

HMA for preleveling shall be thoroughly compacted. HMA that is used to prelevel wheel ruts shall be compacted with a pneumatic tire roller unless otherwise approved by the Engineer.

5-04.3(10)D2 HMA Compaction Nonstatistical Evaluation – Acceptance Testing

(July 18, 2018 APWA GSP)

The location of the HMA compaction acceptance tests will be randomly selected by the Engineer from within each subplot, with one test per subplot.

5-04.3(10)D3 HMA Nonstatistical Compaction – Price Adjustments

(July 18, 2018 APWA GSP)

For each compaction lot with one or two sublots, having all sublots attain a relative density that is 92 percent of the reference maximum density the HMA shall be accepted at the unit Contract price with no further evaluation. When a subplot does not attain a relative density that is 92 percent of the reference maximum density, the lot shall be evaluated in accordance with Section 1-06.2 to determine the appropriate CPF. The maximum CPF

shall be 1.00, however, lots with a calculated CPF in excess of 1.00 will be used to offset lots with CPF values below 1.00 but greater than 0.90. Lots with CPF lower than 0.90 will be evaluated for compliance per 5-04.3(11). Additional testing by either a nuclear moisture-density gauge or cores will be completed as required to provide a minimum of three tests for evaluation.

For compaction below the required 92% a Non-Conforming Compaction Factor (NCCF) will be determined. The NCCF equals the algebraic difference of CPF minus 1.00 multiplied by 40 percent. The Compaction Price Adjustment will be calculated as the product of CPF, the quantity of HMA in the compaction control lot in tons, and the unit Contract price per ton of mix.

5-04.3(11) Reject Work**5-04.3(11)A Reject Work General**

(July 18, 2018 APWA GSP)

Work that is defective or does not conform to Contract requirements shall be rejected. The Contractor may propose, in writing, alternatives to removal and replacement of rejected material. Acceptability of such alternative proposals will be determined at the sole discretion of the Engineer. HMA that has been rejected is subject to the requirements in Section 1-06.2(2) and this specification, and the Contractor shall submit a corrective action proposal to the Engineer for approval.

5-04.3(11)B Rejection by Contractor

(July 18, 2018 APWA GSP)

The Contractor may, prior to sampling, elect to remove any defective material and replace it with new material. Any such new material will be sampled, tested, and evaluated for acceptance.

5-04.3(11)C Rejection Without Testing (Mixture or Compaction)

(City Contracts, July 18, 2018 APWA GSP)

The Engineer may, without sampling, reject any batch, load, or section of Roadway that appears defective. Material rejected before placement shall not be incorporated into the pavement. Any rejected section of Roadway shall be removed.

No payment will be made for the rejected materials or the removal of the materials unless the Contractor requests that the rejected material be tested. If the Contractor elects to have the rejected material tested, a minimum of three representative samples will be obtained and tested. Acceptance of rejected material will be based on conformance with the nonstatistical acceptance Specification. If the CPF for the rejected material is less than 0.75, no payment will be made for the rejected material; in addition, the cost of sampling and testing shall be borne by the Contractor. If the CPF is greater than or equal to 0.75, the cost of sampling and testing will be borne by the Contracting Agency. If the material is rejected before placement and the CPF is greater than or equal to 0.75, compensation for

the rejected material will be at a CPF of 0.75. If rejection occurs after placement and the CPF is greater than or equal to 0.75, compensation for the rejected material will be at the calculated CPF with an addition of 25 percent of the unit Contract price added for the cost of removal and disposal.

5-04.3(11)D Rejection - A Partial Sublot

(July 18, 2018 APWA GSP)

In addition to the random acceptance sampling and testing, the Engineer may also isolate from a normal subplot any material that is suspected of being defective in relative density, gradation or asphalt binder content. Such isolated material will not include an original sample location. A minimum of three random samples of the suspect material will be obtained and tested. The material will then be statistically evaluated as an independent lot in accordance with Section 1-06.2(2).

5-04.3(11)E Rejection - An Entire Sublot

(July 18, 2018 APWA GSP)

An entire subplot that is suspected of being defective may be rejected. When a subplot is rejected a minimum of two additional random samples from this subplot will be obtained. These additional samples and the original subplot will be evaluated as an independent lot in accordance with Section 1-06.2(2).

5-04.3(11)F Rejection - A Lot in Progress

(July 18, 2018 APWA GSP)

The Contractor shall shut down operations and shall not resume HMA placement until such time as the Engineer is satisfied that material conforming to the Specifications can be produced:

1. When the Composite Pay Factor (CPF) of a lot in progress drops below 1.00 and the Contractor is taking no corrective action, or
2. When the Pay Factor (PF) for any constituent of a lot in progress drops below 0.95 and the Contractor is taking no corrective action, or
3. When either the PF_i for any constituent or the CPF of a lot in progress is less than 0.75.

5-04.3(11)G Rejection - An Entire Lot (Mixture or Compaction)

(July 18, 2018 APWA GSP)

An entire lot with a CPF of less than 0.75 will be rejected.

5-04.3(12) Joints

5-04.3(12)A HMA Joints**5-04.3(12)A1 Transverse Joints**

(July 18, 2018 APWA GSP)

The Contractor shall conduct operations such that the placing of the top or wearing course is a continuous operation or as close to continuous as possible. Unscheduled transverse joints will be allowed and the roller may pass over the unprotected end of the freshly laid mixture only when the placement of the course must be discontinued for such a length of time that the mixture will cool below compaction temperature. When the Work is resumed, the previously compacted mixture shall be cut back to produce a slightly beveled edge for the full thickness of the course.

A temporary wedge of HMA constructed on a 20H:1V shall be constructed where a transverse joint as a result of paving or planing is open to traffic. The HMA in the temporary wedge shall be separated from the permanent HMA by strips of heavy wrapping paper or other methods approved by the Engineer. The wrapping paper shall be removed and the joint trimmed to a slightly beveled edge for the full thickness of the course prior to resumption of paving.

The material that is cut away shall be wasted and new mix shall be laid against the cut. Rollers or tamping irons shall be used to seal the joint.

5-04.3(12)A2 Longitudinal Joints

(July 18, 2018 APWA GSP)

The longitudinal joint in any one course shall be offset from the course immediately below by not more than 6 inches nor less than 2 inches. All longitudinal joints constructed in the wearing course shall be located at a lane line or an edge line of the Traveled Way. A notched wedge joint shall be constructed along all longitudinal joints in the wearing surface of new HMA unless otherwise approved by the Engineer. The notched wedge joint shall have a vertical edge of not less than the maximum aggregate size or more than ½ of the compacted lift thickness and then taper down on a slope not steeper than 4H:1V. The sloped portion of the HMA notched wedge joint shall be uniformly compacted.

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

(April 2020 City of Auburn GSP)

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 58H-22 per Section 9-02 (Bituminous Materials).

5-04.3(12)B Bridge Paving Joint Seals

5-04.3(12)B1 HMA Sawcut and Seal

(July 18, 2018 APWA GSP)

Prior to placing HMA on the bridge deck, establish sawcut alignment points at both ends of the bridge paving joint seals to be placed at the bridge ends, and at interior joints within the bridge deck when and where shown in the Plans. Establish the sawcut alignment points in a manner that they remain functional for use in aligning the sawcut after placing the overlay.

Submit a Type 1 Working Drawing consisting of the sealant manufacturer's application procedure.

Construct the bridge paving joint seal as specified on the Plans and in accordance with the detail shown in the Standard Plans. Construct the sawcut in accordance with the detail shown in the Standard Plan. Construct the sawcut in accordance with Section 5-05.3(8)B and the manufacturer's application procedure.

5-04.3(12)B2 Paved Panel Joint Seal

(July 18, 2018 APWA GSP)

Construct the paved panel joint seal in accordance with the requirements specified in section 5-04.3(12)B1 and the following requirement:

1. Clean and seal the existing joint between concrete panels in accordance with Section 5-01.3(8) and the details shown in the Standard Plans.

5-04.3(13) Surface Smoothness

(July 18, 2018 APWA GSP)

The completed surface of all courses shall be of uniform texture, smooth, uniform as to crown and grade, and free from defects of all kinds. The completed surface of the wearing course shall not vary more than $\frac{1}{8}$ inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline. The transverse slope of the completed surface of the wearing course shall vary not more than $\frac{1}{4}$ inch in 10 feet from the rate of transverse slope shown in the Plans.

When deviations in excess of the above tolerances are found that result from a high place in the HMA, the pavement surface shall be corrected by one of the following methods:

1. Removal of material from high places by grinding with an approved grinding machine, or
2. Removal and replacement of the wearing course of HMA, or
3. By other method approved by the Engineer.

Correction of defects shall be carried out until there are no deviations anywhere greater than the allowable tolerances.

Deviations in excess of the above tolerances that result from a low place in the HMA and deviations resulting from a high place where corrective action, in the opinion of the Engineer, will not produce satisfactory results will be accepted with a price adjustment. The Engineer shall deduct from monies due or that may become due to the Contractor the sum of \$500.00 for each and every section of single traffic lane 100 feet in length in which any excessive deviations described above are found.

When utility appurtenances such as manhole covers and valve boxes are located in the traveled way, the utility appurtenances shall be adjusted to the finished grade prior to paving. This requirement may be waived when requested by the Contractor, at the discretion of the Engineer or when the adjustment details provided in the project plan or specifications call for utility appurtenance adjustments after the completion of paving.

Utility appurtenance adjustment discussions will be included in the Pre-Paving planning (5-04.3(14)B3). Submit a written request to waive this requirement to the Engineer prior to the start of paving.

5-04.3(14) Planing (Milling) Bituminous Pavement

(July 18, 2018 APWA GSP)

The planing plan must be approved by the Engineer and a pre planing meeting must be held prior to the start of any planing. See Section 5-04.3(14)B2 for information on planing submittals.

Locations of existing surfacing to be planed are as shown in the Drawings.

Where planing an existing pavement is specified in the Contract, the Contractor must remove existing surfacing material and to reshape the surface to remove irregularities. The finished product must be a prepared surface acceptable for receiving an HMA overlay.

Use the cold milling method for planing unless otherwise specified in the Contract. Do not use the planer on the final wearing course of new HMA.

Conduct planing operations in a manner that does not tear, break, burn, or otherwise damage the surface which is to remain. The finished planed surface must be slightly grooved or roughened and must be free from gouges, deep grooves, ridges, or other imperfections. The Contractor must repair any damage to the surface by the Contractor's planing equipment, using an Engineer approved method.

Repair or replace any metal castings and other surface improvements damaged by planing, as determined by the Engineer.

A tapered wedge cut must be planed longitudinally along curb lines sufficient to provide a minimum of 4 inches of curb reveal after placement and compaction of the final wearing course. The dimensions of the wedge must be as shown on the Drawings or as specified by the Engineer.

A tapered wedge cut must also be made at transitions to adjoining pavement surfaces (meet lines) where butt joints are shown on the Drawings. Cut butt joints in a straight line with vertical faces 2 inches or more in height, producing a smooth transition to the existing adjoining pavement.

After planing is complete, planed surfaces must be swept, cleaned, and if required by the Contract, patched and preleveled.

The Engineer may direct additional depth planing. Before performing this additional depth planing, the Contractor must conduct a hidden metal in pavement detection survey as specified in Section 5-04.3(14)A.

(November 2019, City of Auburn GSP)

Supplement this section with the following:

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 and 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).

5-04.3(14)A Pre-Planing Metal Detection Check

(July 18, 2018 APWA GSP)

Before starting planing of pavements, and before any additional depth planing required by the Engineer, the Contractor must conduct a physical survey of existing pavement to be planed with equipment that can identify hidden metal objects.

Should such metal be identified, promptly notify the Engineer.

See Section 1-07.16(1) regarding the protection of survey monumentation that may be hidden in pavement.

The Contractor is solely responsible for any damage to equipment resulting from the Contractor's failure to conduct a pre-planing metal detection survey, or from the Contractor's failure to notify the Engineer of any hidden metal that is detected.

5-04.3(14)B Paving and Planing Under Traffic**5-04.3(14)B1 General**

(July 18, 2018 APWA GSP)

In addition the requirements of Section 1-07.23 and the traffic controls required in Section 1-10, and unless the Contract specifies otherwise or the Engineer approves, the Contractor must comply with the following:

1. Intersections:
 - a. Keep intersections open to traffic at all times, except when paving or planing operations through an intersection requires closure. Such closure must be kept to the minimum time required to place and compact the HMA mixture, or plane as appropriate. For paving, schedule such closure to individual lanes or portions thereof that allows the traffic volumes and schedule of traffic volumes required in the approved traffic control plan. Schedule work so that adjacent intersections are not impacted at the same time and comply with the traffic control restrictions required by the Traffic Engineer. Each individual intersection closure or partial closure, must be addressed in the traffic control plan, which must be submitted to and accepted by the Engineer, see Section 1-10.2(2).
 - b. When planing or paving and related construction must occur in an intersection, consider scheduling and sequencing such work into quarters of the intersection, or half or more of an intersection with side street detours. Be prepared to sequence the work to individual lanes or portions thereof.
 - c. Should closure of the intersection in its entirety be necessary, and no trolley service is impacted, keep such closure to the minimum time required to place and compact the HMA mixture, plane, remove asphalt, tack coat, and as needed.
 - d. Any work in an intersection requires advance warning in both signage and a number of Working Days advance notice as determined by the Engineer, to alert traffic and emergency services of the intersection closure or partial closure.
 - e. Allow new compacted HMA asphalt to cool to ambient temperature before any traffic is allowed on it. Traffic is not allowed on newly placed asphalt until approval has been obtained from the Engineer.
2. Temporary centerline marking, post-paving temporary marking, temporary stop bars, and maintaining temporary pavement marking must comply with Section 8-23.
3. Permanent pavement marking must comply with Section 8-22.

5-04.3(14)B2 Submittals – Planing Plan and HMA Paving Plan

(July 18, 2018 APWA GSP)

The Contractor must submit a separate planing plan and a separate paving plan to the Engineer at least 5 Working Days in advance of each operation's activity start date. These

plans must show how the moving operation and traffic control are coordinated, as they will be discussed at the pre-planing briefing and pre-paving briefing. When requested by the Engineer, the Contractor must provide each operation's traffic control plan on 24 x 36 inch or larger size Shop Drawings with a scale showing both the area of operation and sufficient detail of traffic beyond the area of operation where detour traffic may be required. The scale on the Shop Drawings is 1 inch = 20 feet, which may be changed if the Engineer agrees sufficient detail is shown.

The planing operation and the paving operation include, but are not limited to, metal detection, removal of asphalt and temporary asphalt of any kind, tack coat and drying, staging of supply trucks, paving trains, rolling, scheduling, and as may be discussed at the briefing.

When intersections will be partially or totally blocked, provide adequately sized and noticeable signage alerting traffic of closures to come, a minimum 2 Working Days in advance. The traffic control plan must show where police officers will be stationed when signalization is or may be, countermanded, and show areas where flaggers are proposed.

At a minimum, the planing and the paving plan must include:

1. A copy of the accepted traffic control plan, see Section 1-10.2(2), detailing each day's traffic control as it relates to the specific requirements of that day's planing and paving. Briefly describe the sequencing of traffic control consistent with the proposed planing and paving sequence, and scheduling of placement of temporary pavement markings and channelizing devices after each day's planing, and paving.
2. A copy of each intersection's traffic control plan.
3. Haul routes from Supplier facilities, and locations of temporary parking and staging areas, including return routes. Describe the complete round trip as it relates to the sequencing of paving operations.
4. Names and locations of HMA Supplier facilities to be used.
5. List of all equipment to be used for paving.
6. List of personnel and associated job classification assigned to each piece of paving equipment.
7. Description (geometric or narrative) of the scheduled sequence of planing and of paving, and intended area of planing and of paving for each day's work, must include the directions of proposed planing and of proposed paving, sequence of adjacent lane paving, sequence of skipped lane paving, intersection planing and paving scheduling and sequencing, and proposed notifications and coordinations to be timely made. The plan must show HMA joints relative to the final pavement marking lane lines.
8. Names, job titles, and contact information for field, office, and plant supervisory personnel.
9. A copy of the approved Mix Designs.
10. Tonnage of HMA to be placed each day.
11. Approximate times and days for starting and ending daily operations.

5-04.3(14)B3 Pre-Paving and Pre-Planing Briefing

(July 18, 2018 APWA GSP)

At least 2 Working Days before the first paving operation and the first planing operation, or as scheduled by the Engineer for future paving and planing operations to ensure the Contractor has adequately prepared for notifying and coordinating as required in the Contract, the Contractor must be prepared to discuss that day's operations as they relate to other entities and to public safety and convenience, including driveway and business access, garbage truck operations, Metro transit operations and working around energized overhead wires, school and nursing home and hospital and other accesses, other contractors who may be operating in the area, pedestrian and bicycle traffic, and emergency services. The Contractor, and Subcontractors that may be part of that day's operations, must meet with the Engineer and discuss the proposed operation as it relates to the submitted planing plan and paving plan, approved traffic control plan, and public convenience and safety. Such discussion includes, but is not limited to:

1. General for both Paving Plan and for Planing Plan:
 - a. The actual times of starting and ending daily operations.
 - b. In intersections, how to break up the intersection, and address traffic control and signalization for that operation, including use of peace officers.
 - c. The sequencing and scheduling of paving operations and of planing operations, as applicable, as it relates to traffic control, to public convenience and safety, and to other contractors who may operate in the Project Site.
 - d. Notifications required of Contractor activities, and coordinating with other entities and the public as necessary.
 - e. Description of the sequencing of installation and types of temporary pavement markings as it relates to planning and to paving.
 - f. Description of the sequencing of installation of, and the removal of, temporary pavement patch material around exposed castings and as may be needed
 - g. Description of procedures and equipment to identify hidden metal in the pavement, such as survey monumentation, monitoring wells, street car rail, and castings, before planning, see Section 5-04.3(14)B2.
 - h. Description of how flaggers will be coordinated with the planing, paving, and related operations.
 - i. Description of sequencing of traffic controls for the process of rigid pavement base repairs.
 - j. Other items the Engineer deems necessary to address.
2. Paving – additional topics:
 - a. When to start applying tack and coordinating with paving.
 - b. Types of equipment and numbers of each type equipment to be used. If more pieces of equipment than personnel are proposed, describe the sequencing of the personnel operating the types of equipment. Discuss

the continuance of operator personnel for each type equipment as it relates to meeting Specification requirements.

- c. Number of JMFs to be placed, and if more than one JMF how the Contractor will ensure different JMFs are distinguished, how pavers and MTVs are distinguished if more than one JMF is being placed at the time, and how pavers and MTVs are cleaned so that one JMF does not adversely influence the other JMF.
- d. Description of contingency plans for that day's operations such as equipment breakdown, rain out, and Supplier shutdown of operations.
- e. Number of sublots to be placed, sequencing of density testing, and other sampling and testing.

5-04.3(15) Sealing Pavement Surfaces

(July 18, 2018 APWA GSP)

Apply a fog seal where shown in the plans. Construct the fog seal in accordance with Section 5-02.3. Unless otherwise approved by the Engineer, apply the fog seal prior to opening to traffic.

5-04.3(16) HMA Road Approaches

(July 18, 2018 APWA GSP)

HMA approaches shall be constructed at the locations shown in the Plans or where staked by the Engineer. The Work shall be performed in accordance with Section 5-04.

5-04.3(17) Asphalt Cold Patch

(November 2019, City of Auburn GSP)

"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.

5-04.3(18) Porous HMA

(November 2019, City of Auburn GSP)

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.

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

5-04.4 Measurement

(City Contracts, November 2019 City of Auburn GSP)

HMA Cl. ____ PG ____, HMA for ____ Cl. ____ PG ____, and Commercial HMA will be measured by the ton in accordance with Section 1-09.2, with no deduction being made for the weight of asphalt binder, mineral filler, or any other component of the mixture. If the Contractor elects to remove and replace mix as allowed by Section 5-04.3(11), the material removed will not be measured.

Roadway cores will be measured per each for the number of cores taken.

Preparation of untreated roadway will be measured by the mile once along the centerline of the main line Roadway. No additional measurement will be made for ramps, Auxiliary Lanes, service roads, Frontage Roads, or Shoulders. Measurement will be to the nearest 0.01 mile.

Pavement repair excavation will be measured by the square yard of surface marked prior to excavation.

Asphalt for prime coat will be measured by the ton in accordance with Section 1-09.2.

Prime coat aggregate will be measured by the cubic yard, truck measure, or by the ton, whichever is designated in the Proposal.

Asphalt for fog seal will be measured by the ton, as provided in Section 5-02.4.

Planing bituminous pavement will be measured by the square yard.

Temporary pavement marking will be measured by the linear foot as provided in Section 8-23.4.

No measurement for Water will be made.

Asphalt Cold Patch will be measured by the ton of cold patch furnished and installed.

Rubberized Asphalt for Crack Sealing” will be measured by the ton.

Porous HMA will be measured by the ton.

No measurement for Soil Residual Herbicide will be made.

No measurement for Longitudinal Joint Seals will be made.

5-04.5 Payment

(City Contracts, July 18, 2018 APWA GSP)

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

“HMA Cl. ____ PG ____”, per ton.

“HMA for Approach Cl. ____ PG ____”, per ton.

“HMA for Preleveling Cl. ____ PG ____”, per ton.

“HMA for Pavement Repair Cl. ____ PG ____”, per ton.

“Commercial HMA”, per ton.

The unit Contract price per ton for “HMA Cl. ____ PG ____”, “HMA for Approach Cl. ____ PG ____”, “HMA for Preleveling Cl. ____ PG ____”, “HMA for Pavement Repair Cl. ____ PG ____”, and “Commercial HMA” shall be full compensation for all costs, including anti-stripping additive, incurred to carry out the requirements of Section 5-04 except for those costs included in other items which are included in this Subsection and which are included in the Proposal.

“Preparation of Untreated Roadway”, per mile.

The unit Contract price per mile for “Preparation of Untreated Roadway” shall be full pay for all Work described under 5-04.3(4) , with the exception, however, that all costs involved in patching the Roadway prior to placement of HMA shall be included in the unit Contract price per ton for “HMA Cl. ____ PG ____” which was used for patching. If the Proposal does not include a Bid item for “Preparation of Untreated Roadway”, the Roadway shall be prepared as specified, but the Work shall be included in the Contract prices of the other items of Work.

“Preparation of Existing Paved Surfaces”, per mile.

The unit Contract Price for “Preparation of Existing Paved Surfaces” shall be full pay for all Work described under Section 5-04.3(4) with the exception, however, that all costs involved in patching the Roadway prior to placement of HMA shall be included in the unit Contract price per ton for “HMA Cl. ____ PG ____” which was used for patching. If the Proposal does not include a Bid item for “Preparation of Untreated Roadway”, the Roadway shall be prepared as specified, but the Work shall be included in the Contract prices of the other items of Work.

“Crack Sealing”, by force account.

“Crack Sealing” will be paid for by force account as specified in Section 1-09.6. For the purpose of providing a common Proposal for all Bidders, the Contracting Agency has entered an amount in the Proposal to become a part of the total Bid by the Contractor.

“Pavement Repair Excavation Incl. Haul”, per square yard.

The unit Contract price per square yard for "Pavement Repair Excavation Incl. Haul" shall be full payment for all costs incurred to perform the Work described in Section 5-04.3(4) with the exception, however, that all costs involved in the placement of HMA shall be included in the unit Contract price per ton for "HMA for Pavement Repair Cl. ____ PG ____", per ton.

"Asphalt for Prime Coat", per ton.

The unit Contract price per ton for "Asphalt for Prime Coat" shall be full payment for all costs incurred to obtain, provide and install the material in accordance with Section 5-04.3(4).

"Prime Coat Agg.", per cubic yard, or per ton.

The unit Contract price per cubic yard or per ton for "Prime Coat Agg." shall be full pay for furnishing, loading, and hauling aggregate to the place of deposit and spreading the aggregate in the quantities required by the Engineer.

"Asphalt for Fog Seal", per ton.

Payment for "Asphalt for Fog Seal" is described in Section 5-02.5.

"Longitudinal Joint Seal", per linear foot.

The unit Contract price per linear foot for "Longitudinal Joint Seal" shall be full payment for all costs incurred to perform the Work described in Section 5-04.3(12).

"Planing Bituminous Pavement", per square yard.

The unit Contract price per square yard for "Planing Bituminous Pavement" shall be full payment for all costs incurred to perform the Work described in Section 5-04.3(14).

"Temporary Pavement Marking", per linear foot.

Payment for "Temporary Pavement Marking" is described in Section 8-23.5.

"Water", per M gallon.

Payment for "Water" is described in Section 2-07.5.

"Job Mix Compliance Price Adjustment", by calculation.

“Job Mix Compliance Price Adjustment” will be calculated and paid for as described in Section 5-04.3(9)C6.

“Compaction Price Adjustment”, by calculation.

“Compaction Price Adjustment” will be calculated and paid for as described in Section 5-04.3(10)D3.

“Roadway Core”, per each.

The Contractor’s costs for all other Work associated with the coring (e.g., traffic control) shall be incidental and included within the unit Bid price per each and no additional payments will be made.

“Cyclic Density Price Adjustment”, by calculation.

“Cyclic Density Price Adjustment” will be calculated and paid for as described in Section 5-04.3(10)B.

(City Contracts, April 2020, City of Auburn GSP)

Supplement this section with the following:

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

“Asphalt Cold Patch”, Per Ton

The unit contract price per ton for “Asphalt Cold Patch,” shall be full compensation for all costs incurred to carry out the requirements of Section 5-04.3(17) (Asphalt Cold Patch) except for those costs included in other items which are included in this sub-section and which are included in the proposal.

“Rubberized Asphalt for Crack Sealing”, Per Ton

The unit contract price for “Rubberized Asphalt for Crack Sealing” shall be full pay for all costs of material, labor, tools, and equipment necessary for the application of the crack sealant as specified including all costs associated with preparation, placing, blotting, and spreading sand.

“Porous HMA”, Per Ton

If HMA can be installed with a paving machine, it will not be paid for as “Commercial HMA”, but instead will be paid for as “HMA Cl. ____ PG ____”.

All costs associated with providing, placing, and sealing new joints in the asphalt concrete shall be included in the unit Contract price for “HMA Cl. ____ PG ____”.

All cost incurred to obtain, provide and install herbicide for “Soil Residual Herbicide” in accordance with Section 5-04.3(4)B shall be included in the unit contract price per ton for HMA.

Longitudinal Joint Seals between the HMA and cement concrete pavement shall be included in the unit contract price per ton of the HMA.

Hot or cold mix asphalt concrete for temporary patches shall not be measured for separate payment. All costs associated with temporary patches shall be included in the appropriate unit bid prices for the work involved.

5-05 Cement Concrete Pavement

5-05.3 Construction Requirements

5-05.3(1) Concrete Mix Design for Paving

(January 2017, City of Auburn GSP)

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.

- 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 GSP)

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 GSP)

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 $\frac{3}{4}$ 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.

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 GSP)

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 $\frac{3}{4}$ 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.

Add the following new section:

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

(August 2016, City of Auburn GSP)

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 GSP)

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 GSP)

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.

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

(September 2016, City of Auburn GSP)

Add the following new section including subsections:

5-05.3(23) Cement Concrete Pavement for Alley

(September 2016, City of Auburn GSP)

This work consists of placing Cement concrete pavement for alleyways.

5-05.3(23)A Pavement and Alley Requirements

(August 2016, City of Auburn GSP)

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 GSP)

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).

5-05.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

Measurement for "Cement Concrete Pavement – Crosswalk" will be by the square yard.

Measurement for Cement Concrete Pavement – Including Dowels will be by the square yard of concrete in place, including the area placed underneath curbs. No deduction will be made for castings in pavement.

5-05.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

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

"Cement Concrete Pavement – Including Dowels", Per Square Yard

“Cement Concrete Pavement – Crosswalk”, Per Square Yard

The unit contract price per square yard for “Cement Concrete Pavement – Including Dowels,” shall be full compensation for all costs incurred to carry out the requirements of

The unit contract price for “Cement Conc. Pavement – Crosswalk” shall be full pay for all costs of labor, tools, materials, and equipment necessary to complete the cement concrete pavement to the lines, grades, and depths specified on the Plans including the saw cutting of the grid pattern and other finishing requirements.

Section 5-05 (Cement Concrete Pavement) at the thickness required in the Plans including furnishing and installing epoxy coated dowel bars and tie bars, block outs, joints, thickened edges, and integral curbs on concrete pavement in accordance to the Standard Details and Contract Plans.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-06 Pervious Concrete Pavement

5-06.1 Description

This work shall consist of constructing a pervious cementitious pavement composed of 66nclude66 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 66nclude66 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:

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 68nclude68 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 68nclude68 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 5-06.3(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 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 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 Engineer.

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 request in writing that the Engineer 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 additional 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.

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, overseeing 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 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.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following subsections:

5-06.4 Measurement

Measurement for “Pervious Concrete Pavement – Sidewalk” will be by the square yard of finished surface of pervious concrete walk. No measurement will be made for blocked out areas, castings or other discontinuities in the sidewalk nine (9) square feet or larger.

Measurement for “Pervious Concrete Pavement-Vehicular” will be by the square yard for the finished surface of pervious concrete pavement. No Measurement will be made for blocked out areas, castings or other discontinuities in the pavement nine (9) square feet or larger.

5-06.5 Payment

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

“Pervious Concrete Pavement – Sidewalk”, Per Square Yard

“Pervious Concrete Pavement – Vehicular”, Per Square Yard

The Unit contract price per square yard for “Pervious Concrete Pavement – Sidewalk” shall be full pay for furnishing all labor, tools, equipment and materials required to construct the pervious concrete sidewalk as specified in this Section, including but not limited to; performing mix designs, and placing pervious concrete.

The Unit contract price for “Pervious Concrete Pavement-Vehicular” shall be full pay for furnishing all labor, tools, equipment and materials required to construct the pervious concrete pavement as specified in this Section, including but not limited to; performing mix designs, and placing pervious concrete.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-07 Textured Asphalt

5-07.1 Description

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

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

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

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

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

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

5-07.3(1) Textured Asphalt Terms

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-compacted**, 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 site who has successfully completed a StreetPrint Level 1 or Level II Accreditation Training Program.

5-07.3(2) Certification

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

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

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

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

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

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

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

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

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

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

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

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**

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

5-07.3(5)B Stamping Depth

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

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

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).

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-07.4 Measurement

Measurement for "Textured Asphalt" shall be by the square yard of surface area completed.

5-07.5 Payment

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

"Textured Asphalt", Per Square Yard

The unit contract price for "Textured Asphalt" shall be full pay for all costs of labor, tools, and equipment necessary to install the asphalt texturing, including heating, imprinting, and coloring the asphalt.

Costs for placing and compacting the HMA Cl. 1/2 inch pavement receiving the texturing shall be paid for as indicated in Section 5-04 (Hot Mix Asphalt) of these Special Provisions.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-08 Stamped Colored Cement Concrete**5-08.1 Description**

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

5-08.2 Materials

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
- 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**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.
 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

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.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-08.4 Measurement

Measurement for “Colored Stamped Cement Concrete” shall be per Square Yard.

5-08.5 Payment

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

“Colored Stamped Cement Concrete”, Per Square Yard

The unit contract price for “Colored Stamped Cement Concrete” shall be full pay for all costs of labor, tools, materials, and equipment necessary to mix, pour, grade, finish, stamp, apply the colored release agent, apply the concrete sealer, and color the stamped concrete.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-09 Slurry Seal Surface Treatment

5-09.1 Description

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

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**

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

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.

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

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

5-09.2(4) Laboratory Testing

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

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

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.

5-09.2(7) Sampling

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

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**

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

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

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 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

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

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

5-09.3(1)E Calibration

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

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

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

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 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

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**

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

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

5-09.3(6)C Hand Work

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

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.

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

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.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-09.4 Measurement

“Slurry Seal Surface Treatment” will be measured by the square yard of work completed and accepted.

5-09.5 Payment

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

“Slurry Seal Surface Treatment”, Per Square Yard

Payment for “Slurry Seal Surface Treatment” shall include all costs to complete the work, including, but not limited to surface preparation, calibration, furnishing and applying slurry treatment, and curing.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-10 Non-Woven Fabric for Pavement Overlays

(January 2018, City of Auburn GSP)

5-10.1 Description

(January 2018, City of Auburn GSP)

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

5-10.2 Materials

(April 2020, City of Auburn GSP)

Asphalt Binder PG 58H-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

5-10.3 Construction Requirements

(January 2018, City of Auburn GSP)

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

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)A (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.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-10.4 Measurement

(City Contracts, January 2018, City of Auburn GSP)

"Non-Woven Fabric" will be measured by the square yard of area actually covered.

5-10.5 Payment

(City Contracts, January 2018, City of Auburn GSP)

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

"Non-Woven Fabric", Per Square Yard

Payment for "Non-Woven Fabric" shall include all costs to complete the work, including, but not limited to surface preparation, furnishing and applying asphalt, furnishing and applying fabric, and curing.

(February 2023, City of Auburn GSP)

Supplement Division 5 with the following section, including subsections:

5-11 High Friction Surface Treatment

5-11.1 Description

This work consists of applying a High Friction Surface Treatment (HFST) consisting of one application of a single layer of a binder resin system covered with a single layer of calcined bauxite aggregate as shown.

5-11.1(1) Definitions

High Friction Surface Treatment (HFST) – A product composed of calcined bauxite bound with a polymeric resin.

5-11.2 Materials

5-11.2(1) Aggregate

Furnish calcined bauxite aggregate meeting the requirements listed below. Deliver the aggregate to the construction site in super sacks labeled clearly for identification. Provide aggregate that is virgin, clean, dry, and free from foreign matter. A sample of the aggregate lot/batch shall be supplied upon request.

Aggregate Requirements

Property	Test Method	Requirement
Aggregate Gradation: % Passing the #4 sieve Minimum % Passing the #6 sieve Maximum % Passing the #16 sieve	AASHTO T27 & T11	100 95 5
Los Angeles Abrasion, % Max (Loss after 100 Revolutions)	AASHTO T96	10
Moisture Content, % Maximum	AASHTO T 255 (note 1)	0.2
Aluminum Oxide Content, % Minimum	ASTM C-25	87

Notes 1: For each application, perform AASHTO T 255 within 3 hours of and prior to placement of the HFST material.

5-11.2(2) Binder Resin System

Provide a modified binder resin system, meeting the requirements below, recommended by the manufacturer as suitable for use on the intended pavement surface and for the potential range of atmospheric exposure. A sample of the resin binder system for each lot/batch shall be supplied upon request.

Epoxy Resin Binder Material Properties Requirements

Property	Test Method	Requirements Polymeric Resin
Viscosity, Poises	ASTM D 2556 (note 1)	Class C: 7 – 30
Gel Time	AASHTO M 235 (note 2)	Class C: 10 minute: min.
Ultimate Tensile Strength, psi	AASHTO M 235 (note 3)	2,000 – 5,000
Elongation at Break	AASHTO M 235 (note 4)	30 – 70%
Water Absorption, %	AASHTO M 235 (note 5)	1 max.

Durometer Hardness (Shore D)	AASHTO D2240 (note 6)	60 – 80
Compressive Strength, psi	ASTM C 579 (note 7)	1,000 min. (3 hours) 5,000 min. (7 days)
Cure Rate (Dry through time), hours	ASTM D 1640, 55 mil wet thickness @ 75 °F (note 8)	3 max.
Mixing Ratio	Provide manufacturer's recommendations a minimum of 60 days prior to construction.	Per Manufacturer
Adhesion Strength, psi @ 24 hrs	ASTM D 7234 (note 9)	250 min. or 100% substrate failure
Infrared Spectrum	AASHTO T 237	Note 10

Notes:

1. Prepare a one pint sample per manufacturer's recommendation and mix for 2 to 3 minutes before testing. Use X1.1 for Spindle Selection. Perform testing at a temperature of $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$].
2. Prepare a 60g sample per manufacturer's recommendation. Perform testing at a temperature of $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$].
3. Prepare sample as per manufacturer's recommendation. Prepare Type I specimens in accordance with ASTM D638. Cure specimens for 7 days at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] and $50 \pm 2^{\circ}\text{F}$ [$10 \pm 1^{\circ}\text{C}$]. Test specimens at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] without delay.
4. Prepare sample as per manufacturer's recommendation. Prepare Type I specimens in accordance with ASTM D638. Cure specimens for 7 days at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] and $50 \pm 2^{\circ}\text{F}$ [$10 \pm 1^{\circ}\text{C}$]. Test specimens at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] without delay.
5. Prepare sample as per manufacturer's recommendation. Cure specimens for 7 days at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] and $50 \pm 2^{\circ}\text{F}$ [$10 \pm 1^{\circ}\text{C}$]. Test specimens at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] without delay after immersion.
6. Prepare sample as per manufacturer's recommendation. Use the Type 1 Precision-Type D Durometer Method. Cure specimens for 7 days at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] and $50 \pm 2^{\circ}\text{F}$ [$10 \pm 1^{\circ}\text{C}$]. Test specimens at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] without delay.
7. Prepare sample as per manufacturer's recommendation. Prepare specimen according to Method "B", 2" x 2" cube, using 2.75 parts of sand to one part of mixed polymer resin binder by volume. Sand shall meet ASTM C778, 20-30 sand. Cure specimens at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] and $50 \pm 2^{\circ}\text{F}$ [$10 \pm 1^{\circ}\text{C}$]. Test specimens at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] without delay.
8. Prepare sample as per manufacturer's recommendation. Prepare a specimen of 50-55 wet mil thickness. Cure specimens for 3 hours max at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] and $50 \pm 2^{\circ}\text{F}$ [$10 \pm 1^{\circ}\text{C}$]. Test specimens at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] without delay.
9. Prepare sample as per manufacturer's recommendation. Use method D, E, or F with a 2 inch loading fixture. Cure specimens for 24 hours at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] and $50 \pm 2^{\circ}\text{F}$ [$10 \pm 1^{\circ}\text{C}$]. Test specimens at $73 \pm 2^{\circ}\text{F}$ [$23 \pm 1^{\circ}\text{C}$] without delay.

10. To be established by each manufacturer for each individual component and combination of components.

5-11.2(3) Manufacturer's Certificate of Compliance

Submit a Manufacturer's Certificate of Compliance and supporting tests for the Binder Resin System and HFST aggregate demonstrating compliance with these specification requirements a minimum of 14 calendar days prior to the start of HFST Work.

5-11.2(4) Quality Control (QC) Plan

Submit a QC Plan to the Project Manager for approval at least 30 days prior to the placement. The QC Plan shall show proposed methods to control the equipment, materials, mixing, and paving operations to ensure conformance with these specifications. Discuss the QC Plan requirements at the pre-construction, pre-placement, and progress meetings. The QC Plan shall contain at a minimum the following information.

- (a) Key Personnel and contact information.
- (b) Moisture control methods of aggregate.
- I List of manufacturer recommendations for the following:
 - Method of Surface Preparation and required surface condition for adequate bonding;
 - Crack Repair and slurry requirements;
 - Weather, moisture and temperature requirements and a plan for the chance/or occurrence of a rain event;
 - Mixing ratio and application rates for polymer resin and aggregate;
 - Application methods; and
 - Curing time and requirements for opening to traffic.
- (d) Cleaning and maintenance schedule for truck mounted application machine, including metering and monitoring device(e) Corrective actions that will be taken for unsatisfactory construction practices and deviations from specifications.

The QC Plan shall designate a QC Manager, who shall have full authority to institute any action necessary for the successful operation of the QC Plan. The QC Manager shall be on the jobsite at all times during placement of the HFST.

A field technician shall be present at the job site unless otherwise approved in the QC Plan. The field technician shall be responsible for the required field quality control sampling and testing in conformance with the approved quality control plan and contract documents. All sampling shall be performed in the presence of and in locations as directed by the Engineer. Maintain and make available upon request complete records of sampling, testing, actions taken to correct problems, and quality control inspection results. Any deviation from the approved QC Plan shall be cause for immediate suspension of operations.

5-11.3 Construction Requirements**5-11.3(1) Equipment**

Provide a Truck Mounted Application Machine, air compressor, portable shot blast equipment, regenerative air sweeper and other necessary equipment to insure efficient

operation and construction to meet specified results. Provide equipment in sufficient number and capacities that will provide coordinated and uniform progress of the work. .

5-11.3(1)A Truck Mounted Application Machine

The HFST application machine shall be an HFST system manufacturer approved self-propelled, fully automated truck mounted application machine capable of continuously applying resin and aggregate at a uniform thickness and rate, respectively, in varying widths of up to 12 ft.

The application machine shall be capable of continuously and thoroughly mixing epoxy resin binder components to the ratio recommended by the epoxy resin binder manufacturer (± 2 percent by volume). The epoxy resin binder shall be uniformly applied to the pavement surface at a minimum coverage rate of 12 gals/min with a uniform application thickness of 55-65 mils.

The aggregate shall be applied by the same application machine which includes an aggregate drop spreader capable of mechanically continuously spreading bauxite aggregate at a rate of 12-15 lb/sqyd, with a maximum height from spreader to pavement surface of 12 in. to achieve proper spread of aggregate. The use of chip spreaders, vehicle tires, rollers, vibratory compactors or devices that throw loose aggregate onto any part of the live roadway lanes will not be allowed to apply the aggregate onto the wet uncured resin.

The HFST application machine shall be capable of the uniform application of the epoxy resin binder and aggregate at a minimum continuous application rate of 2,300 sq yd/hour.

5-11.3(1)B Air Compressor

The air compressor shall be capable of producing a minimum pressure of 90 psi at the end of the discharge hose. The air stream shall discharge onto the pavement through an appropriate air lance. The tool lubricator shall be bypassed and a filter installed on the discharge valve to keep water and oil out of the line.

5-11.3(1)C Shot Blasting Equipment

Furnish mono-directional or bi-directional electric powered shot blast machines with single or multiple blast wheels that cover a width of at least 2.5 feet per pass, and conform to EPA air pollution requirements by containing dust and steel abrasive media. If the equipment is not equipped for simultaneous bi-directional blasting, make separate passes in opposite direction to ensure equal cleaning on all side of exposed aggregate.

5-11.3(1)D Regenerative Air Sweeper (RAS)

The Regenerative Air Sweeper (RAS) shall be self-propelled with power brooms capable of cleaning the existing pavement and removing loose aggregate without dislodging the bonded HFST aggregate. The regenerative air vacuum sweeper shall blast re-circulated, filtered air through a vacuum head having a minimum width of 6.0 feet at a minimum rate of 10,000 cubic feet per minute. The RAS shall be capable of being used without water for dust suppression to ensure a dry surface will be maintained.

5-11.3(2) Labor**5-11.3(2)A Manufa'turer's Representative**

The manufacturer of the binder resin system is required to have a representative at the pre-construction or pre-placement meeting and at the construction site to provide technical assistance to the Engineer and Contractor personnel before placement of the high friction surface treatment and as necessary during the surface preparation, material placement and during any necessary corrective actions. Follow the recommendations of the manufa'turer's representative when installing the HFST. Instruct the manufa'turer's representative to alert the Contractor and the Engineer of anything that could affect the performance of the HFST.

5-11.3(2)B Applicator Qualifications

A minimum of 10 calendar days prior to the pre-placement meeting, the Contractor shall submit these following qualifications: a minimum of 3 projects with the owner's contact information on which the HFST Contractor has installed a cumulative minimum of 10,000 square yards of HFST using applicator vehicle equipped with an automated continuous application device within the past three years demonstrating a friction reading of 65 FN40R or higher when tested in accordance to ASTM E 274, or 0.80 when tested according to ASTM E 1911. An installer who does not meet this minimum shall be allowed if they are certified by the manufacturer to install and a manufa'turer's representative is onsite during all installations.

5-11.3(2)C Quality Control Personnel

QC Manager, Field Technician

5-11.3(3) Construction**5-11.3(3)A General**

Do not begin HFST installation until all materials and equipment necessary to perform the installation and all required repairs are at the job site.

- (a) Season, Weather & Temperature Limitations** – Apply the epoxy resin binder material on dry surfaces (including no condensation moisture from construction vehicles in front of binder application), when the ambient temperature is within the following range.

Minimum Temperature (surface and ambient): The minimum temperature at time of placement shall be 55 °F and rising, unless the epoxy resin manufacturer can provide test data to support installations at lower temperatures.

Maximum Temperature (surface and ambient): The maximum temperature at time of placement shall be 105 °F or when the anticipated weather conditions or pavement surface temperature would prevent the proper application of the surface treatment in accordance with the manufacturer's recommendations.

Ensure the epoxy resin components are capable of being mixed at lower than ambient temperatures in the event that the components are stored outdoors.

Do not place HFST within 72 hours of a rain event, and when rain is forecast within 24 hours of application. When there is a 40% or greater chance of rain forecasted within 24 hours of application the Contractor will discuss a plan of action as required by 5-06.2(4), Quality Control (QC) Plan. Do not place the high friction surface treatment if the material can't be applied, cured and open to traffic prior to the ambient temperature decreasing to 40°F, surface temperature decreasing to 50°F and/or it begins to rain; or the contractor will remove and replace said section of treatment.

There shall be no visible, or near surface moisture present in or on the pavement surface at the time of application of the HFST. A plastic sheet left taped in place for a minimum of two hours, according to ASTM D 4263, shall be used to identify moisture in the pavement.

- (b) Handling of Materials** - Deliver aggregate to the construction site in clearly labeled bags or sacks that are uniquely identifiable and shall include the following: manufactures batch #, lot # and date. Protect materials from moisture and contaminants. Protect the epoxy resin binder materials from temperatures according to the manufacturer's requirements.

Pre-Placement Meeting - Five (5) working days prior to the Contractor beginning the work, a pre-activity meeting will be held between the Contractor, resin binder system manufacturer's representative, the Engineer and such other interested parties as may be invited. The purpose of the pre-activity meeting will

- (c) It be:**

1. To review the initial progress schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for progress payment, notifications, approvals, submittals, etc.
4. To establish 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.

5-11.3(3)B Surface Preparation:

Prior to placement of the HFST remove, or protect as shown all reflective markers, durable pavement markings, and legends from pavement surfaces by hydro, sand or shot blasting. Cover or otherwise protect all drainage structures, utility covers, expansion joints, curbs, and any other structure within the enclosed surface area of HFST prior to HFST placement.

Temporarily block all drains and catch basins while preparing the surface and placing the HFST. Do not allow any sawing, sandblasting, shot-blasting, sweeping, water blasting, cleaning, flushing, or HFST material to enter drains, or catch basins.

The surface to receive the HFST shall be thoroughly clean, dry and free of all dust, oil, debris and other deleterious materials. Pavement surfaces contaminated with oils, greases, or other deleterious materials not removed by the surface preparation shall be washed with a detergent solution, rinsed with clean water, and dried using a hot compressed air lance.

Where HFST will be applied on either new ACP or new concrete surface or patches in a project, construct the HFST a minimum of 30 days after placement of underlying and adjacent pavement.

Clean asphalt pavement surfaces using mechanical sweepers and high pressure air wash with sufficient oil traps. Mechanically sweep all surfaces to remove dirt, loose aggregate, debris, and deleterious material. Vacuum sweep or air wash using a minimum of 180 cfm of clean and dry compressed air, all surfaces to remove all dust, debris, and deleterious material. Maintain the tip of the air lance within 12 inches of the surface.

Clean concrete pavement surfaces by shot blasting and vacuum sweeping. Shot blast all surfaces to remove all curing compounds, loosely bonded mortar, surface carbonation, and deleterious material. The prepared surface shall comply with the International Concrete Repair Institute (ICRI) standard for surface roughness CSP 5. After shot blasting, vacuum sweep or air wash, with a minimum of 180 cfm of clean and dry compressed air, all surfaces to remove all dust, debris, and deleterious material. Maintain air lance perpendicular to the surface and the tip of the air lance within 12 in. of the surface.

Do not allow HFST materials to cover or penetrate joints in concrete pavements.

Clean and fill all cracks greater than ¼ inch in width and/or depth. Fill cracks with a slurry created with the epoxy resin binder and aggregate specified herein. Once the slurry in the pretreated areas has gelled proceed with the installation of the high friction surface treatment.

Do not allow general traffic on the prepared pavement surfaces.

A prime coat shall be applied if required by the epoxy resin binder system manufacturer. The prime coat shall be applied in accordance with the epoxy resin binder system manufacturer's recommended application procedures.

Do not place HFST on new ACP or concrete pavements prior to the elapse of a 30 calendar day cure period.

5-11.3(3)C Installation

The binder resin system shall be mixed and placed onto the pavement using a Truck Mounted Application Machine at a uniform application thickness of 50-65 mils (25-32 sf /gal). If recommended by the Binder manufacturer, use a heated metering pump. The binder resin system shall be blended and mixed within 2% of the ratio recommended by the manufacturer and shall be continuously applied once blended. Flow meter readings shall be recorded and supplied to the Engineer.

Immediately and prior to the epoxy resin system gelling, apply the calcined bauxite aggregate using the same integrated application truck and at a uniform rate of 12-15 lbs. per square yard. Completely cover the Binder Resin System with the aggregate to achieve a uniform surface with no exposed resin binder visible on the surface.

It is the responsibility of the HFST installer to ensure full embedment of the calcined bauxite aggregate.

Irregular areas or areas outside the travel lane of less than 250 square yards in area that are inaccessible to truck mounted application machine may be placed by hand methods in accordance with the epoxy resin binder system manufacturer's recommendations.

Cover wet spots with the aggregate prior to the gelling of the epoxy resin binder system. Equipment and traffic shall not be allowed on the HFST until cured to the epoxy resin binder system manufacturer's recommendations.

A new continuous section of HFST placement shall be delineated whenever the following occur:

- Installation process stops for a period of time exceeding the curing time of the resin binder, resulting in a cold joint in the HFST.

Any time there is a change in the installation process, such as a switch from machine applied to hand applied or hand applied to machine applied

- plied

Place the calcined bauxite fully covering the polymer binder such that none of the binder is exposed. Do not allow the mixed material to separate, cure, dry, be exposed or otherwise harden in such a way as to impair retention and bonding of the high friction surfacing aggregate. Remove and replace any section of wet, uncured resin that is contacted by foreign material or becomes contaminated at the contractor's expense.

Recovered, uncontaminated, clean and dry calcined bauxite aggregate may only be reused once. Recovered aggregate must be blended with new aggregate at a rate of 3:1 (three parts of new calcined bauxite to one part recovered bauxite). Provide a written record of the recovered aggregate and mark containers holding the recovered aggregate as "Recovered Calcined Bauxite" with the project number.

5-11.3(3)D Clean up

Remove excess and loose aggregate from the traveled way and shoulders using the Regenerative Air Sweeper following initial installation once the application has cured. Sweep an application of HFST on highway ramps a second time 24-48 hours after application. Sweep the entire HFST application area a final time 3-5 days after installation and as directed by the Engineer.

5-11.3(3) E- Post-installation Dynamic Friction Testing

The agency will use Dynamic Friction Testing (DFT) to measure the friction characteristics of the high friction surface treatment in accordance with ASTM E 1911 within five days after the placement (once the surface is deemed cured) of each continuous section and again 90 days after the initial test of each continuous section. The initial test of the surface may be conducted as early as the same day and as late as the 5th day. The earliest the Agency may conduct the second round of testing on each continuous section shall be a minimum of 90 days after the installation. A minimum DFT result of 0.90 is required within 5 days after placement of the high friction surface treatment and a minimum of 0.80 is required 90 days after completion of the high friction surface treatment for each reading.

- a) The DFT testing will be conducted on each continuous section as stated below.

The first test location should be within the first 25 LF of the continuous section, and the second test should be at least 200 LF beyond the first test, unless the continuous section is less than 225 LF, in which case it should be located at the approximate midpoint of the continuous section. Each subsequent test should be conducted 200 LF beyond the last test for each continuous section. If the first four DFT testing results are satisfactory, the frequency of testing may be decreased to one DFT test for every 1000 LF as approved by the Engineer.

- b) near.

Each test location shall contain 3 separate tests. Each test shall report the DFT values for 12, 24, and 36

- c) mph.

Testing will be conducted in right or left wheel path of a lane, approximately 3 LF from the centerline or shoulder stripe or in the apparent wheel

- d) path.

Additional DFT tests will be conducted at the location of any surface anomalies or deficiencies, at the discretion of the Engineer. Anomalies which may require an additional test from the agency include but are not limited to

- e) d to:

- 1) Locations where the resin shows through the aggregate.

Locations of surface defects/impressions from construction operations (e.g. wheel and foot traffic)

- 2) cracks).

Locations of manual patching after completion of installation

- 3) tion.

Test locations where the friction values are as described in item (g) below

- 4) below.

- f) Note the location of any continuous sections where any friction values fall below the specification limit of 0.90 at 35 mph.

Note any continuous sections where the friction values from the two DFT tests differ by more than 10 percent, regardless of whether the friction value was above the

specification limit. Note any continuous sections with a single DFT test where the friction value differs by more than 10 percent from the previous continuous section.

g) tion.

5-11.3(3)F Post-installation Bond Strength Test

Before opening to traffic, perform a minimum of two bond strength tests and no less than two bond tests per 500 feet of each HFST placement per ASTM D 7234 for each complete placement in the presence of and at locations designated by the Engineer. Cut 2 or 3 inch diameter cores and conduct bond tests on the cores.

The bond tests consist of:

- Coring through the HFST and approximately 1 inch into the existing pavement surface.
- Attaching a device to the top of the core.
- Exerting a tensile load to the core sufficient to cause failure or achieve 250 psi, whichever occurs first.

Perform bond tests when the pavement surface temperature is less than 80 °F.

A successful test is the failure of the substrate, or 250 psi loading without failure of the HFST-substrate bond.

After coring and testing, restore the area voided by the cores by blowing with compressed air and filling with HFST material.

Additional bond strength tests may be required by the Engineer. Additional bond strength tests, performed by the Contractor when required by the Engineer that show successful results will be paid in accordance with Section 1-09.6. The Engineer may self-perform bond strength tests, in addition to those performed by the Contractor to the same limits shown above.

5-11.3(4) Maintenance**5-11.3(4)A Correction of Defects**

Correct all defects in material and work, as directed, at no additional cost to the Agency, according to the following:

Remove and replace high friction surface treatment that the Engineer determines has any raveling, delamination, streaking, bond test failure or failure to meet the DFT friction values following initial testing and the testing done after a minimum of 90 days following placement. Ensure the minimum replacement is the full lane width and no less than ten feet long and as approved by the Engineer. Replace with acceptable high friction surface treatment at the Contractor's expense. Replaced areas will be retested and evaluated according to 5-06.3(3)E and 5-06.3(3)F for acceptance or further corrective action.

Any roadway features disturbed by the work or the Contractor's operations shall be restored in like kind materials and design as directed by the Engineer at no additional cost to the agency.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with these subsections:

5-11.4 Measurement

The quantities of high friction surface treatment will be measured on a square yard basis, and will be the sealed surface area, and will be limited to the neat lines and dimensions shown or directed.

5-11.5 Payment

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

"High Friction Surface Treatment", per Square Yard

The unit Contract price per square yard for "High Friction Surface Treatment" shall be full compensation for all costs incurred to carry out the requirements of Section 5-06 including but not limited to furnishing and placing all materials and equipment, labor, testing, retesting, road surface preparation and incidentals necessary to complete the work as specified.

Payment for work done under this section will be limited to 90% upon passing 5-day DFT testing and 100% following passing 90 day DFT testing

No separate or additional payment will be made for reinstallation and retesting of HFST where the initial installation was determined to be defective.

END OF DIVISION 5

DIVISION 6 Structures**6-02 Concrete Structures****6-02.1 Description**

(January 2017 City of Auburn GSP)

Supplement this section with the following:

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

6-02.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

“Cement Concrete Wall” shall be measured by the square foot, from the bottom of the concrete footing to the top of the finished wall.

6-02.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

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

“Cement Concrete Wall”, Per Square Foot

The Unit contract price per square foot for “Cement Concrete Wall” shall be full pay for all labor, tools, equipment and materials required to construct the wall, including all costs for formwork, weep holes, reinforcement and other integral items to the construction and function of the wall structure.

6-07 PAINTING**6-07.1 Description**

(February 2024 City of Auburn GSP)

Supplement this section with the following:

This work shall consist of painting and applying painting systems to metal roadway luminaires and metal luminaire parts to downtown decorative lighting and traffic signals.

6-07.2 Materials

(January 2018 City of Auburn GSP)

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 GSP)

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 GSP)

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 GSP)

Add the following new section:

6-07.3(15) 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

6-07.5 Payment

(City Contracts, January 2018 City of Auburn GSP)

Supplement this section with the following:

Measurement and payment for all painting and finishes shall be included in the lump sum bid item price for "Traffic Signal System_____" including all labor, equipment, materials and tools necessary to complete the work required by the Specifications.

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 GSP)

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 GSP)

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.

7-01.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

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

"Trench Drain", Per Linear Foot

(City Contracts, August 2016, City of Auburn GSP)

Revise reference to payment for Drain Pipe to the following:

The unit contract price for "Drain Pipe - ____In. Diam." Per linear foot shall be full pay for all work to complete the installation, including structure excavation and installation of bedding and backfill.

The unit contract price for "Trench Drain" per linear foot shall be full pay for all work to complete the installation, including structure excavation and installation of bedding and backfill.

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

7-04 Storm Sewers

7-04.2 Materials

(October 2021 City of Auburn GSP)

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:

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)
Solid Wall Polyvinyl Chloride (PVC) Pipe, C900	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 50	9-05.13 (Ductile Iron Sewer Pipe)
High Density Polyethylene Pipe (HDPE)	9-05.23 (High Density Polyethylene Pipe (HDPE))
Triple Wall Polypropylene Culvert and Storm Sewer Pipe	9-05.24(1) (Polypropylene Culvert Pipe and Storm Sewer Pipe)

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 GSP)

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 GSP)

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.

7-04.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

The television inspection work will be measured per linear foot.

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

7-04.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

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

“Solid Wall PVC Storm Pipe, SDR-35, ____ In. Diam.”, Per Linear Foot

“Solid Wall PVC Storm Pipe, SDR-21, ____ In. Diam.”, Per Linear Foot

“Ductile Iron Pipe, Special Class 52, Storm Pipe, ____ In. Diam.”, Per Linear Foot

“Storm Sewer Television Inspection”, Per Linear Foot

The unit contract price per linear foot for “Storm Sewer Television Inspection” shall be full pay for all work to complete the Television Inspection including all associated cleaning and flushing.

(City Contracts, October 2021 City of Auburn GSP)

Revise references to payment for storm sewer pipe to the following:

The unit contract price per linear foot for storm sewer pipe of the kind and size specified shall be full pay for all work to complete the installation including the following:

- Furnishing and installing pipe, pipe fittings, and other pipe appurtenances.
- Adjusting inverts to manholes and catch basins
- Testing of pipes
- Sawcutting (including additional sawcutting for pavement restoration)
- Trenching
- Structure Excavation Class B (including haul)
- Installing bedding and backfill materials within the trench
- Furnishing and installing temporary patches or steel plates over unfinished portions of trenches crossing traveled ways
- Disposal of surplus trench excavation
- General pipe installation work including plugs and connections
- Plugging existing pipes for abandonment
- Temporary plugs, bypass pumping, or both
- Normal Dewatering and disposal of groundwater

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

7-05.2 Materials

(November 2020 City of Auburn GSP)

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) for Sanitary Sewer and EJ product #00370782 (Eon #3717ZPT

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

Frame and #3705CPT Cover) for Storm Drainage, 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 GSP)

Add the following new section:

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 GSP)

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

(November 2020 City of Auburn GSP)

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.

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

The frame or ring shall be placed on concrete blocks and/or wedged up to the desired grade. When the Contract Plans call for rubberized adjustment risers, they shall be the Infra-Riser manufactured by EJCO, or approved equivalent. 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 GSP)

Supplement this section with the following:

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 GSP)

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 GSP)

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).

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

7-05.4 Measurement

(City Contracts, August 2016 City of Auburn GSP)

Replace the first paragraph with the following:

Manholes, catch basins, and other structures listed in this section will be measured per each complete structure installed without adjustment for height.

(City Contracts, April 2019 City of Auburn GSP)

Replace the third paragraph with the following:

No measurement will be made for adjustment of new structures. Adjustment of existing manholes and catch basins will be measured per each.

(City Contracts, August 2016 City of Auburn GSP)

Replace the fourth paragraph with the following:

No measurement for structure excavation class B or structure excavation class B including haul will be made.

7-05.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

Payment will be made in accordance with Section 1-04.1 (Intent of the Contract) for the following bid items:

“Manhole Ring and Solid Cover”, Per Each

“Trash Rack”, Per Each

“Connect to Existing Catch Basin”, Per Each

“Connect to Existing Manhole”, Per Each

The unit contract prices per each for “Connect to Existing Catch Basin” and “Connect to Existing Manhole” shall be full pay for all work to complete the connection including all materials, labor, and equipment to extend the new pipe and connect to the existing structure.

The unit contract price per each for “Manhole Ring and Solid Cover” shall be full pay for all work, equipment and materials necessary to remove the existing manhole ring and cover and furnish and install a new manhole ring and cover, and to complete final adjustment to finish grade (including asphalt concrete patches).

(City Contracts, August 2022 City of Auburn GSP)

Revise references to payment for manholes, catch basins, and other structures listed in this section to the following:

The unit contract price per each for manholes, catch basins, and other structures listed in this section shall be full pay for all work to complete the installation including the following:

- Furnishing and installing structures, and structure accessories
- Testing of structures

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

- Sawcutting (including additional sawcutting for pavement restoration)
- Trenching
- Structure Excavation Class B (including haul).
- Installing bedding and backfill materials
- Furnishing and installing temporary patches or steel plates over unfinished portions of trenches crossing traveled ways
- Disposal of surplus excavation
- General structure installation work
- Plugging existing pipes for abandonment
- Extending existing pipes for making connections
- Connecting both new and existing pipes to the new drainage structure
- Temporary plugs, bypass pumping, or both
- Normal Dewatering and disposal of groundwater
- Protection of the structures during other work including construction of the roadway subgrade.
- Adjustment of the castings to final grade, including the castings and the surface restoration (including HMA pavement patching)

7-07 Cleaning Existing Drainage Structures

7-07.5 Payment

(City Contracts, November 2019 City of Auburn GSP)

Delete this section and replace it with the following:

Costs for the cleaning of facilities installed by the Contractor are included in the costs for those facilities and no separate payment for cleaning those facilities shall be made. Costs for cleaning existing facilities that accumulate debris, obstruction due to the Contractor's activities or due to inadequate temporary erosion and sedimentation control measures are the sole responsibility of the Contractor and no payment shall be made.

7-08 General Pipe Installation Requirements

7-08.1 Description

(January 2017 City of Auburn GSP)

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.

7-08.2 Materials

(January 2018 City of Auburn GSP)

Delete this section and replace it with the following:

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

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 GSP)

The second sentence of the third paragraph is deleted.

(January 2018 City of Auburn GSP)

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 GSP)

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 GSP)

Supplement this section with the following:

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 GSP)

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

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 GSP)

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 GSP)

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.

(August 2016 City of Auburn GSP)

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.

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

“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 GSP)

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.

7-08.3(4) Plugging Existing Pipe

(January 2018 City of Auburn GSP)

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.

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.

(November 2019 City of Auburn GSP)

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

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

surface thickness. Unless otherwise shown on the plans, the minimum asphalt concrete pavement replacement section shall be 2 inches thick.

7-08.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

Measurement for "Imported Pipe Trench Backfill", "Select Pipe Trench Backfill", "Pipe Zone Bedding" and "Pipe Foundation Material" will be by the ton.

"Controlled Density Fill (CDF) for Trench Backfill" and "Controlled Density Fill (CDF) for Filling Pipe" will be measured by the cubic yard.

7-08.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Delete this section and replace it with the following:

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

"Pipe Foundation Material", Per Ton

"Pipe Zone Bedding", Per Ton

"Select Pipe Trench Backfill", Per Ton

"Imported Pipe Trench Backfill", Per Ton

"Controlled Density Fill (CDF) for Trench Backfill", Per Cubic Yard

"Controlled Density Fill (CDF) for Filling Pipe", Per Cubic Yard

The unit contract price for "Pipe Foundation Material", "Pipe Zone Bedding", "Select Pipe Trench Backfill", "Imported Pipe Trench Backfill", "Controlled Density Fill (CDF) for Trench Backfill" shall include all costs associated furnishing the material and all costs associated with the over-excavation and disposal of the surplus and unsuitable trench excavation replaced by these items.

The unit contract price for "Controlled Density Fill (CDF) for Filling Pipe" shall include all costs associated with furnishing and placing the material, including labor and equipment.

All costs associated with trenching, installing bedding and backfill materials within a trench, disposal of surplus trench excavation, general pipe installation work including "Normal Trench Dewatering," plugs and connections, and plugging existing pipes for abandonment shall be included in the unit contract price for the type and size of pipe installed.

"Structure Excavation Class B" and "Structure Excavation Class B Including Haul" for pipe trenching in accordance with all provisions of Section 2-09 (Structure Excavation) shall be included in the unit contract price for the type and size of pipe installed.

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

Payment for pipe trench restoration will be made under the applicable items listed in the Proposal Form. If no pay items for the materials required for the trench restoration are included in the bid proposal, pipe trench restoration shall be included in the unit contract price for the type and size of pipe installed.

7-09 Water Mains

7-09.1 Description

(January 2017 City of Auburn GSP)

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 GSP)

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 GSP)

Supplement this section with the following:

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 Pipe

(January 2017 City of Auburn GSP)

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 GSP)

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

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 GSP)

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 GSP)

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 GSP)

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.

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

(December 2021 City of Auburn GSP)

Supplement this section with the following:

The City will take bacteriological test samples. If no appropriate appurtenance is available, the Contractor may be required to install corporation stops in the main at all locations required to take bacteriological test samples. If original test samples prove unsatisfactory, a charge of \$100.00 will be made for processing each additional sample.

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

7-09.3(24)J Preventing Reverse Flow

(November 2019 City of Auburn GSP)

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 9-38 (Submittal Approval). 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 GSP)

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.

(July 2021 City of Auburn GSP)

Add the following section:

7-09.3(25) Pipe Casing

Steel casing pipe shall meet ASTM A-53, having a minimum tensile strength of 60,000 psi and a minimum yield strength of 35,000 psi. Minimum wall thicknesses for casing diameter 14" shall be 0.25". All joints shall be welded. Provide shop applied polyamide epoxy-coal tar anticorrosive coating on casing exterior conforming to AWWA C210. Minimum coating thickness of 16 mils dry film thickness (DFT), do not exceed manufacturer's maximum thickness. A ductile iron casing meeting the requirements of water pipe may be used in lieu of steel.

The carrier pipe shall be installed with casing spacers as shown on the plans. Spacers shall be designed for center restraint and provide a maximum space of 1-inch between the upper runners and the inside of the steel casing. The spacers shall prevent the pipe bells from touching the inside of the casing. Metal components of casing spacers shall be Type 304 (18-8) 14-gauge (minimum) stainless steel. The liner shall be neoprene rubber or PVC, and the runners shall be polyethylene.

Where casing spacers must be custom designed to account for a specific grade of the carrier pipe inside the casing, submittals must be provided which include drawings and dimensions for each of the casing spacers and the respective location of each of the spacers relative to the casing and carrier pipe.

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

Casing end seals shall be 1/8-inch thick synthetic rubber, pull on type, with stainless steel bands and clamps.

7-09.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

Measurement for payment of "Connect to Existing Water Main" will be per each.

(City Contracts, July 2021 City of Auburn GSP)

Supplement this section with the following:

Cased crossings will be measured by the linear foot of casing installed.

7-09.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

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

"Connect to Existing Water Main", Per Each

"2-In. Blowoff Assembly", Per Each

The unit contract price per each for "Connection to Existing Water Main" shall include all costs for furnishing labor, materials, and equipment necessary to cut into the main and make the connection complete in place including verification of existing condition, temporary blocking, capping, temporary blow offs and other items required for testing including all required notifications to water users of disruptions to their service.

The unit contract price per each for "2-Inch Blow Off Assembly" shall be full pay for all work to install the blow off assembly, including but not limited to excavating, backfilling, laying and jointing pipe, tapping the main, corporation stop, pipe and fittings, gate valve, meter box, and cover and cleanup.

The cost of valve assemblies shall be paid for under separate bid items.

Where bolted flanged joint pipe is used on this project, the flange shall be attached to "Special Class 53 D.I. Pipe" and payment will be at the same rate as the unit contract price for "Special Class 52 D.I. Pipe", unless otherwise specified.

(July 2021 City of Auburn GSP)

Supplement this section with the following:

"Cased Crossing" Per LF

The unit contract price per linear foot for "Cased Crossing" shall include all costs for furnishing labor, materials, and equipment necessary to construct a cased crossing in accordance with the detail shown on the Plans, where designated on the Plans or by the Engineer.

(City Contracts, October 2021 City of Auburn GSP)

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

All references to payment for water pipe is revised to the following:

The unit contract price per linear foot for water main pipe listed in this section shall be full pay for all work to complete the installation including the following:

- Furnishing and installing pipe, pipe accessories, and other appurtenances.
- Sawcutting (including additional sawcutting for pavement restoration)
- Trenching
- Structure Excavation Class B (including haul).
- Installing bedding and backfill materials
- Furnishing and installing temporary patches or steel plates over unfinished portions of trenches crossing traveled ways
- Disposal of surplus excavation
- General pipe installation work
- Plugging existing pipes for abandonment
- Extending existing pipes for making connections
- Preparation and implementation of reverse flow prevention plan
- Preparation and implementation of a de-chlorination plan
- Normal Dewatering and disposal of groundwater
- Disinfection, flushing and testing of pipe
- Protection of the pipe during other work including construction of the roadway subgrade.

7-12 Valves for Water Mains

7-12.3 Construction Requirements

(January 2018 City of Auburn GSP)

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 GSP)

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

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 GSP)

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.

7-12.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

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

“Adjust Valve Box”, Per Each

The unit contract prices for “Adjust Valve Box” shall be full pay for all work including providing all materials, equipment and labor to lower the structure b120nclude120laning and adjust structures to finish grade after the overlay is complete (including asphalt concrete patches).

(January 2017 City of Auburn GSP)

The second paragraph is revised to read:

The unit contract price per each for the valves specified shall be full pay for all work, equipment, and materials to furnish and install each valve complete in place on the water main, including trenching, jointing, blocking of valve, painting, disinfecting, hydrostatic testing, valve box, valve wrench extension box, marker post, and final adjustment to finish grade (including asphalt concrete patches).

7-14 Hydrants

7-14.3 Construction Requirements

(January 2017 City of Auburn GSP)

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

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

be 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

(February 2024 City of Auburn GSP)

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:

For Public Fire Hydrants: Safety Yellow conforming to Sherwin Williams Industrial Enamel B54 Y 37, or approved equivalent.

For Private Fire Hydrants: Safety Red conforming to Sherwin Williams Industrial Enamel B54 R 38, or approved equivalent.

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 GSP)

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.

7-14.5 Payment

(City Contracts, January 2018 City of Auburn GSP)

References to payment for “Hydrant Assembly” are revised to the following:

The unit contract price per each for “Hydrant Assembly” shall be full pay for all work to furnish and install fire hydrant assemblies, including all costs for valves, restrain systems, tees, tie rods, storz adapter, concrete blocks, gravel, painting, type 2BB pavement marker(s),

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

connecting to the water main, and all pipe required for the complete installation- of the hydrant assembly.

References to payment for "Resetting Existing Hydrant" are revised to the following:

The unit contract price per each for "Resetting Existing Hydrant" shall be full pay for all work to reset the existing hydrant, including restrain system, painting, type 2BB pavement marker(s), reconnecting to the main, and all pipe and other materials required.

References to payment for "Moving Existing Hydrant" are revised to the following:

The unit contract price per each for "Moving Existing Hydrant" shall be full pay for all work to move the existing hydrant, including new hydrant lateral tee, restraint system, painting, 2BB pavement marker(s), connecting to the main, and all pipe and other materials required.

References to payment for "Hydrant Extension" are revised to the following:

The unit contract price per each for "Extensions" shall be full pay for all work including materials, labor, and equipment required to extend the hydrant vertically.

7-15 Service Connections

7-15.2 Materials

(September 2021 City of Auburn GSP)

Replace the reference to Service pipe from the list of materials and replace with the following:

Service Pipe & Tail Piece	9-30.6(3)A (Copper Tubing), 9-30.6(3)B (Polyethylene Tubing)
---------------------------	---

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.

7-15.3 Construction Requirements

(January 2017 City of Auburn GSP)

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,

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

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.

7-15.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

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

“Water Service Connection $\frac{3}{4}$ In. Meter with 1 In. Diam. Service Line”, Per Each

“Water Service Connection ____ In. Diam.”, Per Each

“Dual Water Service Connection Renewal $\frac{3}{4}$ In. Diam.”, Per Each

“Water Service Connection Renewal ____ In. Diam.”, Per Each

The unit contract price for each size of “Water Service Connection $\frac{3}{4}$ In. Meter with 1 In. Diam. Service Line “ shall be per each, in place, and shall be full compensation for all labor, equipment, and materials necessary to furnish and install the new water service including tap and corporation stop, 1-inch service line from the main to the meter, 1-inch to $\frac{3}{4}$ inch Mueller adaptors, 1 inch curb valve, 1 inch meter yoke with angle check valve and angle valve, traffic bearing meter box and lid, tailpiece, shutoff valve assembly, reconnecting the existing service or capping the end as appropriate, and reconnecting the old meter to the new service line. The City will provide and set $\frac{3}{4}$ inch meters for new 1 inch diameter service connections.

The unit contract price for each size of “Water Service Connection, ____ In. Diam.” Shall be per each, in place, and shall be full compensation for all labor, equipment, and materials necessary to furnish and install the new water service including tap and corporation stop, service line from the main to the meter, adaptor, curb valve, meter yoke with angle check valve and angle valve, meter box, tailpiece, and reconnecting the existing service or capping the end as appropriate. The City will provide and set $\frac{3}{4}$ inch diam. Meters for new 1 inch diam. Service connections.

The unit contract price for each size of “Water Service Connection Renewal ____ In, Diam.” Shall be per each, in place, and shall be full compensation for all labor, equipment and materials necessary to renew existing water services, including new service line, from the main to the meter, curb valve, meter yoke with angle check valve and angle valve, meter box, tailpiece, and reconnecting the existing service.

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

7-17 Sanitary Sewers

7-17.2 Materials

(October 2021 City of Auburn GSP)

Delete this section and replace it with the following:

Only the pipe materials listed below are approved for use on City sanitary sewer systems.

Materials shall be in accordance with following Sections:

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)
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)
Solid Wall Polyvinyl Chloride (PVC) Pipe, C900	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	9-05.13 (Ductile Iron Sewer Pipe)
High Density Polyethylene Pipe (HDPE)	9-05.23 (High Density Polyethylene Pipe (HDPE))

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 GSP)

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 GSP)

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 GSP)

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

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

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 GSP)

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 GSP)

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.

7-17.3(2)H Television Inspection

(May 2019 City of Auburn GSP)

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.

The acceptable completion of all applicable channels and grout

2. work.

The acceptable debris removal, cleaning, and flushing of all applicable pipes and struct

3. ures.

The television inspection requirements shall include the provisions of:

1. The television camera shall be a pan and tilt camera system specifically designed and constructed for sewer environments.

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

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

2. pipe.

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 process

3. dure.

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 P

4. lans.

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

8. 1. A clear color DVD or USB Flash Drive 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 indica.
8. 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.

7-17.4 Measurement

(City Contracts, January 2017 City of Auburn GSP)

Supplement this section with the following:

Television inspection work will be measured per linear foot.

7-17.5 Payment

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

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

“PVC Sanitary Sewer Pipe, SDR-35, ____ In. Diam.”, Per Linear Foot

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

“PVC Sanitary Sewer Pipe, SDR-21, ____ In. Diam.”, Per Linear Foot

“Ductile Iron Pipe, Special Class 52 Sanitary Sewer Pipe, ____ In. Diam.”, Per Linear Foot

“HDPE Sanitary Sewer Pipe, ____ In. Diam.”, Per Linear Foot

“Sanitary Sewer Television Inspection”, Per Linear Foot

The unit contract price per linear foot for “Sanitary Sewer Television Inspection” shall be full pay for all work to complete the Television Inspection including all associated cleaning and flushing.

(City Contracts, August 2018 City of Auburn GSP)

Revise references to payment for sanitary sewer pipe to the following:

The unit contract price per linear foot for sanitary sewer pipe of the kind and size specified shall be full pay for all work to complete the installation including the following:

- Furnishing and installing pipe, pipe fittings, and other pipe appurtenances.
- Adjusting inverts to manholes
- Testing of pipes
- Sawcutting (including additional sawcutting for pavement restoration)
- Trenching
- Structure Excavation Class B (including haul).
- Installing bedding and backfill materials within the trench
- Furnishing and installing temporary patches or steel plates over unfinished portions of trenches crossing traveled ways
- Disposal of surplus trench excavation
- General pipe installation work including plugs and connections
- Plugging existing pipes for abandonment
- Temporary plugs, bypass pumping, or both
- Normal Dewatering and disposal of groundwater

7-18 Side Sewers

7-18.3 Construction Requirements

7-18.3(1) General

(January 2017 City of Auburn GSP)

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.

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

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 GSP)

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(3) Testing

(January 2017 City of Auburn GSP)

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.

7-19 Sewer Cleanouts

7-19.3 Construction Requirements

(January 2018 City of Auburn GSP)

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****8-01.3 Construction Requirements**

(February 2018 City of Auburn GSP)

Supplement this section with the following:

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

(November 2019 City of Auburn GSP)

The second to last paragraph is revised to read:

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

8-01.3(1)A Submittals

(November 2019 City of Auburn GSP)

Supplement this section with the following:

The Contractor's TESC plan shall be submitted to the Engineer for approval per Section 9-38 (Submittal 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)C Water Management**8-01.3(1)C1 Disposal of Dewatering Water**

(September 2019 City of Auburn GSP)

The first paragraph is revised to read:

When uncontaminated groundwater is encountered in an excavation on a project, when approved by the Engineer, it may be infiltrated within vegetated areas of the right of way not designated as Sensitive Areas or incorporated into an existing stormwater conveyance system at a rate that will not cause erosion or flooding in any receiving surface water.

(November 2019 City of Auburn GSP)

Add the following new section:

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

The Contractor shall amend, revise, or replace the City provided Draft Storm Water Pollution Prevention Plan, (Draft SWPPP), see Appendix to these Special Provisions, to address the Contractor's specific means and methods of completing the work and to comply with both the Construction Stormwater General Permit (CSWGP) included as an Appendix to these Special Provisions, 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 9-38 (Submittal Approval). 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 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 GSP)

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) Temporary Seeding and Mulching**8-01.3(2)B Temporary Seeding***(January 2017 City of Auburn GSP)*

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> in Mixture	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 GSP)*

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.

8-01.4 Measurement**8-01.4(1) Lump Sum Bid for Project (No Unit Items)**

(City Contracts, November 2019 City of Auburn GSP)

This Section is deleted.

8-01.4(2) Item Bids

(November 2019 City of Auburn GSP)

The first paragraph is deleted.

(City Contracts, January 2018 City of Auburn GSP)

Supplement this section with the following:

“Sediment Trap” shall be measured per square yard of trap bottom surface area.

No specific unit of measurement shall apply to the lump sum contract price of CSWGP documentation compliance or TESC Plan.

8-01.4(3) Reinstating Unit Items with Lump Sum Erosion Control and Water Pollution Prevention

(City Contracts, November 2019 City of Auburn GSP)

This Section is deleted.

8-01.4(4) Items not included with Lump Sum Erosion Control and Water Pollution Prevention

(City Contracts, November 2019 City of Auburn GSP)

This Section is deleted.

8-01.5 Payment**8-01.5(1) Lump Sum Bid for Project (No Unit Items)**

(City Contracts, November 2019 City of Auburn GSP)

This Section is deleted.

8-01.5(2) Item Bids

(City Contracts, April 2017 City of Auburn GSP)

Supplement this section with the following:

“TESC Plan”, Per Lump Sum

“Sediment Trap”, Per Square Yard

“High Visibility Fence”, Per Linear Foot

“General Permit Documentation Compliance”, Per Lump Sum

The lump sum price for “TESC Plan” shall be full payment for all costs to prepare, update, and modify/maintain the ‘living’ Temporary Erosion and Sediment Control Plan, and included Dewatering Plan elements, when needed, for the duration of the Contract.

Payment for “Sediment Traps” shall be full payment for all labor, tools, and materials to construct a sediment trap and maintain it for the duration of the Project.

The lump sum contract price for “General Permit Documentation Compliance” shall be full pay to maintain and update the SWPPP and file all electronic reports necessary to comply with the permit conditions with the Washington State Department of Ecology.

No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.

(City Contracts, November 2019, City of Auburn GSP)

References to payment for street cleaning is revised to the following:

Per Section 1-07.23(1)A (Dust and Mud Control and Street Cleaning), no additional payment will be made for Street Cleaning.

8-01.5(3) Reinstating Unit Items with Lump Sum Erosion Control and Water Pollution Prevention

(November 2019 City of Auburn GSP)

This Section is deleted.

8-01.5(4) Items not included with Lump Sum Erosion Control and Water Pollution Prevention

(November 2019 City of Auburn GSP)

This Section is deleted.

8-02 Roadside Restoration

8-02.1 Description

(January 2017, City of Auburn GSP)

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 GSP)

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

(February 2024, City of Auburn GSP)

Supplement this section with the following:

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

Depths of topsoil placement shall be as shown in the plans. Where no depths are identified in the plans, 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.

8-02.3(4)A Topsoil Type A

(January 2017, City of Auburn GSP)

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 GSP)

Supplement this section with the following:

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

8-02.3(5) Roadside Seeding, Lawn and Planting Area Preparation

(February 2018, City of Auburn GSP)

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 GSP)

Add the following new section:

8-02.3(5)D 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) Mulch and Amendments

(January 2017, City of Auburn GSP)

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, Lawn and Seeding Areas

(January 2017, City of Auburn GSP)

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 GSP)

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(9) Seeding, Fertilizing, and Mulching

(January 2017, City of Auburn GSP)

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(10) Lawn Installation

(January 2017, City of Auburn GSP)

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 9-14.7(4) (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(10)C Lawn Establishment

(January 2017, City of Auburn GSP)

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(10)D Lawn Mowing

(January 2017, City of Auburn GSP)

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 GSP)

Add the following new section:

8-02.3(10)E 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.

8-02.3(11) Mulch

(January 2017, City of Auburn GSP)

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 GSP)

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

(August 2016, City of Auburn GSP)

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.

Plant establishment includes only those plants listed with "PSIPE _____" (Plant Selection Including Plant Establishment) in the Proposal.

(August 2016, City of Auburn GSP)

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 GSP)

Supplement this section with the following:

Completion of the Plant Establishment period will be certified, in writing, by the Engineer.

8-02.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

Measurement of "Root Control Barrier" will be by the linear foot completed in place.

Measurement of "Tree Grate and Frame" will be measured per each after installation completed and accepted.

No unit of measure shall apply to "Roadside Restoration".

(City Contracts, August 2016, City of Auburn GSP)

References to measurement of topsoil and mulch in this section are revised to the following:

Topsoil Types " _ " will be measured by the square yard for the surface area of the landscape areas multiplied by the specified topsoil thickness for seeded and planting areas, converted to cubic yards.

Bark mulch will be measured by the cubic yard for the surface area of the landscape area multiplied by the specified bark thickness, converted to cubic yards.

8-02.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

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

"Topsoil Type _", Per Cubic Yard

"Root Control Barrier", Per Lineal Foot

"Seeding, Fertilizing, and Mulching", Per Square Yard

"Bark Mulch", Per Cubic Yard

"Tree Grate and Frame", Per Each

"Roadside Restoration", by force account as provided in Section 1-09.6.

(City Contracts, September 2016, City of Auburn GSP)

References to payment for topsoil is revised to the following:

The unit contract price per cubic yard for "Topsoil Type _" shall be full pay to furnish and install Topsoil including all costs associated with preparing the Topsoil for installation, for preparing the site prior to placement of the Topsoil including removal of all excess material and debris, and for all costs associated with supplying and using required soil amendments, and for furnishing all labor, tools, equipment, and materials necessary to complete the work as specified.

The unit Contract price per cubic yard for "Bark Mulch" shall be full pay for furnishing and spreading the mulch onto the existing soil.

(City Contracts, August 2018, City of Auburn GSP)

References to partial payment for plants that include plant establishment is deleted.

8-03 Irrigation Systems

8-03.1 Description

(January 2017, City of Auburn GSP)

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 GSP)

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(4) Irrigation Water Service

(January 2017, City of Auburn GSP)

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(5) Irrigation Electrical Service

(January 2017, City of Auburn GSP)

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).

8-03.3(6) Excavation

(January 2017, City of Auburn GSP)

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(7) Piping

(January 2017, City of Auburn GSP)

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(8) Jointing

(January 2017, City of Auburn GSP)

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(9)F Cross Connection Control Device Installation

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Backflow preventer assembly shall be installed at location(s) shown on the Plans.

8-03.3(9)G Electrical Wire Installation

(January 2017, City of Auburn GSP)

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(10) Flushing and Testing

(January 2017, City of Auburn GSP)

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(11) Backfill

(January 2017, City of Auburn GSP)

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(14) System Operation

(January 2017, City of Auburn GSP)

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 GSP)

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).

(City Contracts, August 2016, City of Auburn GSP)

Add the following new section:

8-03.4 Measurement

No measurement shall be made for "Automatic Irrigation System Complete".

Measurement for "Double Check Valve Assembly" shall be per each double check valve assembly completed.

8-03.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Delete this section and replace it with the following:

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

"Automatic Irrigation System Complete", Per Lump Sum

"Double Check Valve Assembly", Per Each

The lump sum contract price for "Automatic Irrigation System Complete" shall be full pay for the construction of the complete irrigation system, modifying existing systems, or

both, as shown in the Plans and herein specified, including excavation, backfilling, concrete foundations, piping, sprinkler heads, conduit, wiring, restoring facilities destroyed or damaged during construction, salvaging existing materials, and for making all required tests. All additional materials and labor, not shown in the Plans or called for herein and which are required to complete the irrigation system shall be included in the lump sum price. Payment for required irrigation water service connections will be paid separately as identified in Section 7-09.5 of these Special Provisions.

Payment for "Double Check Valve Assembly" shall be full pay for furnishing all material and equipment, installation, permitting, and testing, required for a double check valve assembly. Payment for the water service line, where applicable, shall be separate.

8-04 Curbs, Gutters and Spillways

8-04.3 Construction Requirements

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

(January 2017, City of Auburn GSP)

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 GSP)

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 GSP)

Supplement this section with the following:

"Extruded Cement Concrete Curb" shall be type 6 as detailed in the applicable Standard Plan.

8-04.4 Measurement

(City Contracts, August 2016, City of Auburn GSP)

References to measurement of curb and gutter in this section shall be revised as follows:

Measurement for “Cement Concrete Traffic Curb and Gutter” will not include cement concrete curb and gutter which will be reinforced and poured integral with an Industrial or Commercial Driveway Apron slab.

8-04.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made in accordance with Section 1-04.1 (Intent of the Contract) for the following bid items:

“Bumper Curb”, Per Each

The unit contract price per each for ‘Bumper Curb’ shall be full pay for all labor, materials, and equipment necessary to furnish and install each bumper curb.

(City Contracts, September 2020, City of Auburn GSP)

Supplement this section with the following:

“Cement Conc. Pedestrian Curb – Variable Height”, per linear foot.

The unit contract price per each for “Cement Conc. Pedestrian Curb – Variable Height” shall be full payment for all costs to construct the varying height curb as shown in the Plans or as staked by the Engineer.

8-05 VACANT

This section, including title, is replaced with the following including subsections:

(August 2016, City of Auburn GSP)

This section, including title, is replaced with the following including subsections:

8-05 Dewatering System

8-05.1 General

(February 2023, City of Auburn GSP)

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.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following:

No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.

8-05.1(1) Design

(August 2016, City of Auburn GSP)

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 GSP)

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 GSP)

The Contractor shall submit a Temporary Dewatering Plan to the Engineer for review per Section 9-38 (Submittal Approval). 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.

8-05.2 Vacant

8-05.3 Construction Requirements

8-05.3(1) Damages

(August 2016, City of Auburn GSP)

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.

8-05.3(2) Settlement Monitoring Program

(January 2018, City of Auburn GSP)

Contractor shall develop and submit to the City a Settlement Monitoring Program for review and approval prior to beginning dewatering per Section 9-38 (Submittal Approval).

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.”

8-05.3(3) Maintaining Excavation in Dewatering Condition

(August 2016, City of Auburn GSP)

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.

8-05.3(4) System Removal

(August 2016, City of Auburn GSP)

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.

8-05.4 Measurement

(City Contracts, August 2016, City of Auburn GSP)

“Dewatering System” will be measured per linear foot along the construction centerline. Only sections approved for dewatering by the Engineer will be included in the

measurements. Pipe lengths installed using “Normal Dewatering Methods,” or installed using the dewatering system without approval from the Engineer will not be included in the measurement for “Dewatering System.”

“Normal Trench Dewatering” as described in Section 7-08.3(2)L (Dewatering Trenches) will not be measured for payment, but instead will be included in the per linear foot price of the utility being installed.

8-05.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

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

“Dewatering System”, Per Linear Foot

The unit bid price in the Proposal for “Dewatering System”, per linear foot shall be full compensation for the costs of all labor, tools, equipment, and materials necessary or incidental to design, install, operate, maintain, and remove a complete dewatering system. This Bid item shall also include, but not be limited to, dewatering handling, preliminary testing prior to discharge, storage, permitting, daily monitoring, weekly monitoring, and disposal of clean groundwater and sediment. Providing, installing, operating, and maintaining settling tank(s), or other equipment necessary to meet the discharge requirements, shall be included in this lump sum cost and shall not be measured for separate payment.

The unit price shall also include all costs to continuously operate the dewatering system, all power costs and connections, permits, pumps, wells, pipes, fittings, and appurtenances.

All costs for design of dewatering systems and preparation and implementation of the Temporary Dewatering Plan (including the Contingency Plan, Water Quality Sampling Plan, and Settlement Monitoring Program, including Contingency Plan) shall be included in the dewatering lump sum cost and shall not be measured for separate payment.

Dewatering” shall only be paid for when a dedicated system using well points is used for dewatering. All “normal trench dewatering” work, as defined in Section 7-08.3(2)L, will be incidental to and included in the unit cost for the pipe, structure, etc. being installed.

Restoration of property damaged due to dewatering or settlement caused by the dewatering system shall be the Contractor’s responsibility.

8-06 Cement Concrete Driveway Entrances

8-06.1 Description

(January 2017, City of Auburn GSP)

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 GSP)

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 GSP)

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).

8-06.4 Measurement

(City Contracts, February 2024, City of Auburn GSP)

Supplement this section with the following:

Measurement for "Cement Concrete Driveway Approach" will be by the square yard of finished surface, excluding area measured as driveway apron.

Measurement for "Residential Driveway Apron" will be by the square yard of finished surface, excluding the cement concrete curb and gutter area.

Measurement for "Industrial or Commercial Driveway Apron" will be by the square yard of finished surface including the cement concrete curb and gutter which will be reinforced and poured integral with the driveway apron slab.

8-06.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

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

“Residential Driveway Apron”, Per Square Yard

“Industrial or Commercial Driveway Apron”, Per Square Yard

“Cement Concrete Driveway Approach”, Per Square Yard

The unit contract price per square yard for “Residential Driveway Apron” shall be full pay for all work to complete the installation including subgrade preparation, thickened edges, and wings.

The unit contract price per square yard for “Industrial or Commercial Driveway Apron” shall be full pay for all work to complete the installation including subgrade preparation and integrated cement concrete curb and gutter.

Payment for “Cement Concrete Driveway Approach” shall be full pay for all costs to construct the approach.

Payment for cement concrete curb and gutter will be in accordance with the provisions of Section 8-04 (Curbs, Gutters, and Spillways), except for locations where the curb and gutter is integral with the Industrial and Commercial Driveway Apron.

Payment for water will be in accordance with the provisions of Section 2-07 (Watering).

8-07 Precast Traffic Curb

8-07.2 Materials

(February 2024, City of Auburn GSP)

Supplement this section with the following:

Materials shall meet the requirements of the following sections:

Epoxy Adhesive for Curb	9-26.2
Glass Beads	9-34.4
Raised Pavement Markers	9-21.2
Adhesive for RPMs	9-02.1(8)
36” Delineators	9-17 and COA Std Detail T-32
Adhesive for Delineators	9-02.1(8)

8-07.3 Construction Requirements

8-07.3(16) Installing Curbs

(January 2017, City of Auburn GSP)

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.

8-07.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Delete this section and replace it with the following:

Precast curb shall be measured along the length of the precast curb system installed, from delineator to delineator, without deduction for gaps.

8-07.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

Payment will be made in accordance with Section 1-04.1 (Intent of the Contract) for the following bid items:

“Precast Curb with Delineators”, Per Linear Foot

The unit contract price per linear foot for ‘Precast Curb with Delineators’ shall include all costs to furnish and construct the mountable curb system, including, raised pavement markers, epoxy, and delineators.

8-09 Raised Pavement Markers

8-09.3 Construction Requirements

8-09.3(2) Surface Preparation

(January 2017, City of Auburn GSP)

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 GSP)

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.

8-09.4 Measurement

(City Contracts, April 2019, City of Auburn GSP)

Raised Pavement Markers will be measured by the unit for each marker furnished and installed.

8-09.5 Payment

(City Contracts, February 2020, City of Auburn GSP)

Supplement this section with the following:

Payment will be made in accordance with Section 1-04.1 (Intent of the Contract) for the following bid items:

"Remove Raised Pavement Markers", Per Each

"Raised Pavement Markers", Per Each

(City Contracts, September 2016, City of Auburn GSP)

References to payment for Raised Pavement Markers are revised to the following:

The unit contract price per each for "Raised Pavement Markers Type ___" shall be full pay for furnishing and installing the markers in accordance with these specifications including all cost involved with traffic control except for reimbursement for labor for traffic control in accordance with Section 1-10 (Temporary Traffic Control).

The unit contract price per each for "Remove Raised Pavement Markers" shall be full pay to remove each pavement marker.

8-12 Chain Link and Wire Fence**8-12.2 Materials**

(July 2023, City of Auburn GSP)

Supplement this section with the following:

Coated Chain Link Fence

Chain link fence fabric shall be hot-dip galvanized with a minimum of 0.8 ounce per square foot of surface area.

Fencing materials shall be coated with an ultraviolet-insensitive plastic or other inert material at least 2 mils in thickness. Any pretreatment or coating shall be applied in accordance with the manufacturer's written instructions. The Contractor shall provide the Engineer with the manufacturer's written specifications detailing the product and method of fabrication. All components of the fence shall be black.

8-12.4 Measurement

(City Contracts, July 2023, City of Auburn GSP)

Supplement this section with the following:

Coated chain link fence will be measured by the linear foot of completed fence along the ground line. No separate measurement will be made for coated chain link fence end, corner, or pull posts.

8-12.5 Payment

(City Contracts, July 2023, City of Auburn GSP)

Supplement this section with the following:

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

Coated Chain Link Fence Type _____, per linear foot.

Payment for "Coated Chain Link Fence Type ____" shall include all costs to furnish and install end, corner, and pull posts as required to construct the fence. No separate measurement or payment will be made for the different types of posts.

8-13 Monument Cases**8-13.1 Description**

(January 2017, City of Auburn GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

Add the following new section:

8-13.3(3) Reference Points

(August 2016, City of Auburn GSP)

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.

8-13.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

Monument adjustment shall be measured by each monument adjusted to final grade.

8-13.5 Payment

(City Contracts, December 2020, City of Auburn GSP)

Supplement this section with the following:

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

“Monument Type A (Modified)”, Per Each

“Monument Type B (Modified)”, Per Each

“Adjust Existing Monument”, Per Each

Payment for “Monument Type B (Modified)” shall be full pay for the materials, labor, survey work, recording, adjustments to finish grade (including asphalt concrete patches), and other costs to install each monument.

Payment for “Adjust Existing Monument” shall be full pay for the materials, labor, survey work, recording, asphalt concrete patches, and other costs to adjust each monument to final grade.

8-14 Cement Concrete Sidewalks**8-14.1 Description**

(January 2017, City of Auburn GSP)

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.

8-14.3 Construction Requirements**8-14.3(1) Excavation**

(January 2017, City of Auburn GSP)

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 GSP)

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

(February 2023, City of Auburn GSP)

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. This work will be at the Contractor's cost.

(January 2017, City of Auburn GSP)

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 GSP)

Add the following new section:

8-14.3(3)A Special Sidewalk

(August 2016, City of Auburn GSP)

(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 GSP)

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).

8-14.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

“Sidewalk Ramp Detectable Warning Retrofit,” will be measured by the square foot of truncated dome material installed on the existing ramp.

8-14.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

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

“Special 2x2 Scored Cement Concrete Sidewalk”, Per Square Yard

“Special Brick Sidewalk”, Per Square Yard

“Sidewalk Ramp Detectable Warning Retrofit”, Per Square Foot

The unit contract price per square yard for “Cement Concrete Sidewalk”, “Special 2x2 Scored Cement Concrete Sidewalk”, and “Special Brick Sidewalk” shall be full pay for all work to complete the installation including subgrade preparation and thickened edges where identified.

The unit contract price per square yard for “Sidewalk Ramp Detectable Warning Retrofit” shall be full pay for complete installation of the detectable warning patterns including all preparation of the existing sidewalk, labor, equipment and materials.

8-18 Mailbox Supports**8-18.2 Materials**

(January 2017, City of Auburn GSP)

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).

8-18.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

Relocation of mailboxes shall be measured per each unit or cluster of mailboxes relocated.

8-18.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

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

“Relocate Type III Mailbox Support w/ boxes”, Per Each

“Relocate Type IV N.D.C.B.U. (mailboxes)”, Per Each

The unit contract price per each for relocating mailboxes shall be full payment to remove and re-install existing mailbox group, including all new materials necessary to install the support.

8-20 Illumination, Traffic Signal Systems, Intelligent Transportation Systems, and Electrical**8-20.1 Description****8-20.1(1) Regulations and Code**

(April 2018, City of Auburn GSP)

The fourth paragraph is revised to read:

Safe-wiring labels required by Labor and Industries shall apply on this project.

8-20.1(3) Permitting and Inspections

(April 2018, City of Auburn GSP)

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(1) Equipment List and Drawings

(January 2017, City of Auburn GSP)

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

(December 2020, City of Auburn GSP)

Add the following new section:

8-20.3(1)D 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.

All existing illumination and traffic signal display and detection system equipment shall remain operational until the corresponding new equipment is constructed, tested, operational and accepted by the Engineer. Temporary video detection equipment shall be fully operational and accepted by the Engineer as a substitute for the function of any existing induction loop or video detection prior to any construction activities that render such existing traffic detection ineffective. 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

(December 2021 City of Auburn GSP)

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 a minimum of 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

(April 2018, City of Auburn GSP)

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 GSP)

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 2017, City of Auburn GSP)

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 GSP)

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 ITS Cabinets

(April 2018, City of Auburn GSP)

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 GSP)

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 GSP)

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 GSP)

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

(November 2020, City of Auburn GSP)

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 parallel to the roadway surface.

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 GSP)

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.

8-20.3(14) Signal Systems**8-20.3(14)B Signal Heads**

(January 2017, City of Auburn GSP)

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 GSP)

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 GSP)

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 GSP)

Add the following new section:

8-20.3(14)F Emergency Vehicle Pre-Emption

Detector

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.

(August 2016, City of Auburn GSP)

Add the following new section:

8-20.3(14)G Interconnect Network

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.

(December 2021, City of Auburn GSP)

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 between 42-inches and 46-inches measured from the centerline of push buttons to the adjacent level landing. The push button must be reachable within 10 inches from the level landing. Braille is required on push button placards and the contractor is responsible to make sure they are placed in the correct locations.

(November 2020, City of Auburn GSP)

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 by Kar-Gor or Econolite Vision video detection camera system, as called out in the plans including all 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 or Econolite representative to assist with the system installation and turn on.

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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

(November 2020, City of Auburn GSP)

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 RUGGEDCOM RS900 Ethernet switch

8-20.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

No unit of measure shall apply to the lump sum signal and lighting items specified in this section.

Vaults and junction boxes shall be measure per each unit installed.

Removal and resetting of the traffic signal items listed in the payment section shall be per each item removed and re-installed.

8-20.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

Supplement this section with the following:

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

“Signal Interconnect System Complete”, Per Lump Sum

“Video Detection System Complete”, Per Lump Sum

“Splice Vault”, Per Each

“Pull Box”, Per Each

“Locking Junction Box”, Per Each

“Adjust Existing Junction Box”, Per Each

“Remove Signal Head”, Per Each

“Remove Traffic Video Detection Camera”, Per Each

“Remove and Reset Signal Head”, Per Each

“Remove and Reset Video Detection Camera”, Per Each

“Replace & Recycle Signal Head Modules”, Per Each

“Replace Signal Controller Cabinet”, Per Each

“Backplate Tape”, Per Each

“Louvered Backplate”, Per Each

“Traffic Video Detection Camera”, Per Each

“Wide Angle Traffic Video Detection Camera”, Per Each

“Signal Pole Terminal Cabinet”, Per Each

“Signal Head with Mount”, Per Each

“Signal Controller and Smart Monitor”, Per Each

“Remove Street Light”, Per Each

“Induction Loop Vehicle Detector”, Per Each

The unit contract cost for “Remove Signal Head” and “Remove Traffic Video Detection Camera” shall include all work related to salvaging and removal of existing system components.

The Lump Sum Contract price for “Traffic Signal Revision Signage” shall be full pay for supplying, installing, maintaining and removing the sign and posts according to the Contract documents, including. Supplying and installing the warning placards on each of the signal heads identified in Detail A and Detail D of the Contract Plans.

The unit Contract prices for “Remove and Reset Signal Head” and “Remove and Reset Video Detection Camera” shall be full pay for Work associated with the removing, transporting, resetting, rewiring, repairing existing mounting location, and for supplying and installing all materials and any needed mounting fixtures and wiring.

The unit Contract price for “Replace & Recycle Signal Head Modules” shall be full pay for Work associated with removal and recycling of existing modules and supplying and installing LED modules.

The unit Contract price for “Replace Signal Controller Cabinet” shall be full pay for Work associated with removing existing cabinet and components from the foundation and salvaging, supplying and installing all necessary materials including cabinet, signal controller, MMU, other specified internal components, wiring, mounting hardware, and testing.

The unit Contract price for “Backplate Tape” shall be full pay for Work associated with supplying the materials and installing according to the Contract Plans.

The unit Contract price for “Louvered Backplate” shall be full pay for Work associated with supplying the materials and installing according to the Contract documents.

The unit Contract prices for “Traffic Video Detection Camera” and “Wide Angle Traffic Video Detection Camera” shall be full pay for Work associated with supplying and installing all necessary materials including cameras, wiring, mounting fixtures, surge suppressors, BNC two wire adapter, fuse blocks and video cards for a complete system. Note: only one video card is required per two traffic video cameras per intersection installed; the Wide Angle Traffic Video Detection camera uses one Trafficam “Edge” card.

The unit Contract price for “Signal Pole Terminal Cabinet” shall be full pay for Work associated with supplying and installing all materials and wiring according to the Contract documents.

The unit Contract price for “Signal Head with Mount” shall be full pay for Work associated with supplying materials (including louvered backplate with tape), wiring,

mounting, and installing according to the Contract documents; no adjustment will be made signal head type nor for mounting type.

The unit Contract price for “Traffic Signal Controller and Smart Monitor” shall be full pay for Work associated with supplying and installing the controller and smart monitor boards, including wiring, and testing according to the Contract Plans.

The unit contract cost for “Remove Street Light” shall include all work, materials, and labor to remove the street light and components, and for all costs related to salvaging, when identified.

The unit contract cost for “Induction Loop Vehicle Detector” shall include all Work associated with installing, splicing, and testing each loop.

8-21 Permanent Signing

8-21.3 Construction Requirements

(January 2017, City of Auburn GSP)

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 GSP)

Supplement this section with the following:

Costs for removing existing signs shall be included in the lump sum contract price for “Permanent Signing”.

8-21.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

Supplement this section with the following:

“Relocate Permanent Traffic Sign and Post” shall be measured per each unit of work completed and accepted.

“Remove Traffic Sign” and “Traffic Sign” will be measured by each sign removed or installed.

8-21.5 Payment

(City Contracts, February 2024, City of Auburn GSP)

Supplement this section with the following:

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

“Relocate Permanent Traffic Sign and Post”, Per Each

“Remove Traffic Sign”, Per Each

“Traffic Sign”, Per Each

The unit Contract price for “Relocate Permanent Traffic Sign and Post” shall be full pay for Work associated with the removing, salvaging, repairing existing mounting location, and reinstalling the sign and post according to the Contract Plans and these Specifications.

The unit Contract price for “Remove Traffic Sign” shall be full pay for Work associated with the removing, salvaging, and repairing existing mounting location.

The unit Contract price for “Traffic Sign” shall be full pay for supplying and installing the sign and mounting hardware according to the Contract Plans and these Specifications.

8-22 Pavement Marking

8-22.1 Description

(January 2017, City of Auburn GSP)

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 GSP)

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 GSP)

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 GSP)*

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.

8-24.4 Measurement*(City Contracts, January 2017, City of Auburn GSP)*

Delete this section and replace it with the following:

“Rock Wall” will be measured by the length and height of finished wall surface including that portion of the “Rock Wall” toed into existing ground.

8-24.5 Payment*(City Contracts, April 2017, City of Auburn GSP)*

Delete this section and replace it with the following:

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

“Rock Wall”, Per Square Foot

The unit contract price for “Rock Wall” shall include all costs for excavation, backfill, underdrain pipe installation, and rock placement. Piping and connection to storm sewer system, if required, shall also be included in the unit price for “Rock Wall,” unless otherwise specified.

(August 2016, City of Auburn GSP)

Supplement Division 8 with the following new section including subsections:

8-32 Fiber Optic Communications**8-32.1 Description**

(November 2020, City of Auburn GSP)

The work specified in this section shall include the furnishing and installation of fiber optic cables, splices, splice enclosures, custom labels 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).

8-32.2 Construction Requirements**8-32.2(1) Contractor Qualifications**

(August 2016, City of Auburn GSP)

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.

8-32.2(2) Quality Assurance

(August 2016, City of Auburn GSP)

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.

8-32.2(3) Fiber Optic Cable Installation

(August 2016, City of Auburn GSP)

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.

8-32.2(4) Fiber Optic Cable Splicing

(August 2016, City of Auburn GSP)

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.

8-32.2(5) Fiber Optic Cable Labeling

(December 2020, City of Auburn GSP)

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. Fiber Optic Cable shall have custom City of Auburn labels in Vaults and at aerial attachment points.

8-32.2(6) Fiber Optic Cable Racking in Cable Vaults

(August 2016, City of Auburn GSP)

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.

8-32.2(7) Fiber Optic Patch Panels

(August 2016, City of Auburn GSP)

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.

8-32.2(8) Fiber Optic Splice Case

(August 2016, City of Auburn GSP)

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.

8-32.3 Fiber Optic Cable Testing

(August 2016, City of Auburn GSP)

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.

8-32.3(1) Insertion Loss Testing

(August 2016, City of Auburn GSP)

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

8-32.3(2) Optical Time Domain Reflectometer (Otdr) Testing

(August 2016, City of Auburn GSP)

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.

8-32.3(3) Fiber Cable Testing Documentation

(August 2016, City of Auburn GSP)

The Contractor shall submit the fiber test results to the Engineer for approval per Section 9-38 (Submittal Approval). 1 licensed copy of the OTDR manufacturers 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

8-32.4 Measurement

(City Contracts, August 2016, City of Auburn GSP)

"Fiber Optic Cable – _____ Strand SMFO" will be measured by the lineal foot of cable installed and accepted, including slack storage.

"Fiber Optic Patch Panel" will be measured per each unit installed and accepted.

"Fiber Optic Splice Case" will be measured per each splice case installed and accepted.

8-32.5 Payment

(City Contracts, August 2016, City of Auburn GSP)

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

"Fiber Optic Cable – _____ Strand SMFO", Per Lineal Foot

"Fiber Optic Splice Case", Per Each

"Fiber Optic Patch Panel", Per Each

The unit bid item prices per each for splice cases and patch panels shall be full pay to furnish, install, and test the specified equipment.

The bid item prices for "Fiber Optic Cable – _____ Strand SMFO" shall include, but not be limited to, all costs for the following:

- Furnishing, installing and testing the fiber optic cable.
- Furnishing and installing racking hardware in existing and proposed pull boxes and vaults for fiber optic cable where the Plans specify slack storage.
- Pulling fiber through vaults and junction boxes
- Removing existing fiber messenger cable from aerial attachments and from conduits and junction boxes for the installation of fiber optic cable as indicated in the Plans.

- Protecting and preserving existing conductors as indicated in the Plans and as required to maintain the existing signal and ITS system functions,

(January 2018, City of Auburn GSP)

Supplement Division 8 with the following new section including subsections:

8-33 Bollards**8-33.1 Description**

(January 2018, City of Auburn GSP)

This work consists of building, furnishing, and installing bollards where shown on the Plans and as detailed in the Standard Detail(s).

8-33.2 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)

8-33.4 Measurement

(City Contracts, January 2017, City of Auburn GSP)

“Removable Bollard” and “Fixed Bollard” shall be measured per each bollard installed and accepted.

8-33.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

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

“Removable Bollard”, Per Each

“Fixed Bollard”, Per Each

The Unit contract price per each for “Removable Bollard” and “Fixed Bollard” shall be full pay for all labor, tools, equipment and materials required to furnish and install each bollard.

(August 2016, City of Auburn GSP)

Supplement Division 8 with the following new section including subsections:

8-34 Wood Fence and Gates**8-34.1 Description**

(August 2016, City of Auburn GSP)

This work shall consist of installing new “Wood Fence” and “Wood Gate” where shown and as detailed on the Plans.

8-34.2 Construction Requirements

(August 2016, City of Auburn GSP)

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.

8-34.4 Measurement

(City Contracts, August 2016, City of Auburn GSP)

“Wood Fence” shall be measured per linear foot of work completed and accepted.

“Wood Gate” shall be measured per each unit of work completed and accepted.

8-34.5 Payment

(City Contracts, April 2017, City of Auburn GSP)

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

“Wood Fence”, Per Linear Foot

“Wood Gate”, Per Each

The unit contract price shown in the proposal for “Wood Fence” shall be full pay for labor, tools, materials, and equipment necessary to perform the work, complete.

The unit contract price shown in the proposal for “Wood Gate” shall be full pay for labor, tools, materials, and equipment necessary to perform the work, complete.

END OF DIVISION 8

DIVISION 9 Materials**9-05 Drainage Structures and Culverts****9-05.7 Concrete Storm Sewer Pipe****9-05.7(1) Plain Concrete Storm Sewer Pipe**

(January 2017 City of Auburn GSP)

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 GSP)

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 GSP)

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 GSP)

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.

9-14 Erosion Control and Roadside Planting**9-14.2 Topsoil****9-14.2(1) Topsoil Type A**

(February 2024, City of Auburn GSP)

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.

9-14.2(3) Topsoil Type C

(January 2017, City of Auburn GSP)

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.

9-14.5 Mulch and Amendments

(January 2017, City of Auburn GSP)

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.

9-14.5(3) Bark or Wood Chips

(January 2017, City of Auburn GSP)

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.

9-14.6(1) Polyacrylamide (PAM)

(January 2017, City of Auburn GSP)

Supplement this section with the following:

PAM will only be used upon approval of the Engineer.

(January 2017, City of Auburn GSP)

Add the following new section:

9-14.7 Plant Materials**9-14.7(5) Tagging**

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.

(January 2017, City of Auburn GSP)

Add the following new section:

9-14.7(6) Inspection

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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 GSP)

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

(September 2021, City of Auburn GSP)

Supplement this section with the following:

The Double check valve assembly shall be a Febco 850 or approved equivalent sized to match the irrigation meter size and be approved by the State of Washington Dept of Health.

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 GSP)

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 GSP)

Supplement this section with the following:

Detectable marking tape shall be 3-inch wide detectable tape on main lines only.

9-29 Illumination, Signal, Electrical**9-29.1 Conduit, Innerduct, Outerduct**

(April 2018, City of Auburn GSP)

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.

9-29.2 Junction Boxes, Cable Vaults, and Pull Boxes

(September 3, 2019, WSDOT GSP)

Supplement this section with the following:

Slip-Resistant Surfacing for Junction Boxes, Cable Vaults, and Pull Boxes

Where slip-resistant junction boxes, cable vaults, or pull boxes are required, each box or vault shall have slip-resistant surfacing material applied to the steel lid and frame of the box or vault. Where the exposed portion of the frame is ½ inch wide or less, slip-resistant surfacing material may be omitted from that portion of the frame.

Slip-resistant surfacing material shall be identified with a permanent marking on the underside of each box or vault lid where it is applied. The permanent marking shall be formed with a mild steel weld bead, with a line thickness of at least 1/8 inch. The marking shall include a two character identification code for the type of material used and the year of manufacture or application. The following materials are approved for application as slip-resistant material, and shall use the associated identification codes:

1. Harsco Industrial IKG, Mebac #1 - Steel: M1
2. W. S. Molnar Co., SlipNOT Grade 3 – Coarse: S3
3. Thermion, SafTrax TH604 Grade #1 – Coarse: T1

9-29.3 Fiber Optic Cable, Electrical Conductors, and Cable

(April 2018, City of Auburn GSP)

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 GSP)

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.

(September 2021, City of Auburn GSP)

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 (not including Anchor Bolts), nuts, screws, and washers, shall be stainless steel, unless designated otherwise.

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 2011 AASHTO 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. Luminaires shall be adjusted to be parallel to the roadway and shall follow the slope of the roadway on inclines/hills.

(August 2016, City of Auburn GSP)

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 GSP)

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 GSP)

Supplement this section with the following:

All welds shall be deburred.

9-29.6(5) Foundation Hardware

(November 2020, City of Auburn GSP)

Supplement this section with the following:

Four high-strength steel anchor bolts shall be furnished with the poles. 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 GSP)

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 GSP)

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

(November 2020, City of Auburn GSP)

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 1 1/4 " to 2" (1 5/8 " to 2 3/8 " 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 a 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.

9-29.11(2) Photoelectric Controls

(December 2020, City of Auburn GSP)

Supplement this section with the following:

The photoelectric control shall be Vantage Point Lighting Control Module manufactured by Sensus USA Inc.

9-29.12(1) Illumination Circuit Splices

(January 2017, City of Auburn GSP)

Supplement this section with the following:

Approved copper splice "C" crimp connectors shall be used to connect bonding wires.

9-29.12(2) Traffic Signal Splice Material

(January 2017, City of Auburn GSP)

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.

(August 2016, City of Auburn GSP)

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. Crafc0 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 GSP)

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 GSP)

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 GSP)

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 and Type 2070 Controllers and Cabinets

(December 2021, City of Auburn GSP)

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 TS-2 Type 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 and corning buffer tube fanout kit and Unicam SC connectors..

9-29.16 Vehicular Signal Heads, Displays, and Housing

(August 2016 City of Auburn GSP)

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 GSP)

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 GSP)

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) with clear lenses. Part numbers for Dialight LEDs are as follows:

Size	Description	Part Number
12 inch	RED Ball	433-1270-003XL15
12 inch	AMBER Ball	433-3270-901XL15
12 inch	GREEN Ball	433-2270-001XL15
12 inch	RED Arrow	432-1374-001XOD15
12 inch	AMBER Arrow	431-3374-901XOD15
12 inch	GREEN Arrow	432-2374-001XOD15
12 inch	GREEN/AMBER Arrow	430-6370-001

12 inch AMBER/AMBER 430-6370-805
Flashing Arrow)

9-29.16(2)E Painting Signal Heads

(April 2018, City of Auburn GSP)

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.

9-29.18 Vehicle Detector

(January 2017 City of Auburn GSP)

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

(December 2021 City of Auburn GSP)

Replace the first paragraph with the following:

The Pedestrian Push Button Assembly shall be an Guardian APS 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 2017 City of Auburn GSP)

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.

(February 2023, City of Auburn GSP)

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.

The RRFB shall utilize two frontside LEDs that are approximately 5" by 2" and a minimum of 7" apart. They shall be double sided where shown in the plans. There shall be end mounted indicator flashers in the direction of the pedestrian crossing only. The system shall utilize the black Campbell AGPS pushbutton with modified 5" x 7" yellow R10-25 MUTCD signs.

The pole shall be a 4 1/2" OD Galvanized steel or aluminum pipe threaded at one end to fit a square pedestal 4 bolt aluminum frangible pole base. The top of the 4 ½" pole shall be capped with a waterproof factory cap. The four bolt concrete foundation shall be a minimum of 18" round by 3 feet deep and meet the manufacturers recommendations.

Equipment enclosures shall be mounted out of reach above or behind the pedestrian signage.

The RRFB units shall be Eltec or Carmanah.

(November 2020, City of Auburn GSP)

Add the following new section:

9-29.23 Video Detection Cameras

The Video Detection System shall be Econolite Vision or Trafficon by Kar-Gor and the presence detector boards shall be Trafficon VIP3D.2, which monitors only two cameras. Both systems shall include built in ethernet communication for our ITS system.

The cameras shall be located as 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.

9-29.24 Service Cabinets*(November 2020 City of Auburn GSP)*

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
30 AMP	1 pole	Traffic Signal
100 AMP	2 pole	Main

(October 2016 City of Auburn GSP)

Supplement Division 9 with 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.

(February 2023, City of Auburn GSP)

Supplement Division 9 with the following new section:

9-29.27 CCTV System

CCTV cameras shall be a Axis M5525-E 2 MP Mini PTZ Dome with a Axis Ethernet 15 Watt POE injector.

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 use a custom 1-1/2" threaded pipe Painted Signal black, T94A01D Pendant mounting kit and Pelco AstroBrac 90 degree pole mount 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.

(November 2020 City of Auburn GSP)

Supplement Division 9 with 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, Alpha Battery Backup, compact batteries, 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, Alpha Battery Backup, Compact batteries, 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 Message Activation Code CRC matches the Message CRC.

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 GSP)

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**

(September 2020, City of Auburn GSP)

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 them protection equal to that of the pipe. Field fabricated fittings will not be permitted. Flexible couplings shall be of the style as required for specific application.

9-30.2(6) Restrained Joints

(September 2020, City of Auburn GSP)

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 (A WW A C 111) 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 ductile iron 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/ A WW A C 111/ A21.11.

9-30.3 Valves

9-30.3(1) Gate Valves (3-inches to 16-inches)

(July 2022, City of Auburn GSP)

Delete this section and replace it with the following:

Resilient wedge gate valves shall be used on all 12 inch and smaller water lines and shall be manufactured by Clow, American Flow Control, Waterous, M & H, Kennedy 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(3) Butterfly Valves

(December 2020, City of Auburn)

Supplement this section with the following:

Butterfly valves shall conform to AWWA Specification C-504, Class 150 B shall have Mechanical joint ends and be rated at 150 psi or higher working pressure and shall be manufactured by Mueller, Clow, M&H, or Kennedy. Operator shall have standard AWWA 2 inch square nut.

9-30.3(4) Valve Boxes

(February 2018, City of Auburn GSP)

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 per City of Auburn Standard Detail W-18.

9-30.3(7) Combination Air Release/Air Vacuum

(September 2021, City of Auburn GSP)

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

The body and cover shall be ductile iron.

9-30.3(8) Tapping Sleeve and Valve Assembly

(January 2017, City of Auburn GSP)

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

(September 2020, City of Auburn GSP)

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 inch Storz adapter with blind cap, or approved equivalent. Hydrants shall conform to the latest revision of AWWA Specification C502 for dry-barrel fire hydrants for ordinary water service. Hydrants shall be Mueller "Super Centurion 250" or M & H Style 129.

9-30.6 Water Service Connections (2 inches and Smaller)**9-30.6(3) Service Pipes****9-30.6(3)B Polyethylene Tubing**

(October 2023, City of Auburn GSP)

Replace this section with the following:

Polyethylene tubing shall meet the requirements of AWWA C901. Tubing shall be high molecular mass with a 200 psi rating. Tubing used for 1 and 2 inch shall be SDR 9 (copper tube size) with stainless steel liners in all couplings and wrapped a #10 insulated copper tracer wire wrapped around pipe.

9-37 VACANT

(August 2016, City of Auburn GSP)

This section, including title, is replaced with the following including subsections:

9-37 Filter Fabric**9-37.1 Filter Fabric for Infiltration Systems**

(September 2021, City of Auburn GSP)

Filter fabric for permanent infiltration systems shall be a non-woven, needle punched polypropylene geotextile fabric meeting the requirements of AASHTO M-288-06 for class 3 applications.

(February 2018, City of Auburn GSP)

Supplement Division 9 with the following new section including subsections:

9-38 Submittal Approval**9-38.1 Submittals**

(February 2018, City of Auburn GSP)

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

(February 2023, City of Auburn GSP)

Except as specified otherwise in the Contract Documents, all submittals shall be made electronically. Each electronic email shall be limited to 10 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 10 MB's size limit for a specific submittal, the Contractor may request to submit the individual submittal to the City as a hardcopy or other submittal approach subject to Engineer approval. Such requests shall be made in writing and include an explanation of why the Contractor is requesting to make a hardcopy submittal(s). 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. 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.

(City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following:

Submittals shall be transmitted via e-mail to PWSubmittals@auburnwa.gov. The e-mail subject line of electronic submittals shall include the following: <<<Project Number>>>, <<<Project Name>>> - <<<Submittal Title>>>.

(Non-City Contracts, February 2023, City of Auburn GSP)

Supplement this section with the following:

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: <<<Permit/FAC Number>>>, <<<Project Name>>> - <<<Submittal Title>>>.

9-38.1(2) Request for Submittal Approval (RSA) Form Instructions

(February 2018, City of Auburn GSP)

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 Contract Number (I.E. ## - ##) and Contract/Project Name;
3. Fill in the Project Identifying Number (I.E. CP####);
4. Fill in the Date the Submittal was transmitted to the City;
5. Provide the Contractor’s name and, if applicable, the name of Subcontractor or supplier who prepared the submittal;
6. 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).
7. When applicable, provide the Bid Item number the submittal is referencing;
 8. 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;
 9. 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,
 10. Provide the Contract Specification section number(s) or the page number the submittal material is referencing, or you can list the Plan Sheet number; and
 11. 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 GSP)

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
(November 2022, City of Auburn GSP)

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 1 copy electronically for review. The Contractor is responsible for distributing the City returned 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 1 labeled product sample or 1 set 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: For Draft O&M Manuals, Submit 1 copy electronically for review. The Contractor is responsible for making and distributing the required number of additional copies of the City returned submittals to its

superintendent, subcontractors and suppliers. Contractor shall submit 1 copy electronically and 1 hard copy of each final and approved O&M Manual.

9-38.1(5) Engineer's Submittal Review

(November 2019, City of Auburn GSP)

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 Provisions of Section 1-06 (Control of Material) shall also apply to this section.

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 GSP)

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

(City Contracts, November 2022, City of Auburn GSP)

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. The Schedule of Submittals must be accepted prior to payment. 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 15 working 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.

End Of Division 9