ENGINEERING CONSTRUCTION STANDARDS

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

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Date

PREFACE FOR THE

CITY OF AUBURN

ENGINEERING CONSTRUCTION STANDARDS

Grading, Utility, Street and other civil construction work within the City of Auburn shall utilize the 2016 WSDOT Standard Specifications for Road, Bridge, and Municipal Construction (English Version) as supplemented and amended by the City of Auburn Special Provisions contained within Part 1 of this document and the applicable and most current published version of City of Auburn Standard Details and Washington State Department of Transportation (WSDOT) Standard Plans for Road and Bridge Construction as included or referenced in Part 2 of this document.

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

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

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

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

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

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

PART 1: SPECIAL PROVISIONS

TABLE OF CONTENTS

DIVISION 1 GENERAL REQUIREMENTS 18

1-01 DEFINITIONS AND TERMS 18

1-01.3 DEFINITIONS ..... Revision/Supplement 18

Standard Details 20

Standard Plans 20

1-05 CONTROL OF WORK 21

1-05.4 CONFORMITY WITH AND DEVIATIONS FROM PLANS AND STAKES Revision/Supplement 21

1-05.4(1) RECORD CONSTRUCTION DRAWINGS ..... New Section 22

1-05.7 REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK ..... Supplement 25

1-05.10 GUARANTEES ..... Supplement 26

1-05.11 FINAL INSPECTION ..... Replacement 26

1-05.11 FINAL INSPECTIONS AND OPERATIONAL TESTING 26

1-05.11(3) OPERATIONAL TESTING 27

1-05.14(1) COOPERATION WITH OTHERS ..... New Section 27

1-05.17 ORAL AGREEMENTS ..... New Section 27

1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC 30

1-07.1 LAWS TO BE OBSERVED ..... Revision/Supplement 30

1-07.5(5) CITY OF AUBURN REQUIREMENTS ..... New Section 31

1-07.6 PERMITS AND LICENSES ..... Supplement 31

1-07.13(2) RELIEF OF RESPONSIBILITY FOR COMPLETED WORK ..... Replacement 31

1-07.15 TEMPORARY WATER POLLUTION PREVENTION ..... Supplement 31

1-07.16 PROTECTION AND RESTORATION OF PROPERTY ..... Supplement 32

1-07.16(1)A PROTECTION AND RESTORATION OF EXISTING MARKERS AND MONUMENTS ..... New Section 33

1-07.16(2) VEGETATION PROTECTION AND RESTORATION ..... Supplement 33

1-07.17 UTILITIES AND SIMILAR FACILITIES ..... Replacement 33

1-07.17(1)A DISRUPTIONS TO CITY WATER SERVICES ..... New Section 34

1-07.17(1)B(1)UTILITY POTHOLING ..... New Section 34

1-07.23 PUBLIC CONVENIENCE AND SAFETY ..... Supplement 35

1-07.23(1) CONSTRUCTION UNDER TRAFFIC ..... Supplement 35

1-07.23(1)A DUST AND MUD CONTROL AND STREET CLEANING ..... New Section 35

1-07.23(1)B DAILY CLEANUP AND MAINTENANCE ITEMS ..... New Section 36

1-07.23(2) CONSTRUCTION AND MAINTENANCE OF DETOURS ..... Supplement 36

1-07.28 HAUL ROUTES ..... New Section 38

1-08 PROSECUTION AND PROGRESS 38

1-08.0 PRELIMINARY MATTERS ..... New Section 38

1-08.4 NOTICE TO PROCEED AND PROSECUTION OF THE WORK ..... Revision 39

1-10 TEMPORARY TRAFFIC CONTROL 40

1-10.1 GENERAL ..... Supplement 40

1-10.2 TRAFFIC CONTROL MANAGEMENT 40

1-10.2(2) TRAFFIC CONTROL PLANS ..... Supplement 40

1-10.3(1)B OTHER TRAFFIC CONTROL LABOR ..... Supplement 40

1-10.3(3)L TEMPORARY SIGNAGE FOR ROADWAY TRAFFIC REVISIONS ..... New Section 41

DIVISION 2 EARTHWORK 42

2-01 CLEARING, GRUBBING AND ROADSIDE CLEANUP 42

2-01.1 DESCRIPTION ..... Supplement 42

2-01.2(1) DISPOSAL METHOD NO. 1 – OPEN BURNING ..... Replacement 42

2-01.2(3) DISPOSAL METHOD NO. 3 - CHIPPING ..... Supplement 42

2-01.3 CONSTRUCTION REQUIREMENTS ..... Supplement 42

2-02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS 42

2-02.1 DESCRIPTION ..... Supplement 42

2-02.3 CONSTRUCTION REQUIREMENTS 43

2-02.3(2) REMOVAL OF BRIDGES, BOX CULVERTS, AND OTHER DRAINAGE STRUCTURES ..... Supplement 43

2-02.3(4) REMOVAL AND RESETTING OF MISCELLANEOUS ITEMS ..... New Section 43

2-02.3(4)A REMOVE AND RESET FENCING ..... New Section 43

2-02.3(4)B REMOVE AND RESET PRIVATE SIGNS ..... New Section 43

2-02.3(4)C REMOVE AND RESET PRIVATE LUMINAIRES ..... New Section 44

2-02.3(5) SALVAGE ..... New Section 44
2-02.3(6) REMOVE RAISED PAVEMENT MARKINGS ..... New Section 44

2-03 ROADWAY EXCAVATION AND EMBANKMENT 45

2-03.1 DESCRIPTION ..... Supplement 45
2-03.3 CONSTRUCTION REQUIREMENTS 45
2-03.3(3) EXCAVATION BELOW SUBGRADE ..... Supplement 45
2-03.3(7)C CONTRACTOR-PROVIDED DISPOSAL SITE ..... Supplement 45
2-03.3(14) EMBANKMENT CONSTRUCTION ..... Supplement 46

2-04 HAUL 46

2-04.2 HAULING ON OTHER THAN CITY STREETS ..... Supplement 46

2-06 SUBGRADE PREPARATION 46

2-06.3(1) SUBGRADE FOR SURFACING ..... Supplement 46

2-07 WATERING 46

2-07.3 CONSTRUCTION REQUIREMENTS ..... Supplement 46
2-07.4(1) WATER FROM CITY HYDRANTS ..... New Section 46

DIVISION 3 PRODUCTION FROM QUARRY AND PIT SITES, AND STOCK PILING 48

3-04 ACCEPTANCE OF AGGREGATE 48

3-04.3(8) PRICE ADJUSTMENT FOR QUALITY OF AGGREGATE ..... Deletion 48

DIVISION 4 BASES 49

DIVISION 5 SURFACE TREATMENTS AND PAVEMENTS BASES 50

5-02 BITUMINOUS SURFACE TREATMENT 50

5-02.3(12) NON-WOVEN FABRIC FOR PAVEMENT OVERLAYS ..... New Section 50

5-03 SLURRY SEAL SURFACE TREATMENT ..... New Section 51

5-03.1 DESCRIPTION 52
5-03.1(1) APPLICABLE SPECIFICATIONS 52
5-03.2 MATERIALS 52
5-03.2(1) ASPHALT EMULSION 52
5-03.2(2) AGGREGATE 52
5-03.2(3) WATER 53

5-03.2(4) LABORATORY TESTING 53
5-03.2(5) STOCKPILING OF AGGREGATES 53
5-03.2(6) STORAGE 53
5-03.2(7) SAMPLING 53
5-03.2(8) VERIFICATION 54
5-03.3 CONSTRUCTION REQUIREMENTS 54
5-03.3(1) EQUIPMENT 54
5-03.3(1)A SLURRY MIXING EQUIPMENT 54
5-03.3(1)B SLURRY SPREADING EQUIPMENT 54
5-03.3(1)C CLEANING EQUIPMENT 55
5-03.3(1)D AUXILIARY EQUIPMENT 55
5-03.3(1)E CALIBRATION 55
5-03.3(2) PREPARATION OF SURFACE 55
5-03.3(3) COMPOSITION AND RATE OF APPLICATION OF THE SLURRY MIX 55
5-03.3(4) WEATHER LIMITATIONS 55
5-03.3(5) TRAFFIC CONTROL 56
5-03.3(6) APPLICATION OF SLURRY SURFACES 56
5-03.3(6)A GENERAL 56
5-03.3(6)B JOINTS 56
5-03.3(6)C HAND WORK 56
5-03.3(6)D CURING 56
5-03.3(6)E PROTECTION OF EXISTING MONUMENTS AND UTILITY COVERS 56

5-04 HOT MIX ASPHALT 57

5-04.1 DESCRIPTION ..... Revision/Supplement 57
5-04.2 MATERIALS ..... Supplement/Revision 57
5-04.3 CONSTRUCTION REQUIREMENTS 57
5-04.3(1) HOT MIX ASPHALT MIXING PLANT ..... Revision 57
5-04.3(3) HOT MIX ASPHALT PAVERS ..... Supplement/Revision 57
5-04.3(3)A MATERIAL TRANSFER DEVICE/VEHICLE ..... Supplement 58
5-04.3(5)A PREPARATION OF EXISTING SURFACES ..... Supplement/Revision 58
5-04.3(5)B PREPARATION OF UNTREATED ROADWAY ..... Revision 58
5-04.3(5)C CRACK SEALING ..... Replacement 58

5-04.3(5)D SOIL RESIDUAL HERBICIDE ..... Revision/Supplement 59
5-04.3(5)E PAVEMENT REPAIR ..... Supplement 59
5-04.3(7)A MIX DESIGN ..... Replacement 59
5-04.3(7)A1 GENERAL 59
5-04.3(7)A2 MIX DESIGN VERIFICATION 60
5-04.3(7)A3 FIELD VERIFICATION TESTING PROCESS 60
5-04.3(7)A4 IGNITION FURNACE CALIBRATION SAMPLES 61
5-04.3(8) MIXING ..... Revision 61
5-04.3(8)A1 GENERAL ..... Replacement 61
5-04.3(8)A4 DEFINITION OF SAMPLING LOT AND SUBLOT ..... Supplement 61
5-04.3(9) SPREADING AND FINISHING ..... Revision/Supplement 62
5-04.3(10) COMPACTION 62
5-04.3(10)A GENERAL ..... Revision/Supplement 62
5-04.3(12)B LONGITUDINAL JOINTS ..... Revision 62
5-04.3(12)C ASPHALT CONCRETE PAVEMENT BUTT JOINTS ..... New Section 63
5-04.3(14) PLANING BITUMINOUS PAVEMENT ..... Supplement 63
5-04.3(17) PAVING UNDER TRAFFIC ..... Revision 63
5-04.3(21) ASPHALT COLD PATCH ..... New Section 63

5-05 CEMENT CONCRETE PAVEMENT 65

5-05.3(1) CONCRETE MIX DESIGN FOR PAVING ..... Supplement 65
5-05.3(8) JOINTS ..... Revision 66
5-05.3(8)D ISOLATION JOINTS ..... Replacement 66
5-05.3(8)E SEALING THROUGH JOINTS ..... New Section 67
5-05.3(9) INTEGRAL CEMENT CONCRETE CURB ON NEW PAVEMENT .... New Section 67
5-05.3(10) TIE BARS AND CORROSION RESISTANT DOWEL BARS Revision/Supplement 68
5-05.3(23) CEMENT CONCRETE PAVEMENT FOR ALLEY ..... New Section 68
5-05.3(23)A PAVEMENT AND ALLEY REQUIREMENTS ..... New Section 68
5-05.3(23)B EXTRA CONCRETE FOR ALLEY APPROACH RAMP ..... New Section 68

5-06 TEXTURED ASPHALT ..... New Section 68

5-06.1 DESCRIPTION 68
5-06.2 MATERIALS 69
5-06.2(1) COATING MATERIAL 69

5-06.2(2) COLORANT 69
5-06.3 CONSTRUCTION REQUIREMENTS 69
5-06.3(1) TEXTURED ASPHALT TERMS 69
5-06.3(2) CERTIFICATION 70
5-06.3(3) EQUIPMENT 70
5-06.3(3)B RECIPROCATING INFRA-RED HEATER 70
5-06.3(3)C VIBRATORY PLATE COMPACTOR 71
5-06.3(3)D SPRAY EQUIPMENT 71
5-06.3(4) CONSTRUCTION 71
5-06.3(4)A SURFACE PREPARATION PRIOR TO COATING 71
5-06.3(4)B LAYOUT AND IMPRINTING 71
5-06.3(4)C HEATING OF ASPHALT 71
5-06.3(4)D SAMPLE AREA 71
5-06.3(4)E COATING INSTALLATION 71
5-06.3(5) QUALITY CONTROL 72
5-06.3(5)A GENERAL 72
5-06.3(5)B STAMPING DEPTH 72
5-06.3(5)C COATING THICKNESS 72
5-06.3(5)D PROTECTION OF EXISTING PAVEMENT MARKINGS 72

5-07 STAMPED COLORED CEMENT CONCRETE ..... New Section 72

5-07.1 DESCRIPTION 72
5-07.2 MATERIALS 73
5-07.3 CONSTRUCTION REQUIREMENTS 74
5-07.3(1) STAMPING 75

5-08 PERVIOUS CONCRETE PAVEMENT ..... New Section 75

5-08.1 DESCRIPTION 75
5-08.2 MATERIALS 75
5-08.3 CONSTRUCTION REQUIREMENTS 76
5-08.3(1) PERVIOUS CONCRETE PRECONSTRUCTION MEETING 76
5-08.3(2) PERVIOUS CONCRETE MIX DESIGN 76
5-08.3(2)A MIX DESIGN CRITERIA 77
5-08.3(2)B JOB MIX FORMULA (JMF) 77

5-08.3(3) SUBMITTALS 77
5-08.3(4) EQUIPMENT 78
5-08.3(4)A BATCHING PLANT AND EQUIPMENT 78
5-08.3(4)B MIXER TRUCKS 78
5-08.3(4)C SIDE FORMS 78
5-08.3(4)D FINISHING EQUIPMENT 79
5-08.3(5) MEASURING AND BATCHING MATERIALS 79
5-08.3(6) ACCEPTANCE 79
5-08.3(6)A INFILTRATION RATE OF THE PLACED PAVEMENT 80
5-08.3(7) REJECTION 81
5-08.3(8) MIXING PERVIOUS CONCRETE 81
5-08.3(8)A LIMITATIONS OF MIXING PERVIOUS CONCRETE 81
5-08.3(9) SUBGRADE PREPARATION AND SUBBASE 81
5-08.3(10) PLACING, SPREADING, FINISHING, EDGING, TOLERANCES AND CURING 82
5-08.3(10)A CONTRACTOR'S QUALIFICATIONS 82
5-08.3(10)B TEST PANEL 83
5-08.3(11) JOINTS 84
5-08.3(11)A CONSTRUCTION JOINTS 84
5-08.3(11)B CONTRACTION JOINTS 84
5-08.3(11)C ISOLATION JOINTS 84
5-08.3(12) COLD WEATHER WORK 85
5-08.3(13) PROTECTION OF PERVIOUS CONCRETE PAVEMENT 85

DIVISION 6 STRUCTURES 86

6-02 CONCRETE STRUCTURES 86

6-02.1 DESCRIPTION ..... Supplement 86

6-04 TIMBER STRUCTURES 86

6-04.1 DESCRIPTION ..... Supplement 86

DIVISION 7 DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS AND CONDUITS 87

7-01 DRAINS 87

7-01.2 MATERIALS ..... Replacement 87

7-01.3 CONSTRUCTION REQUIREMENTS ..... Supplement 87

7-04 STORM SEWERS 87

7-04.2 MATERIALS ..... Revision 87

7-04.3 CONSTRUCTION REQUIREMENTS 88

7-04.3(1)F LOW PRESSURE AIR TEST FOR STORM SEWERS CONSTRUCTED OF NON AIR-PERMEABLE MATERIALS ..... Supplement 88

7-04.3(1)G TELEVISION INSPECTION ..... New Section 88

7-05 MANHOLES, INLETS, CATCH BASINS, AND DRYWELLS 88

7-05.2 MATERIALS ..... Supplement 88

7-05.2(1) TRASH RACKS ..... New Section 89

7-05.3 CONSTRUCTION REQUIREMENTS ..... Supplement 89

7-05.3(1) ADJUSTING MANHOLES & CATCH BASINS TO GRADE ..... Supplement 89

7-05.3(3) CONNECTIONS TO EXISTING MANHOLES ..... Supplement 90

7-05.3(5) CHANNELS FOR MANHOLES ..... New Section 90

7-08 GENERAL PIPE INSTALLATION REQUIREMENTS 90

7-08.1 DESCRIPTION ..... Replacement 90

7-08.2 MATERIALS ..... Replacement 90

7-08.3 CONSTRUCTION REQUIREMENTS 91

7-08.3(1) EXCAVATION AND PREPARATION OF TRENCH 91

7-08.3(1)A TRENCHES ..... Revision 91

7-08.3(1)B SHORING ..... Supplement 91

7-08.3(2)B PIPE LAYING - GENERAL ..... Supplement 91

7-08.3(2)G jointing of dissimilar pipe ..... Supplement 92

7-08.3(2)J JOINING HIGH DENSITY POLYETHYLENE PIPE (HDPE) PIPE ..... New Section 92

7-08.3(2)K PACKAGING, HANDLING, STORAGE HIGH DENSITY POLYETHYLENE PIPE (HDPE) PIPE ..... New Section 92

7-08.3(2)L DEWATERING TRENCHES ..... New Section 92

7-08.3(3) BACKFILLING ..... Supplement 93

7-08.3(3)A VERTICAL CLEARANCE BETWEEN UTILITY LINES ..... New Section 93

7-08.3(4) PLUGGING EXISTING PIPE ..... Replacement 93

7-08.3(5) PIPE TRENCH RESTORATION ..... New Section 93

7-09 WATER MAINS 94

7-09.1 DESCRIPTION ..... Supplement 94
7-09.2 MATERIALS ..... Supplement 94
7-09.3(10) BACKFILLING TRENCHES ..... Supplement 94
7-09.3(13) HANDLING OF THE PIPE ..... Supplement 94
7-09.3(14) PLUGGING EXISTING PIPE ..... New Section 94
7-09.3(19) CONNECTIONS 94
7-09.3(19)A CONNECTIONS TO EXISTING MAINS ..... Supplement 94
7-09.3(19)B MAINTAINING SERVICE ..... Supplement 94
7-09.3(21) CONCRETE THRUST BLOCKING ..... Supplement 95
7-09.3(23) HYDROSTATIC PRESSURE TEST ..... Supplement 95
7-09.3(24) DISINFECTION OF WATER MAINS ..... Supplement 96
7-09.3(24)J PREVENTING REVERSE FLOW ..... Supplement 96
7-09.3(24)N FINAL FLUSHING AND TESTING ..... Supplement 96

7-12 VALVES FOR WATER MAINS 96

7-12.3 CONSTRUCTION REQUIREMENTS 96
7-12.3(2) ADJUST VALVE BOXES ..... New Section 96
7-12.3(3) COMBINATION AIR RELEASE/AIR VACUUM VALVE ASSEMBLY New Section 96
7-12.3(4) VALVE WRENCH EXTENSION BOX ..... New Section 97
7-14.3 CONSTRUCTION REQUIREMENTS ..... Supplement 97
7-14.3(1) SETTING HYDRANTS ..... Replacement 97
7-14.3(4) MOVING EXISTING HYDRANTS ..... Supplement 97

7-15 SERVICE CONNECTIONS 98

7-15.2 MATERIALS ..... Supplement 98
7-15.3 CONSTRUCTION REQUIREMENTS ..... Supplement 98

7-17 SANITARY SEWERS 99

7-17.2 MATERIALS ..... Replacement 99
7-17.3 CONSTRUCTION REQUIREMENTS 99
7-17.3(1) PROTECTION OF EXISTING SEWAGE FACILITIES ..... Supplement 99
7-17.3(2) CLEANING AND TESTING 99
7-17.3(2)A GENERAL ..... Revision/Supplement 99
7-17.3(2)C INFILTRATION TEST ..... Revision 100

7-17.3(2)F LOW PRESSURE AIR TEST FOR SANITARY SEWERS CONSTRUCTED OF NON AIR-PERMEABLE MATERIALS ..... Supplement..... 100

7-17.3(2)H TELEVISION INSPECTION .....Replacement..... 100

7-18 SIDE SEWERS 101

7-18.3 CONSTRUCTION REQUIREMENTS 101

7-18.3(1) GENERAL ..... Supplement/Revision..... 101

7-18.3(2) FITTINGS .....Replacement..... 101

7-18.3(3) TESTING ..... Supplement..... 102

7-19 SEWER CLEANOUTS 102

7-19.3 CONSTRUCTION REQUIREMENTS .....Replacement..... 102

DIVISION 8 MISCELLANEOUS CONSTRUCTION 103

8-01 EROSION CONTROL AND WATER POLLUTION CONTROL 103

8-01.1 DESCRIPTION..... Supplement..... 103

8-01.2 MATERIALS ..... Supplement..... 103

8-01.3(1)A SUBMITTALS..... Supplement/Revision..... 103

8-01.3(2) SEEDING, FERTILIZING, AND MULCHING 105

8-01.3(2)B SEEDING AND fertilizing ..... Supplement..... 105

8-01.3(2)E TACKIFIERS..... Supplement..... 106

8-01.3(7) STABILIZED CONSTRUCTION ENTRANCE..... Revision..... 106

8-01.3(8) STREET CLEANING..... Revision..... 106

8-02 ROADSIDE RESTORATION..... 107

8-02.1 DESCRIPTION..... Supplement..... 107

8-02.3 CONSTRUCTION REQUIREMENTS 107

8-02.3(1) RESPONSIBILITY DURING CONSTRUCTION..... Supplement..... 107

8-02.3(4) TOPSOIL ..... Supplement..... 107

8-02.3(4)A TOPSOIL TYPE A ..... Supplement..... 107

8-02.3(4)C TOPSOIL TYPE C.....Replacement..... 107

8-02.3(5) PLANTING AREA PREPARATION..... Supplement..... 107

8-02.3(5)B ROOT CONTROL BARRIER.....New Section..... 108

8-02.3(6) SOIL AMENDMENTS..... Supplement..... 108

8-02.3(7) LAYOUT OF PLANTING ..... Supplement..... 108

8-02.3(8) PLANTING..... Supplement..... 108

8-02.3(10) FERTILIZERS ..... Supplement..... 109
8-02.3(11) BARK OR WOOD CHIP MULCH ..... Supplement..... 109
8-02.3(12) COMPLETION OF INITIAL PLANTING .....Replacement..... 109
8-02.3(13) PLANT ESTABLISHMENT ..... Supplement/Revision..... 110
8-02.3(16) LAWN INSTALLATION..... 110
8-02.3(16)A LAWN INSTALLATION..... Supplement..... 110
8-02.3(16)B LAWN ESTABLISHMENT ..... Supplement..... 111
8-02.3(16)C LAWN MOWING ..... Supplement..... 111
8-02.3(16)D FERTILIZER FOR SODDED AREA.....New Section..... 111

8-03 IRRIGATION SYSTEMS 111

8-03.1 DESCRIPTION..... Supplement..... 111
8-03.2 MATERIALS..... Supplement..... 111
8-03.3 CONSTRUCTION REQUIREMENTS ..... Supplement..... 111
8-03.3(2) EXCAVATION..... Supplement..... 112
8-03.3(3) PIPING..... Supplement..... 112
8-03.3(4) JOINTING ..... Supplement..... 112
8-03.3(6) ELECTRICAL WIRE INSTALLATION ..... Supplement..... 112
8-03.3(7) FLUSHING AND TESTING..... Supplement..... 112
8-03.3(9) BACKFILL ..... Supplement..... 112
8-03.3(11) SYSTEM OPERATION ..... Supplement/Revision..... 113
8-03.3(12) CROSS CONNECTION CONTROL DEVICE INSTALLATION..... Supplement..... 113
8-03.3(13) IRRIGATION WATER SERVICE .....Replacement..... 113
8-03.3(14) IRRIGATION ELECTRICAL SERVICE .....Replacement..... 113

8-04 CURBS, GUTTERS AND SPILLWAYS 114

8-04.3(1) CEMENT CONCRETE CURBS, GUTTERS, AND SPILLWAYSSupplement/Revision . 114
8-04.3(1)A EXTRUDED CEMENT CONCRETE CURB ..... Supplement..... 114

8-05 DEWATERING SYSTEM..... New Section..... 114

8-05.1 GENERAL..... 114
8-05.1(1) DESIGN..... 115
8-05.1(2) DAMAGES..... 116
8-05.1(3) MAINTAINING DEWATERED EXCAVATION..... 116
8-05.1(4) SYSTEM REMOVAL 116

8-06 CEMENT CONCRETE DRIVEWAY ENTRANCES 117

8-06.1 DESCRIPTION ..... Supplement 117

8-06.2 MATERIALS ..... Supplement 117

8-06.3 CONSTRUCTION REQUIREMENTS ..... Revision/Supplement 117

8-07 PRECAST TRAFFIC CURB 118

8-07.2 MATERIALS ..... Replacement 118

8-07.3 CONSTRUCTION REQUIREMENTS 118

8-07.3(1) INSTALLING CURBS ..... Revision/Supplement 118

8-09 RAISED PAVEMENT MARKERS 119

8-09.3 CONSTRUICTION REQUIREMENTS 119

8-09.3(2) SURFACE PREPARATION ..... Supplement 119

8-13 MONUMENT CASES 119

8-13.1 DESCRIPTION ..... Supplement 119

8-13.2 MATERIALS ..... Supplement 119

8-13.3 CONSTRUCTION REQUIREMENTS 119

8-13.3(1) REFERENCE POINTS ..... New Section 119

8-13.3(2) INSTALLATION ..... New Section 120

8-14 CEMENT CONCRETE SIDEWALKS 120

8-14.1 DESCRIPTION ..... Replacement 120

8-14.3 CONSTRUCTION REQUIREMENTS 120

8-14.3(1) EXCAVATION ..... Supplement 120

8-14.3(2) FORMS ..... Supplement 121

8-14.3(3) PLACING AND FINISHING CONCRETE ..... Supplement/Revision 121

8-14.3(3)B SPECIAL SIDEWALK ..... New Section 121

8-14.3(4) CURING ..... Replacement 122

8-18 MAILBOX SUPPORTS 122

8-18.2 MATERIALS ..... Supplement 122

8-20 ILLUMINATION, TRAFFIC SIGNAL SYSTEMS, AND ELECTRICAL 122

8-20.1(1) REGULATIONS AND CODE ..... Revision 122

8-20.2(1) EQUIPMENT LIST AND DRAWINGS ..... Replacement 123

8-20.3 CONSTRUCTION REQUIREMENTS 123
8-20.3(1) GENERAL ..... Supplement 123
8-20.3(1)A TEMPORARY SIGNAGE FOR TRAFFIC SIGNALS ..... New Section 123
8-20.3(2) EXCAVATION AND BACKFILLING ..... Revision 124
8-20.3(2)A CONDUIT TRENCH CONSTRUCTION ..... New Section 124
8-20.3(2)B CONDUIT TRENCH BEDDING AND BACKFILL ..... New Section 124
8-20.3(3)B REMOVAL OF FOUNDATIONS ..... New Section 125
8-20.3(4) FOUNDATIONS ..... Supplement 125
8-20.3(4)A FOUNDATIONS FOR LIGHT STANDARDS ..... New Section 125
8-20.3(4)B FOUNDATION FOR CONTROLLER CABINET ..... New Section 125
8-20.3(5) CONDUIT ..... Supplement 125
8-20.3(5)A GENERAL ..... Revision 126
8-20.3(5)A1 FIBER OPTIC CONDUIT ..... Revision 126
8-20.3(5)D CONDUIT PLACEMENT ..... Revision 127
8-20.3(6) JUNCTION BOXES, CABLE VAULTS, and PULL BOXES ..... Supplement 127
8-20.3(8) WIRING ..... Supplement 127
8-20.3(9) BONDING, GROUNDING ..... Revision/Supplement 128
8-20.3(10) SERVICE, TRANSFORMER, AND INTELLIGENT TRANSPORTATION SYSTEM (ITS) CABINETS ..... Replacement 129
8-20.3(11) TESTING ..... Supplement/Revision 129
8-20.3(13) ILLUMINATION SYSTEMS 130
8-20.3(13)A LIGHT STANDARDS ..... Supplement 130
8-20.3(13)C LUMINAIRES ..... Supplement 130
8-20.3(13)F LUMINAIRE FUSING ..... New Section 131
8-20.3(13)G PHOTOELECTRIC CONTROLS ..... New Section 131
8-20.3(14) SIGNAL SYSTEMS 131
8-20.3(14)B SIGNAL HEADS ..... Supplement 131
8-20.3(14)B.1 BACKPLATE TAPE ..... New Section 131
8-20.3(14)C INDUCTION LOOP VEHICLE DETECTORS ..... Supplement 132
8-20.3(14)D TEST FOR INDUCTION LOOPS AND LEAD-IN CABLE ..... Supplement 132
8-20.3(14)E SIGNAL STANDARDS ..... Supplement 132
8-20.3(14)F EMERGENCY VEHICLE PRE-EMPTION ..... New Section 133
8-20.3(14)G INTERCONNECT NETWORK ..... New Section 133
8-20.3(14)H PEDESTRIAN PUSH BUTTONS AND SIGNS ..... New Section 133

8-20.3(14)I VIDEO DETECTION SYSTEM ..... New Section 134
8-20.3(14)J CLOSED CIRCUIT TELEVISION (CCTV) CAMERA SYSTEM ..... New Section 134
8-20.3(14)J.1 DESCRIPTION 134
8-20.3(14)J.2 MATERIALS 134
8-20.3(14)J.2(1) MOUNTING 135
8-20.3(14)J.3 CONSTRUCTION REQUIREMENTS 135
8-20.3(14)J.3(1) GENERAL CABLE INSTALLATION 135
8-20.3(14)J.3(2) CAMERA CABLE 135
8-20.3(14)J.3(3) SYSTEM SETUP 136
8-20.3(14)J.3(4) CCTV SYSTEM PERFORMANCE TEST 136
8-20.3(14)J.3(5) CCTV SYSTEM TEST 136
8-20.3(14)J.3(6) LOCAL CCTV TEST 136
8-20.3(14)K WIRELESS BROADBAND COMMUNICATIONS SYSTEM ..... New Section 137
8-20.3(14)K.1 DESCRIPTION 137
8-20.3(14)K.2 WIRELESS BROADBAND SYSTEM MATERIALS 137
8-20.3(14)K.3 TESTING, MOUNTING AND WIRING 137
8-21 PERMANENT SIGNING 138
8-21.3 CONSTRUCTION REQUIREMENTS ..... Supplement 138
8-22 PAVEMENT MARKING 138
8-22.1 DESCRIPTION ..... Supplement 138
8-23 TEMPORARY PAVEMENT MARKINGS 138
8-23.1 DESCRIPTION ..... Supplement 138
8-24 ROCK AND GRAVITY BLOCK WALL AND GABION CRIBBING 138
8-24.2 MATERIALS ..... Supplement 138
8-24.3 CONSTRUCTION REQUIREMENTS ..... Supplement 139
8-30 WOOD FENCE AND GATES ..... New Section 139
8-30.1 DESCRIPTION 139
8-30.2 CONSTRUCTION REQUIREMENTS 139
8-31 FIBER OPTIC COMMUNICATIONS ..... New Section 140
8-31.1 DESCRIPTION 140
8-31.2 CONSTRUCTION REQUIREMENTS 140

8-31.2(1) CONTRACTOR QUALIFICATIONS 140
8-31.2(2) QUALITY ASSURANCE 140
8-31.2(3) FIBER OPTIC CABLE INSTALLATION 141
8-31.2(4) FIBER OPTIC CABLE SPLICING 142
8-31.2(5) FIBER OPTIC CABLE LABELING 143
8-31.2(6) FIBER OPTIC CABLE RACKING IN CABLE VAULTS 143
8-31.2(7) FIBER OPTIC PATCH PANELS 143
8-31.2(8) FIBER OPTIC SPLICE CASE 143
8-31.3 FIBER OPTIC CABLE TESTING 144
8-31.3(1) INSERTION LOSS TESTING 144
8-31.3(2) OPTICAL TIME DOMAIN REFLECTOMETER (OTDR) TESTING 145
8-31.3(3) FIBER CABLE TESTING DOCUMENTATION 146

DIVISION 9 MATERIALS 147

9-05 DRAINAGE STRUCTURES AND CULVERTS 147

9-05.7(1) PLAIN CONCRETE STORM SEWER PIPE ..... Supplement 147
9-05.7(2) REINFORCED CONCRETE STORM SEWER PIPE ..... Supplement 147
9-05.12 POLYVINYL CHLORIDE (PVC) PIPE 147
9-05.12(1) SOLID WALL PVC CULVERT PIPE, SOLID WALL PVC STORM PIPE, AND SOLID WALL PVC SANITARY SEWER PIPE ..... Revision 147
9-05.13 DUCTILE IRON SEWER PIPE ..... Revision 147

9-14 EROSION CONTROL AND ROADSIDE PLANTING 147

9-14.1 SOIL 147
9-14.1(1) TOPSOIL TYPE A ..... Supplement 147
9-14.1(3) TOPSOIL TYPE C ..... Supplement 148
9-14.4 MULCH AND AMENDMENTS ..... Supplement 148
9-14.4(3) BARK OR WOOD CHIPS ..... Supplement 148
9-14.5(1) POLYACRYLAMIDE (PAM) ..... Supplement 148
9-14.6 plant materials 148
9-14.6(4) TAGGING ..... Replacement 148
9-14.6(5) INSPECTION ..... Supplement 148

9-15 IRRIGATION SYSTEM ..... Supplement 148

9-15.1(2) POLYVINYL CHLORIDE PIPE AND FITTINGS ..... Supplement 148

9-15.3 AUTOMATIC CONTROLLERS ..... Supplement..... 149

9-15.5 VALVE BOXES ..... Supplement..... 149

9-15.6 GATE VALVES ..... Supplement..... 149

9-15.7(2) AUTOMATIC CONTROL VALVES ..... Supplement..... 149

9-15.8 QUICK COUPLING EQUIPMENT ..... Supplement..... 149

9-15.9 DRAIN VALVES ..... Supplement..... 149

9-15.11 CROSS CONNECTION CONTROL DEVICES..... Supplement..... 150

9-15.17 ELECTRICAL WIRE AND SPLICES ..... Supplement..... 150

9-15.18 DETECTABLE MARKING TAPE ..... Supplement..... 150

9-29 ILLUMINATION, SIGNAL, ELECTRICAL.....Revision..... 150

9-29.1 CONDUIT, INNERDUCT, OUTERDUCT..... Supplement..... 150

9-29.2 JUNCTION BOXES, CABLE VAULTS, AND PULL BOXES ..... Supplement 150

9-29.3 FIBER OPTIC CABLE, ELECTRICAL CONDUCTORS, AND CABLE ..... Supplement..... 151

9-29.6(1)A LIGHTING & SIGNAL STANDARDS & DAVIT ARMS.....New Section..... 153

9-29.6(1)B WRAPPING.....New Section..... 156

9-29.6(2)A ANCHOR BASES .....New Section..... 156

9-29.6(4) WELDING ..... Supplement..... 156

9-29.6(5) FOUNDATION HARDWARE..... Revision..... 156

9-29.7 LUMINAIRE FUSING & ELECTRICAL CONNECTIONS AT LIGHT STANDARD BASES, CANTILEVER BASES AND SIGN BRIDGE BASES .....Replacement..... 156

9-29.9 BALLAST, TRANSFORMERS ..... Supplement..... 157

9-29.10 LUMINAIRES .....Replacement..... 157

9-29.11(2) PHOTOELECTRIC CONTROLS ..... Supplement..... 158

9-29.12(1) ILLUMINATION CIRCUIT SPLICES ..... Supplement..... 158

9-29.12(2) TRAFFIC SIGNAL SPLICE MATERIAL ..... Supplement..... 159

9-29.12(3) SEALANTS .....New Section..... 159

9-29.13(2)A TRAFFIC SIGNAL CONTROLLER ASSEMBLY TESTING..... Replacement 159

9-29.13(3) TRAFFIC SIGNAL CONTROLLERS ..... Revised..... 159

9-29.13(6) EMERGENCY PREEMPTION ..... Supplement..... 159

9-29.13(10) NEMA, TYPE 170E, 2070 CONTROLLERS AND CABINETS .....Replacement..... 160

9-29.13(10) TRAFFIC SIGNAL CONTROLLER CABINET UNIT..... 160

9-29.16 VEHICULAR SIGNAL HEADS, DISPLAYS, AND HOUSING ..... Revision..... 161

9-29.16(2) CONVENTIONAL TRAFFIC SIGNAL HEADS ..... Supplement..... 161

9-29.16(2)A OPTICAL UNITS ..... Supplement..... 161
9-29.16(2)E PAINTING SIGNAL HEADS .....Replacement..... 162
9-29.18 VEHICLE DETECTOR..... Supplement..... 162
9-29.19 PEDESTRIAN PUSH BUTTONS..... Revision..... 162
9-29.20 PEDESTRIAN SIGNALS..... Supplement..... 162
9-29.22 REGTANGULAR RAPID FLASHING BEACON (RRFB) .....New Section..... 163
9-29.24 SERVICE CABINETS..... Supplement..... 163
9-29.26 TRAFFIC SIGNAL BATTERY BACKUP SYSTEM.....New Section..... 163

9-30 WATER DISTRIBUTION MATERIALS 164

9-30.1(1) DUCTILE IRON PIPE..... Supplement..... 164
9-30.2(1) DUCTILE IRON PIPE..... Supplement..... 164
9-30.2(6) RESTRAINED JOINTS.....Replacement..... 164
9-30.3(1) GATE VALVES (3-INCHES TO 12-INCHES) .....Replacement..... 165
9-30.3(3) BUTTERFLY VALVES ..... Supplement..... 166
9-30.3(4) VALVE BOXES ..... Supplement..... 166
9-30.3(8) TAPPING SLEEVE AND VALVE ASSEMBLY ..... Supplement..... 166
9-30.5 HYDRANTS..... Supplement..... 166

9-37 FILTER FABRIC..... 169

9-37.1 FILTER FABRIC FOR INFILTRATION SYSTEMS.....New Section..... 169

DIVISION 1 GENERAL REQUIREMENTS

1-01 DEFINITIONS AND TERMS

1-01.3 DEFINITIONS Revision/Supplement

(April 2006 City of Auburn)
Whenever the words "as directed", "as required", "as permitted", or words of the like effect are used, it shall be understood that the direction, requirement or permission of the City of Auburn is intended. The words "sufficient", "necessary", "proper", and the like shall mean sufficient, necessary or proper in the judgment of the City of Auburn. The words "approved", "acceptable", "satisfactory", or other words of the like shall mean approved by, or acceptable to, the City of Auburn.

(January 4, 2016 APWA GSP)
Supplement this Section with the following:

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

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

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

(October 2016D, City of Auburn)

Applicant
The term Applicant shall be used to mean the Owner and any agent of the Owner authorized to represent the Owner.

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

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

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

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

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

Contracting Agency
The term Contracting Agency shall mean the City of Auburn.

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

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

Dates

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

Final Acceptance Date
The date upon which the City accepts the work for the project as being completed.

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

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

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

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

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

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

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

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

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

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

Standard Details

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

Standard Plans

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

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

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

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

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

1-04.2 COORDINATION OF CONTRACT DOCUMENTS, PLANS, SPECIAL PROVISIONS, SPECIFICATIONS AND ADDENDA Revision

(April 2006D City of Auburn)
The second paragraph is deleted and replaced with the following:

Any inconsistency in the parts of the Contract Documents shall be resolved by following this order of precedence (e.g., 1 presiding over 2, 3, 4, 5, 6, and 7; 2 presiding over 3, 4, 5, 6, and 7; and so forth):

1. Construction Standards Part 1 - Division 1 General Requirements;
2. Construction Standards Part 1 - Divisions 2 Technical Specifications;
3. City Approved Plans;
4. Construction Standards Part II - City of Auburn Standard Details and Referenced WSDOT Standard Plans;
5. WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction;
6. WSDOT Standard Plans (M21-01) for Road, Bridge and Municipal Construction;
7. Manual on Uniform Traffic Control Devices for Streets and Highways, current edition; and
8. American Water Works Association Standards, current edition.

1-05 CONTROL OF WORK

1-05.3 WORKING DRAWINGS Supplement

1-05.4 CONFORMITY WITH AND DEVIATIONS FROM PLANS AND STAKES Revision/Supplement

(August 2015D City of Auburn)
Revise the second sentence of the second paragraph to read:

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

(October 2016D, City of Auburn)

The Contractor shall establish all survey controls, both horizontal and vertical, as necessary to assure proper placement of all project elements . Survey work shall be within the following tolerances:

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

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

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

1-05.4(1) RECORD CONSTRUCTION DRAWINGS New Section

(February 2016D City of Auburn)

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

1. The Contractor shall be responsible for tracking all relevant field changes to the approved construction drawings. These changes shall be clearly identified in red ink in a comprehensive manner on one set of full size Plans to be known as the "Record Construction Drawings".
2. The Record Drawing set shall be used for this purpose alone, shall be kept separate from other Plan sheets, and shall be clearly marked as Record Drawings. The Record Drawings shall be kept on site, and shall be available for review by the Contracting Agency at all times. The Contractor shall bring the Record Drawings to each progress meeting for review when such meetings are included in the Contract.
3. The quality of the Record Drawings, in terms of accuracy, clarity, and completeness, is to be adequate to allow the Applicant's Engineer to modify the computer-aided drafting (CAD) Plans to produce a complete set of Record Drawings for the Contracting Agency.
4. The record construction drawings shall identify all existing or abandoned utilities that were encountered during construction that were not shown on the approved construction drawings.
5. The Record Drawing markups shall document all changes in the Work, both concealed and visible. Items that must be shown on the markups include but are not limited to:

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

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

<u>Sanitary Sewer</u>

Manholes:

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

Pipes:

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

Side Sewers:

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

<u>Storm Drainage</u>

Manholes/Catch Basins:

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

Pipes:

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

Water

Pipes:

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

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

Type of facility
Location to the nearest 1-foot horizontal

Meters and Services:

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

Streets

Public Streets:

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

Driveway and Sidewalk:

Type of driveway (commercial or residential section)
Centerline driveway location to the nearest 1-foot horizontal
Driveway width to the nearest 1-foot horizontal
Sidewalk width to the nearest 1-foot horizontal
Channelization:
Type of buttons, reflectors, and curbs

General layout location to the nearest 1-foot horizontal

Signing:

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

Illumination:

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

Signalization:

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

6. At the time the Contractor transmits the comprehensive redline Record Construction Drawings to the City, they shall certify that said drawings are in conformance to the above-referenced requirements and are an accurate depiction of built conditions;
7. The City shall receive and approve the Contractor's certified "Record Construction Drawings" as specified herein prior to achieving physical completion.
8. Additional requirements and process description are included in the Engineering Design Standards, Section 2.03.4

These Record Construction Drawings shall be kept current during the course of construction by the Contractor and be available for review upon request by the Engineer.

1-05.7 REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK Supplement

(October 2016D, City of Auburn)
Supplement this section with the following:

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

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

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

of the Contractor's unauthorized work. The Engineer will not release any financial securities for the project until such time as all monies due to the City by the Contractor have been paid.

No adjustment in contract time or compensation will be allowed because of the delay in the performance of the work attributable to the exercise of the Contracting Agency's rights provided by this Section.

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

1-05.10 GUARANTEES Supplement

(September 2013D City of Auburn)
The work performed under these Contract Documents shall be guaranteed for a period of one year beyond the "Completion Date" thereof against defective materials, equipment, and workmanship and shall also include the landscape establishment required in the Contract per Section 8-02.3(13) (Plant Establishment). Upon receipt of notice from the City of failure of any part of the material, equipment or workmanship during the guarantee period, the affected part or parts shall be replaced with new materials or equipment by, and at the expense of, the Contractor. This guarantee shall be a financial security in compliance with the City's requirements.

The Contractor shall be available approximately sixty (60) calendar days prior to the expiration of the one-year guarantee period to tour the project, with the Engineer, in support of the Engineer's effort to establish a list of corrective work required under the one-year guarantee. Upon the receipt of written notice of such required corrective work, the Contractor shall pursue vigorously, diligently, and without unauthorized interruption of the City Facilities, the work necessary to correct the items listed.

1-05.11 FINAL INSPECTION Replacement

Delete the entire Section and replace with the following:

1-05.11 FINAL INSPECTIONS AND OPERATIONAL TESTING

1-05.11(2) FINAL INSPECTION AND PHYSICAL COMPLETION DATE
(October 1, 2005 APWA GSP)
When the Contractor considers the work physically complete and ready for final inspection, the Contractor by written notice, shall request the Engineer to schedule a final inspection. The Engineer will set a date for final inspection. The Engineer and the Contractor will then make a final inspection and the Engineer will notify the Contractor in writing of all particulars in which the final inspection reveals the work incomplete or unacceptable. The Contractor shall immediately take such corrective measures as are necessary to remedy the listed deficiencies. Corrective work shall be pursued vigorously, diligently, and without interruption until physical completion of the listed deficiencies. This process will continue until the Engineer is satisfied the listed deficiencies have been corrected.

If action to correct the listed deficiencies is not initiated within 7 days after receipt of the written notice listing the deficiencies, the Engineer may, upon written notice to the Contractor, take whatever steps are necessary to correct those deficiencies pursuant to Section 1-05.7. The

Contractor will not be allowed an extension of contract time because of a delay in the performance of the work attributable to the exercise of the Engineer's right hereunder.

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

1-05.11(3) OPERATIONAL TESTING

(October 2016D, City of Auburn)
It is the intent of the Contracting Agency to have, at the Physical Completion Date, a complete and operable system. Therefore when the work involves the installation of machinery or other mechanical equipment; street lighting, electrical distribution or signal systems; irrigation systems; buildings; or other similar work, it may be desirable for the Engineer to have the Contractor operate and test the work for a period of time after final inspection but prior to the physical completion date. Whenever items of work are listed in the Contract Provisions for operational testing, they shall be fully tested under operating conditions for the time period specified to ensure their acceptability prior to the Physical Completion Date. During and following the test period, the Contractor shall correct any items of workmanship, materials, or equipment which prove faulty, or that are not in first class operating condition. Equipment, electrical controls, meters, or other devices and equipment to be tested during this period shall be tested under the observation of the Engineer, so the Engineer may determine their suitability for the purpose for which they were installed. The Physical Completion Date cannot be established until testing and corrections have been completed to the satisfaction of the Engineer.

The costs for power, gas, labor, material, supplies, and everything else needed to successfully complete operational testing, shall be paid by the Contractor.

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

1-05.14(1) COOPERATION WITH OTHERS New Section

(August 2015 City of Auburn)
Should the Engineer determine that a property owner, a utility company or the City has adequate reason to avoid access closure, sewer or water shutoff at the time scheduled, the Contractor shall reschedule their work to meet the new conditions.

1-05.17 ORAL AGREEMENTS New Section

(October 2016D City of Auburn)
No oral agreement, conversation, or electronic mail (e-mail), excluding electronic submittals outlined in Section 1-06 (Control of Material) and Requests for Information outlined in Section 1-04.3(1) (Request for Information (RFI)), with any officer, agent, or employee of the City, shall affect or modify any of the terms or obligations contained in any of the Contract Documents. Such oral agreement, conversation, or e-mail shall be considered as unofficial information and in no way binding, unless subsequently put in writing AND signed by the City Engineer.

1-06 CONTROL OF MATERIAL

(April 2006 City of Auburn)

1-06.7 SUBMITTALS New Section

1-06.7(1) SUBMITTAL PROCEDURES

All submitted information shall be clear, sharp high contrast copies. Accompany each submittal with a letter of transmittal containing the following information:

1. Contractor's name and the name of subcontractor or supplier who prepared the submittal.
2. The Permit Number and identifying number.
3. Each new submittal shall be sequentially numbered (1, 2, 3, etc.,). Each resubmittal shall include the original number with a sequential alpha letter added (1A, 1B, 1C, etc.).
4. Description of the submittal and reference to the contract requirement or technical specification section and paragraph number being addressed.

1-06.7(2) SCHEDULE OF SUBMITTALS

Prior to beginning the work, the Contractor shall submit three (3) copies of a Schedule of Submittals showing the date by which each submittal required for product review or product information will be made. The Schedule of Submittals will 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.

The Contractor shall allow a minimum of 30 calendar 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.

1-06.7(3) SHOP DRAWINGS, PRODUCT DATA, SAMPLES

This paragraph covers submittal of Shop Drawings, Product Data and Samples required for the Engineer's review.

Number and type of submittals:

1. Shop Drawings: Submit five copies, two of which will be marked, stamped and returned to the Contractor. The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers.
2. Product Data: Submit five copies, two of which will be marked, stamped and returned to the Contractor. The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers.
3. Samples: Submit three labeled samples or three sets of samples of manufacturers' full range of colors and finishes. One sample will be returned to the Contractor.

Content of submittals:

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, 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.
6. Additional requirements for submittals are contained in the Technical Specification sections.
7. Designation of work as "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 the deviations shall accompany submittals that contain deviations from the requirements of the Contract Documents. The Contractor's letter shall:

1. Cite the specific 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.

The Engineer will stamp and mark each submittal prior to returning it to the Contractor. The stamps will indicate:

1. "NO EXCEPTIONS TAKEN" – Accepted 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. "MAKE CORRECTIONS NOTED" – Accepted 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. "AMEND AND RESUBMIT" – 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. "REJECTED" – Submitted material does not conform to Plans and Specifications in major respect (i.e., wrong size, model, capacity, or material). A new submission is required.
5. "NOT REVIEWED" – Submittals for material not required on project.

A letter explaining the changes shall accompany re-submittals that contain changes that were not requested by the Engineer on the previous submittal.

1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC

1-07.1 LAWS TO BE OBSERVED Revision/Supplement

(January 4, 2016 WSDOT Amendment)
In the second to last sentence of the third paragraph, "WSDOT" is revised to read "Contracting Agency".

(October 1, 2005 APWA GSP)
Supplement this section with the following:

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

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

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

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and

completely responsible for the conditions of the project site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

1-07.5(5) CITY OF AUBURN REQUIREMENTS New Section

(April 2006D City of Auburn)
The following list represents a portion of City of Auburn Code requirements dealing with the preservation of public natural resources that affect or are affected by the proposed work. Copies of applicable code are available in the City Clerk's office at City Hall, 25 West Main Street, Auburn, Washington.

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

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

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

1-07.6 PERMITS AND LICENSES Supplement

(April 2006D City of Auburn)
The Contractor shall become familiar with all permits and licenses to be obtained and shall insure that all their requirements are met. All required permits and licenses shall be obtained by the Contractor.

1-07.13(2) RELIEF OF RESPONSIBILITY FOR COMPLETED WORK Replacement

(February 2016 City of Auburn)
This Section is deleted and replaced with the following:

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

1-07.15 TEMPORARY WATER POLLUTION PREVENTION Supplement

(October 2016D 2007 City of Auburn)

The Contractor shall implement temporary erosion and sediment control (TESC) measures as necessary to prevent erosion and to stop sediment-laden water from leaving the site and entering the storm drain system. Measures shall be in accordance with, and conform to, the City of Auburn Design Manual and Section 8-01 of the Project Specifications. The Contractor shall construct all necessary elements and provide other necessary materials, labor, and equipment.

Exposed slopes and excavations shall be protected. The Contractor shall maintain and clean the facilities for the life of the construction. The Contractor shall have adequate materials on the site to respond to weather changes and shall modify the system to accommodate seasonal changes. For projects that will have exposed soils or be worked on from October 1 to March 31, a Winterization Plan will be required and shall be complete and accepted by the City prior to September 30. The Winterization Plan shall meet the requirements defined in Chapter 5 of the Engineering Design Standards.

1-07.16 PROTECTION AND RESTORATION OF PROPERTY Supplement

(February 2015 City of Auburn)

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

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

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

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

Existing cement concrete curb, gutter and sidewalk structures disturbed by the Contractor's operations shall be replaced to match existing, or as directed by the Engineer. Cement concrete shall be Class 3000 with entrained air in conformance with Section 6-02 (Concrete Structure) of the Project Specifications.

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

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

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

1-07.16(1) PRIVATE/PUBLIC PROPERTY

1-07.16(1)A PROTECTION AND RESTORATION OF EXISTING MARKERS AND MONUMENTS New Section

(April 2006 City of Auburn)
All existing survey monuments and property corner markers shall be protected from movement by the Contractor. All existing survey markers and/or monuments that must be removed for construction purposes are to be referenced by survey ties and then replaced by the Contractor. All existing property corner markers disturbed or removed by the Contractor's operations which, in the opinion of the Engineer, were not required to be removed for construction purposes shall be replaced, at the Contractor's own expense, by a Professional Land Surveyor registered in the State of Washington. Resetting of property corners for which there is no Record of Survey or Short Plat filed with the County Auditor may require exhaustive and expensive resurvey. This includes the City of Auburn benchmark system. Any damaged monuments must be reset to second order, first class specifications.

1-07.16(2) VEGETATION PROTECTION AND RESTORATION Supplement

(March 2016D, City of Auburn)
The Contractor shall provide notification a minimum of three (3) days advance notification to the owners of any impacts to private vegetation or landscaping that interferes with the work, whether shown on the plans or not.

(August 2, 2010 WSDOT GSP)
Vegetation and soil protection zones for trees shall extend out from the trunk to a distance of 1 foot radius for each inch of trunk diameter at breast height.

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

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

1-07.17 UTILITIES AND SIMILAR FACILITIES Replacement

This section is deleted in its entirety and replaced with the following.

(August 2015D City of Auburn)
The Plans show locations of various known existing above ground amenities and obstructions. The location of known existing underground utilities, as shown on the Plans, are indicated based on available information and may not be exact. The Contractor is responsible for determining their exact location.

A list of utilities and known contact persons will be available at the pre-construction conference for the Contractor's convenience.

The Contractor is responsible for coordination with the utility companies and arranging for the temporary or permanent movement or adjustment of their facilities within the project limits.

The Contractor must call the Utilities Underground Location Center (One-Call Center) for field location, not less than two (2) and not more than ten (10) business days before the scheduled date for beginning excavation that might affect underground utilities. A business day is defined as any day other than Saturday, Sunday, or a legal Local, State, or Federal holiday. The telephone number for the One-Call Center for this project is 811.

The Contractor is responsible for any breakage of utilities or services resulting from their operations and shall hold the City and its consultants and agencies harmless from any claims resulting from disruption of, or damages to, the same.

The temporary removal, replacement, bracing or holding of any utility or structure, including power and telephone poles, required to accomplish the work is the responsibility of the Contractor. Raising, lowering or horizontal relocation of existing water services not requiring additional material, where such relocation is required to accommodate other work, shall be the responsibility of the Contractor.

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

1-07.17(1)A DISRUPTIONS TO CITY WATER SERVICES New Section

(September 2015 City of Auburn)
All water service shutdowns caused by construction activities shall be requested by the Contractor a minimum of four (4) working days in advance of the proposed shutdown, shall be approved by the City a minimum of two (2) working days before the shutdown, and shall be performed by City Water Utility staff. All water service disruptions shall be limited to a maximum of 4 hours.

The City does not guarantee a complete dry system following any water shutdown.

1-07.17(1)B(1)UTILITY POTHOLING New Section

(April 2006 City of Auburn)
The Contractor shall physically locate, uncover, and document the location of underground utilities where necessary or directed using methods and equipment acceptable to the Engineer. The purpose of utility potholing is to allow sufficient time ahead of pipe laying operations to identify underground conflicts, allow ample time to make minor adjustments in pipe grade and/or alignment, and generally facilitate the Contractor's work schedule.

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

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

1-07.23 PUBLIC CONVENIENCE AND SAFETY Supplement

(February 2015 City of Auburn)
In the last sentence of the first paragraph, replace the word "Highway" with the word "Public".

Traffic control and street maintenance for the safety of the traveling public on this project shall be the sole responsibility of the Contractor and all methods and equipment used will be subject to the approval of the City of Auburn. The Contractor and their surety shall be liable for injuries and damages to persons and property suffered because of the Contractor's operations or any negligence connected with them.

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

The Contractor shall maintain normal two-way traffic through the work site(s) at all times, unless the Engineer gives written permission to alter this requirement.

1-07.23(1) CONSTRUCTION UNDER TRAFFIC Supplement

(August 2015 City of Auburn)
All unattended excavations shall be barricaded at all times.

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

At the end of each working day, the Contractor shall place temporary patches or steel plates over unfinished portions of trenches crossing traveled ways. Material for temporary patches shall be hot or cold mix asphalt concrete.

Any asphalt concrete paving, asphaltic cold patch, crushed surfacing or other material required for maintaining traffic during the life of this Contract shall be placed by the Contractor immediately upon request by the Engineer, in the amounts designated.

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

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

1-07.23(1)A DUST AND MUD CONTROL AND STREET CLEANING New Section

(March 2010 City of Auburn)
The Contractor is responsible for controlling dust and mud within the project limits. All streets outside the project limits used by the Contractor during the execution of this Contract shall be kept clean. The Contractor shall be prepared to use the proper equipment necessary to render

the streets free of all mud, debris, and foreign materials. Any damage caused by dust or mud accumulation on the streets and in the storm sewer system shall be the sole responsibility of the Contractor.

The Contractor's cleaning actions must comply with the City of Auburn's Surface Water Management Manual (SWMM).

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

1-07.23(1)B DAILY CLEANUP AND MAINTENANCE ITEMS New Section

(April 2006D City of Auburn)

The Contractor shall clean all roadways, streets and appurtenances, including sidewalks which are open for public use, of all material or debris that has been dropped or otherwise deposited thereon, as a result of Contractor's on- and off-site operations, at the conclusion of each working day, and at such other times as deemed necessary by the Engineer to ensure the safety of the traveling public and to prevent inconvenience to the public and owners of private property adjacent to the project.

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

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

1-07.23(2) CONSTRUCTION AND MAINTENANCE OF DETOURS Supplement

(August 2015D City of Auburn)

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

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

Street closures and detours shall provide for the following:

1. Reasonable access to, and egress from, the properties adjacent to the project at all times.

2. At least one-way traffic on all existing roadways within the project limits during working hours and at the end of each working day provisions for the safe passage of two-way traffic during the non-working hours.
3. If the Contractor requires delays or limited term street closure the request shall be submitted, in writing, for the approval of the Engineer before the anticipated delay or closure. The delay or closure request shall state the reason, the locations, the time and date, and the duration of the required delay or closure.
4. The Contractor is required, at their own expense, to remove all excess materials, debris, or other obstruction caused by their operation, from the streets or alleys as the work progresses, whether within the project limits or along haul routes. If the Contractor neglects to remove such materials or obstruction and return streets, sidewalks, driveways, and roads in suitable condition for traffic within one (1) working day after having received written notice from the Engineer, the work may be done by the City of Auburn and the cost thereof charged to the Contractor. The Contractor shall repair or replace any streets, sidewalks, roads, or culverts damaged by their operations, to the satisfaction of the Engineer and other concerned parties.
5. The Contractor must maintain convenient access for local traffic to driveways, houses, and buildings along the work route. Such access shall be maintained as near as possible to that which existed before construction began. The Contractor shall provide ten (10) working days advance notice to all property owners and tenants of street and alley closures or other restrictions, which may interfere with their access. When the abutting owners' access across right-of-way lines is to be eliminated and replaced under the Contract by another access, the existing access shall not be closed until the replacement access facility is available.

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

1. The Contractor shall provide at least ten (10) working days advance written notification to the local public transportation organization(s), School District, Fire Authority and Police Department before the beginning of operations, so that these agencies may reroute their emergency vehicles around the construction zone. If the Fire Authority or Police Department determine that rerouting is not possible, the Contractor shall provide reasonable access through the construction zone at all times.

2. The Contractor shall notify all affected owners and agencies of all closures, detours and traffic interruptions at least ten (10)working days in advance of such closure. Notification shall be in writing and must include the beginning and ending times and dates of traffic disruption(s), names of streets or locations of alleys to be affected, detour routes, etc. The Contractor shall give the Engineer written certification of all notifications before all traffic disruptions. On large projects requiring extended traffic disruption, the Contractor shall make additional notifications, as conditions require.

1-07.28 HAUL ROUTES New Section

(October 2016D City of Auburn)
Prior to moving any materials or equipment on public streets, the Contractor shall submit a haul route plan to the Engineer for approval per Section 1-06.7 (Submittals). The plan must be submitted 10 calendar days prior to hauling. Engineer approval of the haul route plan is required before hauling begins. Damage done to streets during the Contractor's hauling shall be repaired to pre-construction conditions at the Contractor's expense.

The haul route plans shall include the following:

1. What type of material and equipment is being hauled? (Imported fill material for all structural fill and other fill activities shall be approved by the Engineer.
2. Total quantity hauled as part of this action.
3. Total haul days of this action.
4. Total quantity of material moved per day.
5. Estimated number of trips per day.
6. Estimated start date.
7. Estimated completion date.
8. Intended time of day of the haul.
9. Intended route of the haul. (Clearly shown on the site map)

1-08 PROSECUTION AND PROGRESS

1-08.0 PRELIMINARY MATTERS New Section

1-08.0(1) PRECONSTRUCTION CONFERENCE

(October 2016D City of Auburn)
Prior to beginning work on the Project, a preconstruction conference will be scheduled between the Applicant, the City and such other interested parties as may be invited.

The purpose of the preconstruction conference will be:

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

The Contractor shall prepare, and submit, at the preconstruction meeting, the following:

1. A preliminary schedule of submittals;

1-08.0(2) HOURS OF WORK

(October 2006 City of Auburn)
Except in the case of emergency, or unless otherwise stated in the Plans or approved by the City, the normal straight time working hours for the contract shall be any consecutive 8-hour period between 7:00 a.m. and 6:00 p.m. of a working day, with a maximum 1-hour lunch break and a 5-day work week. The normal straight time 8-hour working period for the contract shall be established with Plan approval, at the preconstruction conference or prior to the Contractor commencing the work.

Permission to work longer than an 8-hour period between 7:00 a.m. and 6:00 p.m. is not required. Permission to work between the hours of 7:00 p.m. and 7:00 a.m. during weekdays and between the hours of 6:00 p.m. and 9:00 a.m. on weekends or holidays may also be subject to noise control requirements. If the Contractor desires to work during restricted times, the Contractor shall submit a written request to the City thirty (30) calendar days prior to the day for which the Contractor is requesting permission to work. The written request shall meet all requirements of Auburn City Code 8.28 and will include specific days and times and description of work to be performed and the reasons the work cannot be performed during the normal hours of work. If approval is granted, it may be revoked at any time the City receives complaints from the public or adjoining property owners regarding the noise from the Contractor's operations.

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

1-08.4 NOTICE TO PROCEED AND PROSECUTION OF THE WORK Revision

Delete the first paragraph and replace it with the following:

(August 2015D City of Auburn)
The City will send a dated and signed official "Notice to Proceed" to the Contractor.

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

1-10 TEMPORARY TRAFFIC CONTROL

1-10.1 GENERAL Supplement

(January 2012D City of Auburn)
The Contractor shall provide flaggers, signs, and other traffic control devices. The Contractor shall erect and maintain all construction signs, warning signs, detour signs, and other traffic control devices necessary to warn and protect the public at all times from injury or damage as a result of the Contractor's operations which may occur on highways, roads, streets, sidewalks, or paths. No work shall be done on or adjacent to any traveled way until all necessary signs and traffic control devices are in place.

1-10.2 TRAFFIC CONTROL MANAGEMENT

1-10.2(2) TRAFFIC CONTROL PLANS Supplement

(April 2014 City of Auburn)
The traffic control plans and/or pedestrian accommodation plans included with the Contract Documents have been furnished as a guide to be used by the Contractor and serve as a "starting point" for the Contractor's development of the traffic control plans and pedestrian accommodation plans for the project. Contractor prepared Traffic Control Plans shall conform to the established standards for plan development as shown in the MUTCD, current version, Part VI, and the WSDOT Work Zone Traffic Control Guidelines, latest edition. A separate pedestrian traffic control plan shall be required from the Contractor if normal pedestrian travel is affected by the Contractors actions. The Contractor shall submit the Traffic Control Plan and/or Pedestrian Accommodation Plan to the Engineer for review and approval at least five (5) working days in advance of the time the traffic control devices, including signs, are scheduled to be installed and utilized. The Engineer must approve the Traffic Control Plan before any onsite work begins on the project. Any modifications or deviations from the approved Traffic Control Plan will require review and approval by the Engineer. The Contractor's failure to obtain approval on Traffic Control Plans may result in penalties being assessed per Section 1-08.9(1) (Penalties).

(April 2007 City of Auburn)
Outside edges of the traveled way may be delineated with traffic safety drums or tubular markers providing that the requirements of Section 1-07.23(1) (Construction Under Traffic) are met. Barricades must comply with, (Barricades, Moveable Type III).

1-10.3(1)B OTHER TRAFFIC CONTROL LABOR Supplement

(December 2008D City of Auburn)
When working within signalized intersections, the Contractor shall schedule and coordinate the use of uniformed police officers to control traffic. Contractor is responsible for all coordination with the City of Auburn Police Department to secure a uniformed police officer as required. This coordination shall be done a minimum of three (3) working days in advance of the day a uniformed police officer is necessary. When the City of Auburn Police Department is not able to secure a uniformed police officer, the Contractor shall provide uniformed officers from outside police agencies and shall contract for those services directly. Contractor shall notify the Engineer prior to the use of outside agency police services.

1-10.3(3)L TEMPORARY SIGNAGE FOR ROADWAY TRAFFIC REVISIONS New Section

(January 2012 City of Auburn)

Temporary "Traffic Revision Ahead" (W20-901) signs with two warning flags shall be installed in advance of roadway projects that include traffic revisions. Warning signs shall be mounted on 4"x 4" wooden posts and placed per plan and MUTCD requirements. The Contractor shall remove all temporary signs and posts no earlier than 3 months and no later than 6 months following completion of the traffic revisions. Posthole voids shall be restored with native material.

END OF DIVISION 1

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DIVISION 2 EARTHWORK

2-01 CLEARING, GRUBBING AND ROADSIDE CLEANUP

2-01.1 DESCRIPTION Supplement

(August 2016, City of Auburn)

Clearing and grubbing shall be done to the construction limits shown on the plans and as directed by the Engineer. 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 Replacement

(August 2016, City of Auburn)

Open burning will not be permitted on this project.

2-01.2(3) DISPOSAL METHOD NO. 3 - CHIPPING Supplement

(August 2016, City of Auburn)

Woodchips shall not be utilized on the project site unless approved by the Engineer.

2-01.3 CONSTRUCTION REQUIREMENTS Supplement

(August 2016D, City of Auburn)

Respective property owners are responsible for relocating or removing trees, shrubs, or any other landscaping material located within the public right-of-way that are in conflict with the work if they wish to save them. The Contractor shall notify property owners a minimum of 5 working days in advance of clearing the site to allow the owner time to remove landscape material.

All landscape materials that remain in the work area shall be removed and disposed of by the Contractor, except when the Engineer specifically orders salvage or protection.

Before removing landscaping material in the right-of-way, the Contractor must receive written approval from the Engineer to begin the work.

2-02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

2-02.1 DESCRIPTION Supplement

(August 2016, City of Auburn)

The quantities listed below are to be included in the lump sum bid price for "Removal of Structures and Obstructions." They are estimates only and are provided for Contractor convenience as a basis for bidding only. The Contractor shall verify the quantities before

bidding. 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).

2-02.3 CONSTRUCTION REQUIREMENTS

2-02.3(2) REMOVAL OF BRIDGES, BOX CULVERTS, AND OTHER DRAINAGE STRUCTURES Supplement

(August 2016, City of Auburn)

The Contractor shall remove storm drainage structures as described in the plans or as designated by the Engineer. The resultant void shall be backfilled with Gravel Borrow per Section 2-03.3(14)J or as directed by the Engineer. All grates, frames and covers shall be disposed of by the Contractor unless the City has requested that they be salvaged, in which case they shall remain City property and will be salvaged as specified in Section 2-02.3(5) (Salvage).

2-02.3(4) REMOVAL AND RESETTING OF MISCELLANEOUS ITEMS New Section

(August 2016, City of Auburn)
The Contractor shall remove and reset miscellaneous items as described in the Plans.

2-02.3(4)A REMOVE AND RESET FENCING New Section

(August 2016, City of Auburn)
This work consists of removing and resetting fencing as shown on the Plans or as required due to existing fencing interfering with construction activities, as determined by the Engineer. The owner of the fence shall retain all component parts unless otherwise stated in the Contract Documents.

The Contractor is responsible for ensuring that the remaining fence and fence to be reset is undamaged. The Contractor shall repair any damage caused by the Contractor's operation at no additional cost to the City. Costs for the replacement of fencing components and finishes (such as 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 3 calendar 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 New Section

(August 2016, City of Auburn)
Where shown on the plans, and as directed by the Engineer, the Contractor shall remove existing private signs for placement in new locations determined by the property owner and the Engineer.

The Contractor is responsible for ensuring that the sign(s) and mounting apparatus(es) remain undamaged. Any damage caused by the Contractor 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 Project Specifications.

2-02.3(4)C REMOVE AND RESET PRIVATE LUMINAIRES New Section

(August 2016, City of Auburn)
Where shown on the plans, and as directed by the Engineer, the Contractor shall move existing private luminaires to new locations determined by the property owner and the Engineer.

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. The Contractor shall replace lost, damaged, or destroyed fixtures and component parts in kind at Contractor 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 Project Specifications.

2-02.3(5) SALVAGE New Section

(August 2016, City of Auburn)
All casings, pipe, frames, grates, covers, traffic signal equipment, poles, luminaires and other material of recoverable value removed from the project shall be carefully salvaged and delivered to the City of Auburn Maintenance & Operations Building (1305 "C" Street SW) in their existing condition. The Engineer will determine what items are salvageable. The Contractor shall provide notice to the Engineer three (3) working days prior to delivery of any salvaged item. Items not identified to be salvaged shall become the property of the Contractor and removed from the site.

Following removal of the existing street light poles and luminaires, the Contractor shall protect the fixture and all component parts from loss or damage until such time as all or part of the fixtures or poles are delivered to City of Auburn Maintenance and Operations building. The Contractor shall replace lost, damaged, or destroyed salvageable fixtures and component parts in kind at the Contractor's expense. The Contractor shall coordinate the receiving of equipment by the City and label each salvaged item with the City project number and location from which it was salvaged. The label shall be a removable weather proof tag that will not damage or mark the salvaged item.

2-02.3(6) REMOVE RAISED PAVEMENT MARKINGS New Section

(August 2016, City of Auburn)
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 operations shall be repaired by the Contractor at the Contractor's expense. Repairs shall be to the satisfaction of the Engineer.

2-03 ROADWAY EXCAVATION AND EMBANKMENT

2-03.1 DESCRIPTION Supplement

(August 2016, City of Auburn)
This section is supplemented with the following:

Roadway excavation shall include all material removed for roadway and parking areas.

Excavated material unsuitable for roadway embankment, such as broken pavement, curbs, sidewalks, etc., shall be disposed of.

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.

Roadway excavation shall be used for embankment construction unless otherwise directed by the Engineer.

2-03.3 CONSTRUCTION REQUIREMENTS

2-03.3(3) EXCAVATION BELOW SUBGRADE Supplement

(August 2016, City of Auburn)
(August 2016, City of Auburn)
The Contractor shall remove and dispose of unsuitable roadway subgrade material. The Contractor shall replace the removed material with gravel backfill per Section 9-03.12(1)A, unless otherwise specified in the Contract Documents. When specified in the plans, the Contractor shall place construction geo-synthetic beneath the gravel backfill.

2-03.3(7)C CONTRACTOR-PROVIDED DISPOSAL SITE Supplement

(September 2016, City of Auburn)
If, during the course of this project, it becomes necessary to dispose of either excess or unsuitable materials, the additional following requirements shall be observed:

1. In no case shall any waste materials be disposed of on any site within the City limits of Auburn unless the Contractor has a valid Grading (Fill) Permit according to Section 1-07.5(5) (City of Auburn Requirements) in this document;

2. Grading (Fill) Permits are issued by the City of Auburn Community Development & Public Works 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 Contractor risk. The Contractor is responsible to ensure that said Contractor has complied with all local codes and ordinances;

2-03.3(14) EMBANKMENT CONSTRUCTION Supplement

(August 2016, City of Auburn)
Embankments shall be constructed in compacted layers of uniform thickness by Method C of Section 2-03.3(14)C (Compacting Earth Embankments).

2-04 HAUL

2-04.2 HAULING ON OTHER THAN CITY STREETS Supplement

(August 2016, City of Auburn)
If the sources of materials provided by the Contractor necessitate hauling over roads other than City streets, the Contractor shall, at the Contractor's expense, make all arrangements for the use and cleaning, if necessary, of the haul routes.

2-06 SUBGRADE PREPARATION

2-06.3(1) SUBGRADE FOR SURFACING Supplement

(August 2016, City of Auburn)
Before placing base course, subgrade shall be shaped to conform to the "typical cross-section" shown in the Plans and as directed by the Engineer. Adequate water shall be spread on the subgrade to obtain optimum moisture content for compaction, as directed by the Engineer. The subgrade shall be graded to a uniform cross-section true to line and grade before placing base material.

2-07 WATERING

2-07.3 CONSTRUCTION REQUIREMENTS Supplement

(August 2016, City of Auburn)
The Contractor shall water to control dust and shall have a water truck available for watering.

2-07.4(1) WATER FROM CITY HYDRANTS New Section

(July 2016, City of Auburn)
The Contractor shall obtain a Fire Hydrant Meter Permit from the City of Auburn Permit Center (1 East Main Street) before taking of water from hydrants. Water will be furnished by the City from the fire hydrant to be designated at the time a Fire Hydrant Meter Permit is obtained and in accordance with the terms of the Fire Hydrant Meter Permit. To obtain a Fire Hydrant Meter Permit the applicant shall make a deposit of $1,965.00 which covers the use of a water meter, hydrant wrench, brass adapter, backflow prevention device and hydrant gate valve, and is refundable if returned in acceptable condition. When the meter, hydrant wrench, backflow prevention device, and gate valve are returned in an acceptable condition and all water usage fees have been paid, the $1,965.00 deposit will then be refunded to the applicant. The applicant shall pay a base fee of $46.42 per month and all water usage will be paid by the applicant at the rate of $3.69 per hundred cubic feet.

NOTE: These are current 2016 rates and may be revised periodically. The Contractor shall be responsible to contact the City and verify these rates. Adjustment of these rates by the City will not be the basis for any contract unit price adjustment.

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

END OF DIVISION 2

DIVISION 3 PRODUCTION FROM QUARRY AND PIT SITES, AND STOCK PILING

3-04 ACCEPTANCE OF AGGREGATE

3-04.3 CONSTRUCTION REQUIREMENTS

3-04.3(8) PRICE ADJUSTMENT FOR QUALITY OF AGGREGATE Deletion

(August 2016, City of Auburn)

This section is deleted in its entirety and no aggregate compliance price adjustments shall be made.

END OF DIVISION 3

DIVISION 4 BASES

END OF DIVISION 4

DIVISION 5 SURFACE TREATMENTS AND PAVEMENTS BASES

5-02 BITUMINOUS SURFACE TREATMENT

5-02.3(12) NON-WOVEN FABRIC FOR PAVEMENT OVERLAYS New Section

(August 2016, City of Auburn)
This work consists of placing Non-woven Fabric for pavement overlays as shown in the plans.

Materials

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

Fabric: Non-woven polypropylene material.

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

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(5)C (Crack Sealing). Holes shall be repaired per Section 5-04.3(5)E (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(5)D (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 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.

5-03 SLURRY SEAL SURFACE TREATMENT **New Section**

(August 2016, City of Auburn)

5-03.1 DESCRIPTION

This work consists of applying an emulsified asphalt slurry seal to prepared designated street surfaces in complete and strict accordance with the Project Specifications..

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 and as directed by the Engineer. The cured slurry shall have a homogenous appearance, fill all cracks, adhere firmly to the surface, and have a skid resistant texture.

5-03.1(1) APPLICABLE SPECIFICATIONS

(September 2016, City of Auburn)
The following specifications and methods are referenced as part of the Project Specifications:

AASHTO __ American Association of State Highway Testing Officials;
ASTM __ American Society for Testing and Materials;
ISSA __ International Slurry Seal Association.

5-03.2 MATERIALS

5-03.2(1) ASPHALT EMULSION

(September 2016, City of Auburn)
Emulsified asphalt shall conform to the requirement of ASTM or ISSA Specification for type SS1h, CSS1h, or QUICK SETTING MIXING GRADE EMULSION.

5-03.2(2) AGGREGATE

(September 2016, City of Auburn)
The mineral aggregate shall consist of natural or manufactured sand, slag, crusher fines, and others or a combination thereof. Smooth-textured sand of less than 1.25% water absorption shall not exceed 50% of the total combined aggregate. The aggregate shall be clean and free of vegetable matter and other deleterious substances. When tested by AASHTO T176 or ASTM D2419, the aggregate blend shall have a sand equivalent of not less than 45. When tested according to AASHTO T104 or ASTM C88 the aggregate shall show a loss of not more than 15%. When tested according to AASHTO T-96 or ASTM C131 the aggregate shall show a loss of not more than 35. Mineral fillers such as Portland Cement, limestone dust, fly ash, and others shall be considered part of the blended aggregate and shall be used in minimum required amounts and must meet the gradation requirements of ASTM D242. Mineral fillers shall only be used if needed to improve the workability of the mix or gradation of the aggregate.

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 (600mm)	19-34
No. 50 (300mm)	12-25
No. 100 (150mm)	7-18
No. 200 (75mm)	5-15
Theoretical Asphalt **Content % Dry**	
Aggregate	6.5-12

5-03.2(3) WATER

(September 2016, City of Auburn)
All water used with the slurry mixture shall be potable and free from harmful soluble salts.

5-03.2(4) LABORATORY TESTING

(September 2016, City of Auburn)
Sources for all materials shall be identified before they are required for use on the project. All samples must be taken according to previously mentioned procedures. All materials shall be pretested in a qualified laboratory to determine their suitability for use in slurry. The theoretical asphalt content shall be determined. The laboratory shall also determine if mineral filler is required, and if so, how much should be used. Test samples shall be made and tested on a Wet Track Abrasion Machine.

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

5-03.2(5) STOCKPILING OF AGGREGATES

(September 2016, City of Auburn)
Precautions shall be taken to insure that stockpiles do not become contaminated with oversized rock, clay, silt, or excessive amounts of moisture. The stockpile shall be kept in areas that drain readily. Segregation of the aggregate will not be permitted.

5-03.2(6) STORAGE

(September 2016, City of Auburn)
The Contractor shall provide suitable storage facilities for the asphalt emulsion. The container shall be equipped to prevent water from entering the emulsion. Suitable heat shall be provided, if necessary, to prevent freezing.

5-03.2(7) SAMPLING

(September 2016, City of Auburn)

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

5-03.2(8) VERIFICATION

(September 2016, City of Auburn)
Each machine will make test strips after calibration and before construction. Test strips shall be a portion of the project. Samples of the Slurry Seal will be taken and verification made as to mix consistency and proportioning. Verification of the rate of application will also be made. If any of the tests fail to meet minimum standards, additional test strips will be required until the Engineer approves each unit. 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.

5-03.3 CONSTRUCTION REQUIREMENTS

5-03.3(1) EQUIPMENT

(September 2016, City of Auburn)
All equipment, tools, and machines used to perform this work shall be maintained in satisfactory working order at all times. Descriptive information on the slurry mixing and application equipment shall be submitted to the Engineer for approval not less than 5 working days before the work starts.

5-03.3(1)A SLURRY MIXING EQUIPMENT

(September 2016, City of Auburn)
The slurry-mixing machine shall be a continuous flow-mixing unit and shall be capable of accurately delivering a predetermined proportion of aggregate, water, and asphalt emulsion to the mixing chamber and to discharge the thoroughly mixed product on a continuous basis. The aggregate shall be prewetted 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.

5-03.3(1)B SLURRY SPREADING EQUIPMENT

(September 2016, City of Auburn)
A mechanical type squeegee distributor shall be attached to the mixing machine. It shall be equipped with flexible material in contact with the pavement and shall be maintained to prevent loss of slurry from the distributor. It shall also be adjustable to ensure uniform spread. There shall be a steering device and a flexible strike-off. The spreader box shall have an adjustable width. The box shall be kept clean, and build-up of asphalt and aggregate on the box will not be permitted. The Engineer shall approve the use of burlap drags or other drags.

5-03.3(1)C CLEANING EQUIPMENT

(September 2016, City of Auburn)
Power brooms, power blowers, air compressors, water flushing equipment, and hand brooms shall be suitable for cleaning the surface and cracks of the old surface.

5-03.3(1)D AUXILIARY EQUIPMENT

(September 2016, City of Auburn)
The Contractor shall provide hand squeegees, shovels, and other equipment as necessary to perform the required work.

5-03.3(1)E CALIBRATION

(September 2016, City of Auburn)
Each slurry-mixing unit used to perform the work shall be calibrated in the presence of the Engineer, before construction. Documentation of previous calibration that covers the exact materials being used may be an acceptable substitute provided they were made during the same calendar year. The documentation shall include an individual calibration of each material at various settings that can be related to the machine's metering device(s). No machine will be allowed to work on the project until calibration has been completed and accepted.

5-03.3(2) PREPARATION OF SURFACE

(September 2016, City of Auburn)
Immediately before applying the slurry, the surface shall be cleaned of all loose material, silt spots, vegetation, and other objectionable material. Any standard cleaning method to clean pavements is acceptable, except water flushing which is not permitted in areas where there are numerous cracks present in the pavement surface. The Engineer shall give final approval of the surface preparation.

5-03.3(3) COMPOSITION AND RATE OF APPLICATION OF THE SLURRY MIX

(September 2016, City of Auburn)
The amount of asphalt emulsion to be blended with the aggregate shall be as determined by the laboratory report after final adjustment in the field. A minimum amount of water shall be added as necessary to obtain a fluid and homogeneous mixture. The rate of application shall be at least 15 pounds per square yard but not greater than 20 pounds per square yard.

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

5-03.3(4) WEATHER LIMITATIONS

(September 2016, City of Auburn)
The slurry seal surface shall not be applied if either the pavement or air temperatures are 55 degrees F or below and falling, but may be applied when both the air and pavement 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.

5-03.3(5) TRAFFIC CONTROL

(September 2016, City of Auburn)
The Contractor is responsible for all Traffic Control. Suitable methods such as barricades, flaggers, pilot cars, etc., shall be used to protect the uncured slurry surface from all types of traffic. Any damage caused by the Contractor's negligence to the uncured slurry will be the responsibility of the Contractor. The Engineer shall give final approval to the traffic control methods used.

5-03.3(6) APPLICATION OF SLURRY SURFACES

5-03.3(6)A GENERAL

(September 2016, City of Auburn)
The surface may be prewetted by fogging ahead of the slurry box if required by local conditions. Water used in prewetting 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.

5-03.3(6)B JOINTS

(September 2016, City of Auburn)
Neither excessive build-up nor unsightly appearance shall be permitted on longitudinal or transverse joints.

5-03.3(6)C HAND WORK

(September 2016, City of Auburn)
Approved squeegees shall be used to spread slurry in areas not accessible to the slurry mixer. Care shall be exercised so that no unsightly appearance results from handwork.

5-03.3(6)D CURING

(September 2016, City of Auburn)
Treated areas will be allowed to cure until the Engineer permits their opening to traffic.

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

5-03.3(6)E PROTECTION OF EXISTING MONUMENTS AND UTILITY COVERS

(September 2016, City of Auburn)

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

5-04 HOT MIX ASPHALT

5-04.1 DESCRIPTION Revision/Supplement

(August 2016, City of Auburn)
Delete the second and third sentence of the first paragraph.

(August 2016, City of Auburn)
Supplement this section as follows:

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

5-04.2 MATERIALS Supplement/Revision

(August 2016, City of Auburn)
Delete the following item from the list in the first paragraph:

Warm Mix Asphalt Additive **9-02.5**

(August 2016, City of Auburn)
Delete the sixth paragraph (begins with "The Contractor may only use warm mix asphalt").

Supplement this section as follows:

The crack sealant material shall be rubberized asphalt per Section 9-04.10 (Crack Sealing – Rubberized Asphalt) and shall be listed in the WSDOT Qualified Products List (QPL).

5-04.3 CONSTRUCTION REQUIREMENTS

5-04.3(1) HOT MIX ASPHALT MIXING PLANT Revision

(September 2016, City of Auburn)
The last sentence of item 3 in the numbered list is deleted.

5-04.3(3) HOT MIX ASPHALT PAVERS Supplement/Revision

(September 2016, City of Auburn)
Replace the first sentence of the seventh paragraph with the following:

Reference lines for vertical control may be required.

(September 2016, City of Auburn)
This section is supplemented as follows:

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)A MATERIAL TRANSFER DEVICE/VEHICLE Supplement

(March 2016 City of Auburn)
This section only applies to paving on State Routes and within the right of way of the State.

5-04.3(5)A PREPARATION OF EXISTING SURFACES Supplement/Revision

(August 2016, City of Auburn)
Replace the first sentence of the fourth paragraph with the following:

Tack coat shall be CSS-1h emulsified asphalt.

(August 2016, City of Auburn)
This section is supplemented as follows:

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

5-04.3(5)B PREPARATION OF UNTREATED ROADWAY Revision

(August 2016, City of Auburn)
Replace the first sentence of the first paragraph with the following:

The existing roadway shall be prepared and primed.

(August 2016, City of Auburn)
Replace the third sentence of the first paragraph with the following:

The aggregate shall conform to the requirements of Section 9-03.8 (Aggregates for Hot Mix Asphalt) for HMA Class ½-inch.

5-04.3(5)C CRACK SEALING Replacement

(September 2016, City of Auburn)
This section is deleted and replaced with the following:

At locations specified in the Contract Document, the Contractor shall perform crack sealing on existing asphalt concrete streets.

Crack sealing shall not be performed on severe alligator or edge cracking.

All cracks shall be cleaned with a stiff-bristled broom and air blasting equipment capable of producing a pressure of 100 psi, using an air lance or a hot air lance. The air blasting equipment shall be equipped with moisture and oil traps to assure the side walls of the crack are not contaminated by the blowing operation. If the cracks contain vegetation, it shall be completely removed before crack sealing begins. The prepared cracks shall also be free of moisture, dust, loose aggregate, and other contaminates prior to sealing with Rubberized Asphalt.

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

Any cracks or joints that do not remain completely filled after one week after installation shall be topped off with additional rubberized asphalt sealant material.

Crack sealing operations shall not be permitted below 40 degrees Fahrenheit air temperature.

5-04.3(5)D SOIL RESIDUAL HERBICIDE Revision/Supplement

(August 2016, City of Auburn)
Replace the first sentence of the first paragraph with the following:

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

(August 2016, City of Auburn)
The first paragraph is supplemented as follows:

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

5-04.3(5)E PAVEMENT REPAIR Supplement

(August 2016, City of Auburn)
HMA for pavement repair shall be HMA Class 1/2-inch PG 22-64 or as shown in the Plans.

5-04.3(7)A MIX DESIGN Replacement

(August 2016, City of Auburn)
Delete this section and replace it with the following;

5-04.3(7)A1 GENERAL

(September 2016, City of Auburn)
Prior to the production of HMA, the Contractor shall determine a design aggregate structure and asphalt binder content in accordance with WSDOT Standard Operating Procedure 732. Once the design aggregate structure and asphalt binder content have been determined, the Contractor shall submit the HMA mix design on DOT form 350-042 demonstrating the design meets the requirements of Sections 9-03.8(2) (HMA Test Requirements) and 9-03.8(6) (HMA Proportion of Materials). HMA accepted by nonstatistical evaluation requires a mix design verification. For HMA accepted by commercial evaluation only the first page of DOT form 350-042 and the percent of asphalt binder is required. In no case

shall the paving begin before the determination of anti-strip requirements has been made. Anti-strip requirements will be determined by:

a. Testing by WSDOT in accordance with TM 718.
b. Testing by Contractor in accordance with WSDOT TM 718.
c. Historical aggregate source anti-strip use provided by WSDOT.

For commercial HMA, aggregate shall meet the requirements of Section 9-03.8 (Aggregates for Hot Mix Asphalt) for HMA Class ½-inch and asphalt binder shall meet the requirements of Section 9-02.1(4) (Performance Graded Asphalt Binder) for PG 64-22.

The mix design will be the initial Job Mix Formula (JMF) for the HMA being produced. Any additional adjustments to the JMF will require the approval of the Engineer and may be made per Section 9-03.8(7) (HMA Tolerances and Adjustments).

5-04.3(7)A2 MIX DESIGN VERIFICATION

(September 2016, City of Auburn)
Verification shall be accomplished by one of the following processes:

a. The Contractor shall submit samples to WSDOT State Materials Lab for WSDOT verification testing in accordance with WSDOT Standard Specifications.
b. Reference a mix design that has been verified by the WSDOT State Materials Lab on a previous project.
c. Reference a mix design that has been verified by the City of Auburn on a previous project in accordance with section 5-04.3(7)A3 (Field Verification Testing Process).
d. Perform Field Verification Testing on a sample of HMA provided by the Contractor prior to paving.

Mix design verification is valid for one year from the date of verification. At the discretion of the Engineer, agencies may accept mix designs verified beyond the verification year with certification from the Contractor that the materials and sources are the same as those shown on the original mix design.

5-04.3(7)A3 FIELD VERIFICATION TESTING PROCESS

(September 2016, City of Auburn)
The Contracting agency will collect three Production Samples of HMA per AASHTO T 168 sampling procedures.

a. The Contracting agency will test one Production Sample in accordance with section 5-04.3(8)A (Acceptance Sampling and Testing—HMA Mixture) for field verification per the requirements of Section 9-03.8(7) (HMA Tolerances and Adjustments).
b. If the test results from the first Production Sample are within the tolerances of section 9-03.8(7) (HMA Tolerances and Adjustments)., the mix design will be considered verified and the test results will be used as acceptance sample number one.

c. If the test results from the first Production Sample are outside the tolerances of section 9-03.8(7) (HMA Tolerances and Adjustments)., the other two samples will be tested and the results of all three tests will be used for acceptance in accordance with Section 5-04.5(1).

5-04.3(7)A4 IGNITION FURNACE CALIBRATION SAMPLES

(September 2016, City of Auburn)
Prior to the first day of paving, six Ignition Furnace Calibration Samples shall be obtained to calibrate the Ignition Furnaces used for acceptance testing of the HMA. Calibration samples shall be provided by the Contractor when directed by the Engineer. Calibration samples shall be prepared in accordance with WSDOT SOP 728.

5-04.3(8) MIXING Revision

(August 2016, City of Auburn)
Delete the second sentence of the second paragraph.

5-04.3(8)A1 GENERAL Replacement

(January 16, 2014 APWA GSP)
Delete this section and replace it with the following:

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

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

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 must be made in accordance with Section 9-03.8(7).

Commercial evaluation may 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 Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Engineer. Commercial HMA can be accepted by a contractor certificate of compliance letter stating the material meets the HMA requirements defined in the contract.

5-04.3(8)A4 DEFINITION OF SAMPLING LOT AND SUBLOT Supplement

(January 16, 2014 APWA GSP)

Section 5-04.3(8)A4 is supplemented with the following:

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

i. If test results are found to be within specification requirements, additional testing will be at the engineers discretion.
ii. If test results are found not to be within specification requirements, additional testing as needed to determine a CPF shall be performed.

If the results of the challenge sample testing are within the allowable deviation established above for each parameter, the acceptance sample test results will be used for acceptance of the HMA.

5-04.3(9) SPREADING AND FINISHING Revision/Supplement

(August 2016, City of Auburn)
Replace the last sentence of the first paragraph with the following:

Unless otherwise directed by the Engineer or specified in the Plans or in the Project Specifications, the nominal compacted depth of any layer of any course shall not exceed the following depths:

(August 2016, City of Auburn)
This section is supplemented as follows:

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

5-04.3(10) COMPACTION

5-04.3(10)A GENERAL Revision/Supplement

(August 2016, City of Auburn)
Replace the second sentence of the first paragraph with the following:

The completed course shall be free from ridges, ruts, humps, depressions, objectionable marks, checking, cracking, or irregularities and shall conform to the line, grade, and cross-section shown in the Plans.

(August 2016, City of Auburn)
This section is supplemented as follows:

All compaction units shall be operated at the speed, within specification limits, that will produce the required compaction.

5-04.3(12)B LONGITUDINAL JOINTS Revision

(August 2016, City of Auburn)
Replace the second paragraph including the numbered list with the following:

If a hot-lap joint is allowed, two paving machines shall be used; a minimum compacted density in accordance with Section 5-04.3(10)B (Control) shall be achieved throughout the traffic lane; and construction equipment other than rollers shall not operate on any uncompacted HMA.

5-04.3(12)C ASPHALT CONCRETE PAVEMENT BUTT JOINTS New Section

(August 2016, City of Auburn)
The Contractor shall provide butt joints where the new asphalt concrete pavement meets the existing pavement as shown on the Plans or as directed by the Engineer in a manner to produce a smooth riding connection to the existing pavement. The depth of butt joint required shall be determined by the depth of new asphalt concrete pavement specified on the Plans, but not less than 2 inches. The surface elevation of new and existing Asphalt Concrete Pavement shall be the same at all butt joints.

All asphalt concrete joints shall be sealed with asphalt binder PG 64-22 per Section 9-02 (Bituminous Materials) or as directed by the Engineer.

5-04.3(14) PLANING BITUMINOUS PAVEMENT Supplement

(August 2016, City of Auburn)
Planing of the existing pavement shall provide a surface that is slightly grooved or roughened to ensure a bond to the Asphalt Concrete Pavement. The full depth beginning and end of each lane of planing shall be squared-off to form a uniform, transverse joint.

The Contractor shall provide for safe vehicle travel over existing manholes, valve boxes, catch basins, etc., for planed areas opened to traffic. Before opening the roadway to traffic, any delaminating of the planed asphalt surface shall be removed and the resulting holes patched with HMA. Also, the surface shall be cleaned by sweeping to remove dust and foreign matter.

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(17) PAVING UNDER TRAFFIC Revision

(August 2016, City of Auburn)
Replace the first two sentences of the second paragraph with the following:

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

(August 2016, City of Auburn)
Replace the third paragraph with the following:

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

5-04.3(21) ASPHALT COLD PATCH New Section

(September 2016, City of Auburn)
"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(22) POROUS HMA NEW SECTION

(September 2016, City of Auburn)

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.

5-05 CEMENT CONCRETE PAVEMENT

5-05.3(1) CONCRETE MIX DESIGN FOR PAVING Supplement

(August 2016, City of Auburn)

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 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 not 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 he 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 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 and shall submit new certified test results.

E. In the event the Contractor elects to use an air-entraining admixture, he 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, he shall submit 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 Revision

(August 2016, City of Auburn)
The first paragraph is revised to read:

The Contractor shall submit for approval to the Engineer a Joint Plan at least 3 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 Plans and shall be of the type and at the locations indicated on the 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 Replacement

(August 2016, City of Auburn)

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 Documents.

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

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

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

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.

5-05.3(8)E SEALING THROUGH JOINTS New Section

(August 2016, City of Auburn)
After the pavement is cured and before carrying any traffic, the space left by the removal of the wood filler strip or the metal cap above the top of the expansion joint filler strip shall be thoroughly cleaned of all loose material. The ¾ inch wide groove shall be completely free of any projecting concrete from the sides and the groove shall be continuous across the slab to each edge. It shall then be filled level with the pavement surface with joint sealant meeting the requirements of Section 9-04.2 (Joint Sealants).

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

5-05.3(9) INTEGRAL CEMENT CONCRETE CURB ON NEW PAVEMENT New Section

(August 2016, City of Auburn)
Integral doweled curb on new pavement shall be constructed as shown in the 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 Plans.

5-05.3(10) TIE BARS AND CORROSION RESISTANT DOWEL BARS Revision/Supplement

(August 2016, City of Auburn)
The first paragraph is revised to read:

Epoxy-coated tie bars shall be placed at all longitudinal contraction and construction joints, in accordance with the requirements shown in the 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 Plans.

(August 2016, City of Auburn)
This section is supplemented 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.

5-05.3(23) CEMENT CONCRETE PAVEMENT FOR ALLEY New Section

(September 2016, City of Auburn)
This work consists of placing Cement concrete pavement for alleyways.

5-05.3(23)A PAVEMENT AND ALLEY REQUIREMENTS New Section

(August 2016, City of Auburn)
Cement concrete pavement for alleys shall meet the requirements of Section 5-05 (Cement Concrete Pavement). Alleys shall meet the requirements for driveways in Section 8-06 (Cement Concrete Driveway Entrances).

5-05.3(23)B EXTRA CONCRETE FOR ALLEY APPROACH RAMP New Section

(August 2016, City of Auburn)
When constructing and finishing cement concrete Alley pavement, the Engineer may in some cases require the Contractor to place additional concrete over the surface of the Alley pavement to serve as an integral ramp or vehicular access to abutting private property. Additional thickness for such ramps shall not exceed 6 inches above the original planned concrete surface at any point.

5-06 TEXTURED ASPHALT New Section

5-06.1 DESCRIPTION

(August 2016, City of Auburn)
This work consists of texturing and coloring asphalt concrete pavement in areas indicated on the Plans. 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).

5-06.2 MATERIALS

(August 2016, City of Auburn)
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

5-06.2(1) COATING MATERIAL

(August 2016, City of Auburn)
The coating material shall be a premium high performance material consisting of epoxy modified acrylic polymers blended with sand and aggregate, "StreetBond SP150E," or an approved equivalent.

5-06.2(2) COLORANT

(August 2016, City of Auburn)
The colorant shall be a highly concentrated, high quality, UV stable pigment blend designed to be added to coating material to provide color to the coating. The colorant shall be StreetBond Colorant, with the color "Bedrock," and the same colorant shall be used in each coating layer applied to the asphalt surface. One pint of StreetBond Colorant shall be used with one 5-gallon pail of StreetBond SP150E Coating Material.

5-06.3 CONSTRUCTION REQUIREMENTS

(August 2016, City of Auburn)
The Contractor shall follow the latest StreetPrint Application Procedures as issued by Integrated Paving Concepts Inc.

5-06.3(1) TEXTURED ASPHALT TERMS

(August 2016, City of Auburn)
Textured Asphalt Pavement shall be described as "StreetPrint Pavement Texturing", "StreetPrint", or approved equivalent pavement on the 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.

5-06.3(2) CERTIFICATION

(August 2016, City of Auburn)

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

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

5-06.3(3) EQUIPMENT

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

5-06.3(3)A TEMPLATES

(August 2016, City of Auburn)
Templates shall be manufactured from flexible, woven wire rope cut and welded into the patterns used for imprinting Asphalt Concrete Pavement.

5-06.3(3)B RECIPROCATING INFRA-RED HEATER

(September 2016, City of Auburn)
Reciprocating Infra-Red Heater shall be used to apply heat to the asphalt surface in designated areas for imprinting. The heating equipment used shall allow continuous monitoring of the surface temperature to ensure the asphalt does not over heat and burn. Equipment that is specifically excluded from this section shall not be used for reheating of the asphalt in any form including direct flame heaters.

5-06.3(3)C VIBRATORY PLATE COMPACTOR

(August 2016, City of Auburn)
Vibratory Plate Compactor shall be used for pressing the wire templates into the heated asphalt to create the specified pattern.

5-06.3(3)D SPRAY EQUIPMENT

(August 2016, City of Auburn)
Spray Equipment shall be capable of applying the coating material to the asphalt surface in a controlled thin film.

5-06.3(4) CONSTRUCTION

5-06.3(4)A SURFACE PREPARATION PRIOR TO COATING

(August 2016, City of Auburn)
The asphalt surface shall be free of dirt, debris, oil or anything that will adversely affect the adhesion of the new coating system. All loose material on the asphalt surface shall be removed and prior to applying the coatings, the asphalt surface shall be completely dry.

5-06.3(4)B LAYOUT AND IMPRINTING

(August 2016, City of Auburn)
Layout and imprinting of the pattern into the surface of the HMA is shown in the Plans.

5-06.3(4)C HEATING OF ASPHALT

(August 2016, City of Auburn)
Direct flame heaters shall not be allowed for the purpose of heating the asphalt. Hot air portable heaters may only be used for heating isolated areas. The temperature of the asphalt surface shall be regularly monitored during the reheating process. The asphalt pavement shall be adequately heat soaked (softened) to a depth of at least 1/2 inch, without burning the asphalt. If during the re-heating process the surface is overheated and begins to emit black smoke, the contractor shall stop work immediately. The damaged surface area shall be removed by milling the upper 1-1/2-inch and replaced by a partial depth patch with the topmost layer matching the existing surface layer mix and binder.

5-06.3(4)D SAMPLE AREA

(August 2016, City of Auburn)
Prior to installing the Surfacing System to the entire project, a sample area shall be completed. Upon approval from the Engineer for appearance of color, the Contractor may proceed with completing the Surfacing System installation.

5-06.3(4)E COATING INSTALLATION

(August 2016, City of Auburn)
The Contractor shall apply the Surfacing System only when the air temperature is at least 50°F and rising, and will not drop below 50°F within 8 hours of application of the coating

material. There should be no precipitation expected within 2 hours after applying the final layer of coating material.

5-06.3(5) QUALITY CONTROL

5-06.3(5)A GENERAL

(August 2016, City of Auburn)
At all times the Contractor shall have a representative familiar with all manufacturer's recommendations for products used on site, or if the StreetPrint process is utilized then a foreman, supervisor or lead hand who is registered with Integrated Paving Concepts, Inc., as a Level 1 or Level II Accredited StreetPrint Installer shall be onsite at all times during installation; certification must be submitted for approval five (5) working days prior to commencing construction.

5-06.3(5)B STAMPING DEPTH

(August 2016, City of Auburn)
Upon completion, the patterned area shall be checked for proper depth of print. 98% of the stamped area shall have an imprint depth of 1/4 inch. If any sample areas have an imprint depth that is less than 1/4 inch, those areas shall be re-heated and re-stamped prior to applying the coatings.

5-06.3(5)C COATING THICKNESS

(August 2016, City of Auburn)
The total thickness shall be monitored by measuring the volume of material used per unit area. For this project an average coverage area for the combined coating layers shall be per manufacturer's recommendation or 150 square feet coated per 5-gallon pail of StreetBond SP150E material used. The Contractor shall provide proof of material usage.

5-06.3(5)D PROTECTION OF EXISTING PAVEMENT MARKINGS

(August 2016, City of Auburn)
The Contractor shall protect all existing pavement markings from contamination from the asphalt sealant including any existing markings on curbing. All disturbed pavement markings shall be returned to their original condition.

5-07 STAMPED COLORED CEMENT CONCRETE New Section

5-07.1 DESCRIPTION

(August 2016, City of Auburn)
This work shall be for the completion of stamped concrete medians as indicated on the Plans.

5-07.2 MATERIALS

(August 2016, City of Auburn)
Stamped concrete shall be air entrained concrete Class 4000 in accordance with the requirements of Section 6-02.

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

Colorant Material Specifications:

- Color: ColorFlo Liquid Color
- Name: Dark Redwood
- 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.

5-07.3 CONSTRUCTION REQUIREMENTS

(August 2016, City of Auburn)

Construction Requirements for Stamped Colored Concrete:

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

1. Measure, batch, mix, and deliver concrete with pigments in accordance with manufacturer's instructions.
2. Ensure mixer is clean and free of washout water before loading.
3. Load mixer to a minimum of 40 percent capacity.
4. Do not load mixer beyond recommended capacity.
5. Add concrete materials to mixer in same order for each batch.
6. Do not add pigment to mixer as first concrete material.
7. Maintain consistent amounts of batch water in each batch.

- Placing, Finishing, and Curing Concrete: As specified in Section 6-02, except as specified in this section.

  1. Place, finish, and cure concrete with pigments in accordance with manufacturer's instructions.
  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.

5-07.3(1) STAMPING

(August 2016, City of Auburn)
The Contractor shall apply a Brickform, or approved equivalent, Antique Release agent, to the concrete as soon as all standing water has disappeared from the concrete surface and prior to beginning the stamping process.

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

5-08 PERVIOUS CONCRETE PAVEMENT New Section

5-08.1 DESCRIPTION

(September 2016, City of Auburn)
This work shall consist of constructing a pervious cementitious pavement composed of portland cement concrete on a prepared subgrade or subbase in accordance with these Specifications and in conformity with the lines grades, thicknesses, and typical cross-sections shown in the Plans.

5-08.2 MATERIALS

(September 2016, City of Auburn)
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) (Type B Retarding Admixtures) or 9-23.6(5) (Type D Water-Reducing and Retarding Admixtures).

Synthetic Fibers for Concrete

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

5-08.3 CONSTRUCTION REQUIREMENTS

5-08.3(1) PERVIOUS CONCRETE PRECONSTRUCTION MEETING

(September 2016, City of Auburn)
Prior to the start of construction of the pervious concrete pavement section, including excavation for the pervious 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 Pervious Concrete Subcontractor's representative, if not the same as the General Contractor's representative(s).
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 Job Mix Formula (JMF).
11. Acceptance criteria.

5-08.3(2) PERVIOUS CONCRETE MIX DESIGN

(September 2016, City of Auburn)
The Contractor shall provide a mix design for pervious concrete and shall submit the mix design to the Engineer for approval per Section 1-06.7 (Submittals). Pervious concrete shall not be placed in the test panels without a mix design that has been reviewed and accepted by the Engineer.

5-08.3(2)A MIX DESIGN CRITERIA

(September 2016, City of Auburn)
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 JMF.
2. Portland cement shall be Type I, Type II, Type I-II Type IP, or Type IS.
3. The cementitious content, including pozzolans if used, shall be a minimum of 480 pounds per cubic yard.
4. The mix shall incorporate a hydration stabilizing admixture.
5. Synthetic microfibers may be utilized at the manufacturer's recommended dosage rate.
6. The water / cement ratio shall not exceed 0.35.
7. No more than 25 percent of portland cement in the mix, by weight, may be replaced by fly ash, ground granulated blast furnace slag, or a combination of both.
8. Coarse aggregate shall conform to Section 9-03.1(4), AASHTO Grading No.8.

5-08.3(2)B JOB MIX FORMULA (JMF)

(September 2016, City of Auburn)
The approved mix design established through the approved test panel becomes the JMF.

5-08.3(3) SUBMITTALS

(September 2016, City of Auburn)
In accordance to Section 1-05.3 (Working Drawings), the Contractor shall submit the following items to the Engineer for acceptance prior to placing any pervious concrete pavement:

1. The source of all materials proposed for use in constructing pervious concrete pavement.
2. Batch weights for all constituents of one (1) cubic yard of the proposed pervious concrete mix.
3. The specific gravity (SSD) of all aggregates to be used in the proposed pervious concrete mix.
4. The proposed gradation of coarse aggregates used in pervious concrete.
5. The designed volume in cubic feet of all proposed components for 1(one) cubic yard of the proposed pervious concrete mix.
6. The design water / cement ratio of the proposed mix design.
7. The fresh density of the proposed pervious concrete mixture as determined by ASTM C1688.
8. Catalogue cuts and Certificates of Compliance for all proposed admixtures.
9. Mill Certification of the portland cement and pozzolans, if used, for the current lot to be used in the production of the proposed pervious concrete mix. The Contractor shall maintain this submittal throughout the duration of the project as lots change.

10. Current certification by the National Ready Mix Concrete Association (NRMCA) for the batch plant(s) to be used in the production of pervious concrete.
11. Current certifications by the NRMCA for the trucks to be used in transporting pervious concrete from the batch plant to the point of placement.
12. Qualification documentation for current certifications by the NRMCA for the Contractor's personnel who will be installing pervious concrete. See Section 5-06.3(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.

5-08.3(4) EQUIPMENT

(September 2016, City of Auburn)
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.

5-08.3(4)A BATCHING PLANT AND EQUIPMENT

(September 2016, City of Auburn)
Pervious concrete shall be centrally mixed in a plant with a current NRMCA certification.

5-08.3(4)B MIXER TRUCKS

(September 2016, City of Auburn)
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.

5-08.3(4)C SIDE FORMS

(September 2016, City of Auburn)
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 the 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.

5-08.3(4)D FINISHING EQUIPMENT

(September 2016, City of Auburn)
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.

5-08.3(5) MEASURING AND BATCHING MATERIALS

(September 2016, City of Auburn)
Measuring and batching materials for pervious concrete pavement shall conform to the requirements of Section 5-05.3(4) (Acceptance of Portland Cement Concrete Pavement).

5-08.3(6) ACCEPTANCE

(September 2016, City of Auburn)
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 ¼ 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 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 3/4 inch of the design depth on the drawings. The average of all cores from a lot shall be within minus 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.

5-08.3(6)A INFILTRATION RATE OF THE PLACED PAVEMENT

(September 2016D, City of Auburn)
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 be responsible for the costs of all testing and shall coordinate and schedule testing with an independent testing company. 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 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 allow additional infiltration tests for the purpose of assessing overall infiltration performance and/or determining a defective lot in accordance with Section 5-08.3(6). The determination of a defective lot, or lots, and the extent(s), will be by the Engineer.

5-08.3(7) REJECTION

(September 2016, City of Auburn)
Pervious concrete may be rejected by the City 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.

5-08.3(8) MIXING PERVIOUS CONCRETE

(September 2016, City of Auburn)
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.

5-08.3(8)A LIMITATIONS OF MIXING PERVIOUS CONCRETE

(September 2016, City of Auburn)
Mixing and placing concrete shall be discontinued when a descending air temperature in the shade away from artificial heat reaches 40º F and shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 40º 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.

5-08.3(9) SUBGRADE PREPARATION AND SUBBASE

(September 2016, City of Auburn)
Prepare and protect subgrade in accordance with Section 2-06.

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

5-08.3(10) PLACING, SPREADING, FINISHING, EDGING, TOLERANCES AND CURING

(September 2016, City of Auburn)
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 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).

5-08.3(10)A CONTRACTOR'S QUALIFICATIONS

(September 2016, City of Auburn)
The contractor shall employ no less than one (1) National Ready Mixed Concrete Association (NRMCA) certified Pervious Concrete Craftsman for each crew, who must be on site, over-seeing the work during all pervious concrete placement; or employ no less than three (3) NRMCA Certified Pervious Concrete Installers per crew, who must be on site working during each pervious concrete placement. The minimum number of certified individuals must be present on each crew for every pervious concrete placement, including

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

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

5-08.3(10)B TEST PANEL

(September 2016, City of Auburn)
Production placement of pervious concrete shall not occur until the Contractor has completed a test panel(s) 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 10 Working Days before installing pervious concrete test panel(s).
2. Coordinate the location of the test panel(s) with the Engineer.
3. Install the test panel(s) in accordance with the Specifications and Drawings.
4. Notify the Engineer when the test panel(s) 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 panel(s) as determined by the Engineer.

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 5-08.3(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 panel(s) shall be maintained and protected throughout the duration of the pervious concrete Work and may not be demolished and disposed of without written permission from the Engineer Test panel(s) shall be removed, and not incorporated into the work, regardless if they passed all tests.

5-08.3(11) JOINTS

(September 2016, City of Auburn)
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.

5-08.3(11)A CONSTRUCTION JOINTS

(September 2016, City of Auburn)
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.

5-08.3(11)B CONTRACTION JOINTS

(September 2016, City of Auburn)
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 ½ inch. Tool joint to the depth and width in fresh concrete immediately after the concrete is compacted.

5-08.3(11)C ISOLATION JOINTS

(September 2016, City of Auburn)
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 ½ inch radius.

5-08.3(12) COLD WEATHER WORK

(September 2016, City of Auburn)
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.

5-08.3(13) PROTECTION OF PERVIOUS CONCRETE PAVEMENT

(September 2016, City of Auburn)
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.

END OF DIVISION 5

DIVISION 6 STRUCTURES

6-02 CONCRETE STRUCTURES

6-02.1 DESCRIPTION Supplement

(August 2016, City of Auburn)
This work shall consist of constructing cast-in-place cement concrete walls as shown on the plans.

6-04 TIMBER STRUCTURES

6-04.1 DESCRIPTION Supplement

(August 2016, City of Auburn)
Work shall include building, furnishing, and installing bollards.

END OF DIVISION 6

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

7-01 DRAINS

7-01.2 MATERIALS Replacement

(August 2016, City of Auburn)
Replace the first two paragraphs after the list of materials with the following: Non-perforated drainpipe shall be manufactured of polyvinyl chloride (PVC) and shall meet the requirements of Section 9-05.12 and perforated drain pipe shall be manufactured of PVC and meet the requirements of Section 9-05.2(6). Trench drains shall be Polydrain Part No. 420 with stainless steel grates Polydrain Part No. 440 or approved equivalent placed on cement concrete Class 4000 per Section 6-02 (Concrete Structures).

7-01.3 CONSTRUCTION REQUIREMENTS Supplement

(August 2016, City of Auburn)
PVC drainpipe shall be used to connect existing roof drains and downspouts to the roadway drainage system.

Wherever a drain pipe trench is located in the roadway, sidewalk, or other area where minor settlement would be detrimental and where the Engineer determines that the native material is not suitable for backfill, the trench shall be backfilled with "Select Pipe Trench Backfill" per trench detail(s) shown in the plans or as directed by the Engineer.

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 or as directed by the Engineer.

7-04 STORM SEWERS

7-04.2 MATERIALS Revision

(August 2016, City of Auburn)
Replace the first paragraph and list of materials with the following:

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

Concrete Storm Sewer Pipe	9-05.7(1) (Plain Concrete Storm Sewer Pipe) 9-05.7(2) (Reinforced Concrete Storm Sewer Pipe)
Solid Wall Polyvinyl Chloride (PVC) Pipe, SDR-35	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)

Solid Wall Polyvinyl Chloride (PVC) Pipe, SDR-21	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Ductile Iron Pipe, Special Class 52, Storm Pipe	9-05.13 (Ductile Iron Sewer Pipe)
High Density Polyethylene Pipe (HDPE)	9-05.21 (High Density Polyethylene Pipe (HDPE))

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 Supplement

(August 2016, City of Auburn)
If the test shows zero leakage after a five-minute test time, the Engineer has the authority to accept and end the test immediately.

7-04.3(1)G TELEVISION INSPECTION New Section

(August 2016, City of Auburn)
All of the provisions of 7-17.3(2)H (Television Inspection) shall apply.

7-05 MANHOLES, INLETS, CATCH BASINS, AND DRYWELLS

7-05.2 MATERIALS Supplement

(August 2016, City of Auburn)

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

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

7-05.2(1) TRASH RACKS New Section

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 (see below) 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 fabrication manhole adapters will not be permitted. All manhole adapters to be provided on this project must have approval from the Engineer in writing before being installed on this project.

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 Supplement

(August 2016, City of Auburn)
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, catch basins, and water valves shall be provided as soon as practical after paving.

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

7-05.3(3) CONNECTIONS TO EXISTING MANHOLES Supplement

(August 2016, City of Auburn)
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.

7-05.3(5) CHANNELS FOR MANHOLES New Section

(August 2016, City of Auburn)
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.

7-05.3(6) NEW CASTINGS New Section

(August 2016, City of Auburn)
Where new castings are indicated to be installed on existing structures in the Plans or by the Engineer, the Contractor shall furnish and install new castings of the type specified. Casting shall include frame and grate, or ring and cover and new adjustment section(s) as necessary to set the casting to final grade. Install to the finished grade as shown.

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

7-08 GENERAL PIPE INSTALLATION REQUIREMENTS

7-08.1 DESCRIPTION Replacement

(August 2016, City of Auburn)
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 Replacement

(August 2016, City of Auburn)

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

Bedding Materials and Select Trench Backfill	9-03.9(3) (Crushed Surfacing)
Foundation Material	9-03.12(1) (Gravel Backfill for Foundations)
Imported Pipe Trench Backfill	9-03.19 (Bank Run Gravel for Trench Backfill) 9-03.14(1) (Gravel Borrow)
Controlled Density Fill	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 Revision

(August 2016, City of Auburn)
The second sentence of the third paragraph is deleted and replaced with the following:

Above the top of the pipe zone, the Contractor may over excavate for L&I compliance in non-critical, off-street areas.

(August 2016, City of Auburn)
The first sentence of the eighth paragraph is deleted and replaced with the following:

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

7-08.3(1)B SHORING Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 or as directed by the Engineer.

7-08.3(2)J JOINING HIGH DENSITY POLYETHYLENE PIPE (HDPE) PIPE New Section

(August 2016, City of Auburn)
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.

7-08.3(2)K PACKAGING, HANDLING, STORAGE HIGH DENSITY POLYETHYLENE PIPE (HDPE) PIPE New Section

(August 2016, City of Auburn)
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.

7-08.3(2)L DEWATERING TRENCHES New Section

(August 2016, City of Auburn)
Where water is encountered in the trench, it shall be removed during pipe-laying operations and the trench so maintained until the ends of the pipe are sealed and provisions are made to

prevent floating of the pipe. Trench water or other deleterious materials shall not be allowed to enter the pipe at any time.
"Normal Trench Dewatering" is defined as dewatering methods occurring in, or directly adjacent to, the trench, including trash pumps, sump pumps, or other methods in the excavated areas. "Normal Trench Dewatering" does not include a dewatering system such as well points, well screens, or deep wells. 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 ten (10) calendar days prior to dewatering operations and approved by the Engineer before underground utility installation begins.

7-08.3(3) BACKFILLING Supplement

(August 2016, City of Auburn)
The Engineer may require "Controlled Density Fill" where uniform compaction around other utilities, foundations or other fixed objects is not possible.

7-08.3(3)A VERTICAL CLEARANCE BETWEEN UTILITY LINES New Section

(August 2016, City of Auburn)
Where the vertical clearance between adjacent storm drainage lines, water or sanitary sewer lines is 2 inches to 6 inches a pipe mitigation measure is required between the two pipes as directed by the Engineer, which may include a cushion of crushed rock or controlled density fill.

7-08.3(4) PLUGGING EXISTING PIPE Replacement

(August 2016, City of Auburn)
All existing sanitary sewer, storm, and drain pipes shown on the plans or designated by the Engineer to be abandoned 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 pipes shown on the plans or designated by the Engineer to be filled shall be filled with controlled density fill (CDF) for the entire length of pipe specified.

7-08.3(5) PIPE TRENCH RESTORATION New Section

(August 2016, City of Auburn)
Trenches excavated as part of a new street construction shall be completed to subgrade before placing surfacing materials and sidewalks. Final restoration will be completed with the street surfacing.

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

7-09 WATER MAINS

7-09.1 DESCRIPTION Supplement

(August 2016, City of Auburn)

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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
Water mains shall be installed with 42-inch minimum finished pipe cover, unless the Engineer determines less cover is adequate where existing facilities, not to be relocated, might interfere with the pipe laying operation.

7-09.3(13) HANDLING OF THE PIPE Supplement

(August 2016, City of Auburn)
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(14) PLUGGING EXISTING PIPE New Section

(August 2016, City of Auburn)
All existing water pipes shown on the planes or designated by the Engineer to be abandoned shall be plugged on the ends with Mechanical Joint plugs.

7-09.3(19) CONNECTIONS

7-09.3(19)A CONNECTIONS TO EXISTING MAINS Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)

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 Supplement

(August 2016, City of Auburn)
All bends, tees, dead-ends and crosses shall be blocked or anchored.

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. 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 Supplement

(August 2016, City of Auburn)
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.

(August 2016, City of Auburn)
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.

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
The City will take bacteriological test samples. The Contractor shall insert corporation stops in the main at all locations required to take bacteriological test samples. If original test samples prove unsatisfactory, a charge of $20.00 will be made for processing each additional sample to be paid by the Contractor to the City.

7-09.3(24)J PREVENTING REVERSE FLOW Supplement

(August 2016, City of Auburn)
Prior to beginning the water main installation, the Contractor shall prepare a Prevention of Reverse Flow Plan per Section 1-06 (Control of Material), showing the intended method, in detail, which will be incorporated to insure the prevention of reverse flows from entering the existing distribution system. The plan shall meet the requirement of WAC 246-902-490.

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

7-09.3(24)N FINAL FLUSHING AND TESTING Supplement

(August 2016, City of Auburn)
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 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.

7-12 VALVES FOR WATER MAINS

7-12.3 CONSTRUCTION REQUIREMENTS

7-12.3(2) ADJUST VALVE BOXES New Section

(August 2016, City of Auburn)
The Contractor shall adjust water valve boxes as specified in the Plans and in accordance with the applicable City of Auburn Standard Details.

7-12.3(3) COMBINATION AIR RELEASE/AIR VACUUM VALVE ASSEMBLY New Section

(August 2016, City of Auburn)
"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).

7-12.3(4) VALVE WRENCH EXTENSION BOX New Section

(August 2016, City of Auburn)
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, and as directed by the Engineer in in accordance with the applicable City of Auburn Standard Detail(s) for deep buried valves.

7-14.3 CONSTRUCTION REQUIREMENTS Supplement

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 and as directed by the Engineer. Hydrants located within 50-feet of the curb face of an intersection shall be marked on both streets. The reflective surfaces of the raised pavement markers shall be 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 Replacement

(August 2016, City of Auburn)
Where shown in the plans, the "Hydrant Assembly" shall be installed perpendicular to the supply main. A 6-inch resilient-wedge gate valve with valve box in accordance with Section 7-12 (Valves for Water Mains) shall be installed on each hydrant supply line.

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

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

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

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

7-14.3(4) MOVING EXISTING HYDRANTS Supplement

(August 2016, City of Auburn)
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: 6 inch ductile iron, Special Class 52 pipe; 6 inch tee or tapping tee and gate valve with box; restraint system; and blocking.

7-15 SERVICE CONNECTIONS

7-15.2 MATERIALS Supplement

(August 2016, City of Auburn)

Saddles (1½ inch & 2 inch services)	9-30.6(1) (Saddles)
Corporation Stops	9-30.6(2) (Corporation Stops)
Service Pipe & Tail Piece	9-30.6(3) (Service Pipes)
Meter Setters (Yoke)	9-30.6(5) (Meter Setters)
Meter Stops	9-30.6(5)A (Meter Stops)
Meter Check Valves	9-30.6(5)B (Meter Check Valves)
Curb Valves	9-30.6(5)C (Curb Valves)
Meter Boxes	9-30.6(7) (Meter Boxes)
Shutoff Valve Assembly	9-30.6(8) (Shutoff Valve Assembly)

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 Supplement

(August 2016, City of Auburn)

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

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

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

7-17 SANITARY SEWERS

7-17.2 MATERIALS Replacement

(August 2016, City of Auburn)
Materials shall be in accordance with following Sections:

Solid Wall Polyvinyl Chloride (PVC) Sanitary Sewer Pipe, SDR-35	9-05.12(1) (Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe)
Polyvinyl Chloride (PVC) Sanitary Sewer Pipe, SDR-21	9-30.1(5) (Polyvinyl Chloride (PVC))
Ductile Iron, Special Class 52 Sanitary Sewer Pipe	9-30.1(1) (Ductile Iron Pipe)
High Density Polyethylene Sanitary Sewer Pipe (HDPE)	9-05.21 (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 Supplement

(August 2016, City of Auburn)
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 Revision/Supplement

(August 2016, City of Auburn)
Delete the first paragraph and replace with the following:

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

(August 2016, City of Auburn)
Insert the following sentence between the first and second sentences of the last paragraph:

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.

(August 2016, City of Auburn)
This section is supplemented with the following:

Before final acceptance, the Contractor shall have all sewer lines inspected by the use of a television camera, utilizing a City approved private inspection services. An approved list of

inspection services may be obtained from the Engineer. Manholes and other structures shall be cleaned and tested per Section 7-07 (Cleaning Existing Drainage Structures).

7-17.3(2)C INFILTRATION TEST Revision

(August 2016, City of Auburn)
In the second paragraph,

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

7-17.3(2)F LOW PRESSURE AIR TEST FOR SANITARY SEWERS CONSTRUCTED OF NON AIR-PERMEABLE MATERIALS Supplement

(August 2016, City of Auburn)
If the test shows zero leakage after a five minute test time, the Engineer has the authority to accept and end the test immediately.

7-17.3(2)H TELEVISION INSPECTION Replacement

(August 2016, City of Auburn)
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.

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

1. The acceptable placement of applicable pipe, ballast, bedding, and backfill material.

2. The acceptable completion of all applicable channels and grout work.

3. The acceptable debris removal, cleaning, and flushing of all applicable pipes and structures.

The television inspection requirements shall include the provisions of:

1. A color DVD television camera with a pan and tilt capacity in order to view all main lines, lateral lines, and structures including channels.

2. A dye solution to be introduced in sufficient quantity to travel from the structure that is the highest point of inspection to the downstream terminus of the inspection limits. Red or purple dye shall be used for PVC pipe and green dye for ductile iron and concrete pipe.

3. A one-inch reference ball to be mounted to the camera in order to drag along the bottom of the pipe during the entire inspection procedure.

4. Linear measure references to be measured from the center of the beginning structure to the center of the next inline structure and include the direction of flow. The locations of lateral pipes and all distinctive pipe conditions shall be referenced to the centerline of the beginning structure. All structure references shall utilize the designated structure reference numbers shown on the plans.

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

1. A clear DVD which encompasses the limits of the inspection area and including all reference data as described herein. The recorded reference time and date for the start of each run shall also be indicated.

2. A written report shall be provided corresponding to the recorded inspection and including all reference data as described herein. The report shall consist of a written narrative of all distinctive pipe conditions including ponding areas in excess of ¼ inch.

7-18 SIDE SEWERS

7-18.3 CONSTRUCTION REQUIREMENTS

7-18.3(1) GENERAL Supplement/Revision

(August 2016, City of Auburn).
This section is supplemented with the following:
All joints shall be approved rubber-gasket joints except the joint between the new and existing pipe that shall be made with approved flexible transition couplings. Side sewers shall be installed to a minimum slope of two percent or as shown on the plans unless otherwise directed by the Engineer and shall be 6-inches diameter from the street sewer to the private property line.

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

(August 2016, City of Auburn).
The third paragraph is replaced with the following:

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

7-18.3(2) FITTINGS Replacement

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

7-18.3(3) TESTING Supplement

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 as directed by the Engineer.

7-19 SEWER CLEANOUTS

7-19.3 CONSTRUCTION REQUIREMENTS Replacement

Sewer cleanouts shall be required as indicated in the applicable Standard Details or as directed by the Engineer.

END OF DIVISION 7

DIVISION 8 MISCELLANEOUS CONSTRUCTION

8-01 EROSION CONTROL AND WATER POLLUTION CONTROL

8-01.1 DESCRIPTION Supplement

(August 2016, City of Auburn)
The Contractor shall implement temporary erosion and sediment control (TESC) measures as necessary to prevent erosion and to stop sediment-laden water from leaving the site and entering other properties or the storm drain system. Measures shall be in accordance with and conform to the City of Auburn Design Manual and these Special Provisions. The Contractor shall construct all necessary elements and provide other necessary materials, labor, and equipment.

Exposed slopes and excavations shall be protected. The Contractor shall maintain and clean the facilities until final restoration has been placed and accepted. The Contractor shall have adequate materials on the site to respond to weather changes and shall modify the system to accommodate seasonal changes.

8-01.2 MATERIALS Supplement

(August 1, 2016, WSDOT Amendment)
This section is supplemented with the following new paragraph:

Recycled concrete, in any form, shall not be used for any Work defined in Section 8-01.

8-01.3(1)A SUBMITTALS Supplement/Revision

(October 2016D, City of Auburn)
When a temporary erosion and sediment control (TESC) plan is not included in the Plans, the Contractor shall prepare a TESC plan and submit it to the Engineer for approval prior to beginning construction. The TESC plan shall cover all areas the Contractor's work may affect both inside and outside the project limits.

When a Temporary Erosion and Sediment Control (TESC) Plan is included in the Plans, the Contractor shall modify the temporary erosion and sediment control (TESC) plans included in the Plans to address the Contractor's specific means and methods for completing the Work and submit to the Engineer for approval prior to beginning construction. The TESC plan shall cover all areas the Contractor's work may affect both inside and outside the project limits. The TESC plan shall also cover dewatering and the Contractor's proposed method of treating and disposing of dewatering effluent and other impacts caused by dewatering activities.

Modifications to the temporary erosion and sediment control (TESC) plans included in the Plans, shall meet all requirements of the City of Auburn Surface Water Management Manual (SWMM). The Contractor shall provide a schedule for TESC Plan implementation and incorporate it into the Contractor's progress schedule. The Contractor shall obtain the Engineer's approval of the TESC Plan and schedule prior to the beginning of Work. The TESC Plan shall cover all areas that maybe affected inside and outside the limits of the

project (including all Contracting Agency-provided sources, disposal sites, and haul roads, and all nearby land, streams, and other bodies of water).

Prior to beginning any concrete or grinding work, the Contractor shall submit a plan, for the Engineer's review and approval, outlining the procedures to be used to prevent high pH stormwater or dewatering water from entering surface waters. The plan shall include how the pH of the water will be maintained between pH 6.5 and pH 8.5 prior to being discharged from the project or entering surface waters.
The Contractor shall allow at least 5-working days for the Engineer to review any original or revised TESC Plan. Failure to approve all or part of any such Plan shall not make the Contracting Agency liable to the Contractor for any Work delays.

8-01.3(1)B EROSION AND SEDIMENT CONTROL (ESC) LEAD
Revision

(July 2016, City of Auburn)
The first sentence of the third paragraph shall be revised to read as follows:

The ESC Lead shall inspect all areas disturbed by construction activities, all on-site erosion and sediment control BMP's and all stormwater discharge points every calendar week and within 24 hours of runoff events in which stormwater discharges from the site or as directed by the Engineer.

The ESC Lead shall be responsible for the monitoring, reporting and recordkeeping requirements as specified in the Construction Stormwater General Permit and Section8-01.3(1)G.

8-01.3(1)F SWPPP PREPARATION AND GENERAL PERMIT COMPLIANCE NEW SECTION

(August 2016, City of Auburn)
The Applicant shall be responsible for securing a Construction Stormwater Permit (General Permit) for the Washington Department of Ecology (DOE) whenever the project size and scope is such that the permit is required by DOE. The Contractor shall comply with all conditions of the Construction Stormwater Permit (General Permit) issued by the Washington Department of Ecology, including monitoring and reporting requirements.

The Applicant shall prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) for City approval. Approval of the SWPPP document is required prior to the beginning of any ground disturbing activities. The Contractor shall allow at least 5 working days for the Engineer's review of the SWPPP.

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

Preparing, revising, maintaining the SWPPP in compliance with the General Permit;

Designing and planning, sediment control/erosion control measures, (BMPs), needed to meet General Permit requirements;

Planning, performing and reporting of storm water monitoring.

Preparing and maintaining documentation required by the General Permit.

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 General Permit. The Contactor shall include and modify as necessary the erosion control measures provided in the 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 General Permit. The Contractor shall provide and maintain on-site the standby equipment and materials to comply with the General Permit.

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 General Permit prior to being discharged from the project or entering surface waters.

For additional SWPPP details and requirements, refer to the City of Auburn SWMM.

8-01.3(2) SEEDING, FERTILIZING, AND MULCHING

8-01.3(2)B SEEDING AND fertilizing Supplement

(August 2016, City of Auburn)

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 Seed in Mixture	Percent by Weight	Minimum Percent Pure Seed	Minimum Percent Germination
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 Supplement

(August 2016, City of Auburn)
The moderate-term mulch soil binder for hydroseeding shall be a bonded fiber matrix with integral tackifier specifically manufactured for hydroseeding applications and erosion control. The moderate-term mulch shall be dyed an appropriate color to facilitate visual metering of application of the materials. The moderate-term mulch shall be 'ECO-AEGIS' as manufactured by Canfor, or approved alternate.

8-01.3(7) STABILIZED CONSTRUCTION ENTRANCE Revision

(August 1, 2016, WSDOT Amendment)
The last sentence of the first paragraph is revised to read:

> Material used for stabilized construction entrance shall be free of extraneous materials that may cause or contribute to track out.

8-01.3(8) STREET CLEANING Revision

(August 1, 2016, WSDOT Amendment)
This section is revised to read:

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

8-02 ROADSIDE RESTORATION

8-02.1 DESCRIPTION Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
Topsoil shall be used to restore any landscape beds or planter areas disturbed by the Work.

8-02.3(4)A TOPSOIL TYPE A Supplement

(August 2016, City of Auburn)
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 by the Contractor.

8-02.3(4)C TOPSOIL TYPE C Replacement

(August 2016, City of Auburn)
Topsoil Type C shall meet the requirements of Section 8-02.3(4)B, (Topsoil Type B), and Section 9-14.1(3), (Topsoil Type C). Native as used in this context shall mean naturally occurring material.

8-02.3(5) PLANTING AREA PREPARATION Supplement

(August 2016, City of Auburn)

Upon approval of the subgrades by the Engineer, topsoil shall be placed to required depths for all seeded, sod, tree, shrub and groundcover areas. Topsoil and subgrade material shall be cultivated to a depth of 12 inches. 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 unless otherwise directed by the Engineer. 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.

8-02.3(5)B ROOT CONTROL BARRIER New Section

(August 2016, City of Auburn)
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 tree and shrub planting areas as shown on the plans or as directed by the Engineer. Backfill with topsoil material being careful not to damage or displace root control material.

8-02.3(6) SOIL AMENDMENTS Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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.

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 Supplement

(August 2016, City of Auburn)
Plant trees and shrubs in planting pits and install tree frames and grates as detailed on plans.

Do not over excavate planting pit depth, however, over excavation of planting pit width is desirable.

Trees shall be handled by the rootball, not by the trunk. Burlap and wire shall remain intact until trees are set in their positions within each planting pit. Remove all wire, twine, and burlap from the top third of the rootball before backfilling. Plant trees and shrubs upright, rotating them to give the best placement to adjacent plants, topography, and structures. Hold plant rigidly in position until topsoil has been backfilled and tamped firmly around the ball or roots.

When the planting pit is backfilled halfway, place the specified quantity of fertilizer plant tablets and stakes, if necessary, as shown on the Plans. Evenly space the fertilizer tablets around the perimeter of and immediately adjacent to the root system. Carefully place, water, and compact planting topsoil filling all voids. Do not injure the root system.

When the planting pit is three-quarters (3/4) backfilled, fill with water and allow it to soak away. Fill pits with additional topsoil and continue backfilling as detailed on Plans. Ground bark shall be placed over all tree-planting saucers to a compact depth of 2 inches. Water trees immediately after planting.

The root systems of all bare root plant material shall be dipped in a slurry of silt and water immediately prior to planting.

8-02.3(10) FERTILIZERS Supplement

(August 2016, City of Auburn)
Trees, shrubs, and groundcover shall be fertilized as follows:

Formula 4-2-2 "Transplanter" as manufactured by Pacific Agro Co., with Hercules nitroform and W.R. Grace's "Magamp" and trace elements. Apply at a rate of:

Trees	8 ounces
Shrubs	2 ounces
Groundcover	1 ounce

Agriform Tablets: Planting tablets, 21-ram size, as manufactured by Agriform International Chemicals, Inc., 20-10-5 analysis. Apply at a rate of:

Trees	4 tablets for every foot of rootball diameter
Shrubs	3 tablets
Groundcover	1 tablet

8-02.3(11) BARK OR WOOD CHIP MULCH Supplement

(August 2016, City of Auburn)
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 Replacement

(August 2016D, City of Auburn)

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. 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.

8-02.3(13) PLANT ESTABLISHMENT Supplement/Revision

(August 2016D, City of Auburn)
The second, third, and fourth paragraphs are replaced with the following:

The plant establishment period shall begin upon 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, as directed by the Engineer, 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(16) LAWN INSTALLATION

8-02.3(16)A LAWN INSTALLATION Supplement

(August 2016, City of Auburn)
Except in areas where the Plans specify hydro-seed, lawn seeding will not be permitted on this project. "Lawn Sod" per Section 9-14.6(8) (Sod) shall be laid smoothly in place in accordance with the typical section(s) in the plans.

Prior to installing "Lawn Sod" all dry soil shall be moistened by sprinkling with water. On sloped areas, the sod shall be laid with the long dimension parallel to the toe or top of slope. The "Lawn Sod" shall be rolled and heavily watered by sprinkler after placement.

8-02.3(16)B LAWN ESTABLISHMENT Supplement

(August 2016, City of Auburn)
The lawn establishment period may be extended or shortened by the Engineer based on the Engineer's opinion of whether or not the lawn has been established. Physical Completion and Final Acceptance will not be allowed until after the lawn establishment period has ended.

Lawn establishment requirements outside the City of Auburn right of way shall be subject to the applicable agreements, easements, and permit conditions for the property on which they are associated.

8-02.3(16)C LAWN MOWING Supplement

(August 2016, City of Auburn)
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.

8-02.3(16)D FERTILIZER FOR SODDED AREA New Section

(August 2016, City of Auburn)
Prior to placing sod, a 10-2-10 fertilizer shall be rototilled into the top 3 inches of the soil at a rate of 4 pounds of available nitrogen per 1,000 square feet.

8-03 IRRIGATION SYSTEMS

8-03.1 DESCRIPTION Supplement

(August 2016, City of Auburn)
This work also consists of the replacement and/or repair of existing irrigation systems.

8-03.2 MATERIALS Supplement

(August 2016, City of Auburn)
Washed sand shall meet the requirements of Section 9-03.8(4).

Irrigation conduit shall be PVC pipe and be in accordance with Section 9-15.1(2) (Polyvinyl Chloride Pipe and Fittings).

8-03.3 CONSTRUCTION REQUIREMENTS Supplement

(August 2016, City of Auburn)
The Contractor shall submit catalog cuts of all heads, quick coupling valves and controller to the Engineer for approval per the requirement of Section 1-06.7 (Submittals). See Section 9-15 (Irrigation System) for Materials.

Water service connections shall be made by the Contractor as indicated in the Plans and such installations and equipment shall conform to the requirements set forth by the Engineer.

8-03.3(2) EXCAVATION Supplement

(August 2016, City of Auburn)
Backfilling shall be done when pipe is not in an expanded condition due to heat or pressure. Cooling of the pipe can be accomplished by operating the system for a short time before backfilling, or by backfilling in the early part of the morning before the heat of the day.

8-03.3(3) PIPING Supplement

(August 2016, City of Auburn)
Due to the nature of PVC pipe and fittings, the Contractor shall exercise care in handling, loading, unloading and storing to avoid damage. The pipe and fittings shall be stored under cover and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lay flat, so as not to be subject to undue bending or concentrated external load at any point. Any pipe that has been dented or damaged shall be set aside until such damage has been cut out and the pipe is rejoined with a coupling.

8-03.3(4) JOINTING Supplement

(August 2016, City of Auburn)
Solvent welded joints shall be given at least 15 minutes set-up time before moving or handling. Pipe shall be partially center loaded to prevent arching and slipping. No water shall be permitted in pipe until a period of at least 10 hours has elapsed for solvent weld setting and curing.

The Contractor shall take great care to insure that the inside of the pipe is absolutely clean. Any pipe ends not being worked on shall be protected and not left open.

No PVC pipe may be threaded or connected to a threaded fitting without an adapter.

8-03.3(6) ELECTRICAL WIRE INSTALLATION Supplement

(August 2016, City of Auburn)
Splices shall be made with a dry-splice wire connector, PVC construction body and snap-lock plug with copper crimp sleeve, three flapped openings for wires and sealer packet such as Rainbird ST-03UL/PT-55 Snap-Tite, UL Wire Connectors and PT-55 Sealer System, Glendora, California or equivalent. Install per manufacturer's specifications.

8-03.3(7) FLUSHING AND TESTING Supplement

(August 2016, City of Auburn)
Before pressure testing, soluble weld joints shall be given at least 24 hours curing time. Before backfilling and installation of automatic valve, all sprinkler lines with risers installed and capped shall be flushed and pressure-tested. The final test must be performed and approved under the direction and supervision of the Engineer. The location, inspection and testing provisions of these specifications shall be strictly adhered to. Any part of the sprinkler system backfilled before location, testing, or approved inspection by the Engineer, will be completely uncovered and exposed until approved for backfilling by the Engineer.

8-03.3(9) BACKFILL Supplement

(August 2016, City of Auburn)

Trenches under roads or paved areas shall be backfilled and tamped with a mechanical tamper in successive 6 inch lifts. Paving shall be replaced to the satisfaction of the Engineer. Jacking under paved areas will be allowed with Engineer's approval.

Unless otherwise specified, trenches shall be deep enough to allow 18 inches cover over sprinkler lines and 24 inches cover over supply lines. All trenches must be straight and not have abrupt changes in grade. Bedding for irrigation lines shall be washed sand from a minimum of 3-inches below to 3-inches above all irrigation lines. Native material may be used as backfill for the remainder of the trench when not in paved areas. Rocks larger than 3-inches in diameter shall be removed from any native material used as backfill.

8-03.3(11) SYSTEM OPERATION Supplement/Revision

(August 2016, City of Auburn)
This section is supplemented as follows:

The Contractor shall perform sprinkler coverage tests to determine if coverage and operation of the system is complete and satisfactory before the sprinkler system will be accepted. If any part of the system is inadequate because of Contractor workmanship or material, repairs or replacement shall be made at Contractor expense and the test repeated until accepted by the Engineer.

(August 2016, City of Auburn)
In the third paragraph, the last sentence is revised to read:

Potable water shall not flow through the cross-connection control device to any downstream component until tested and approved for use by the City in accordance with Section 8-03.3(12) (Cross Connection Control Device Installation).

8-03.3(12) CROSS CONNECTION CONTROL DEVICE INSTALLATION Supplement

(August 2016, City of Auburn)
Backflow preventer assembly shall be installed at location(s) shown on the Plans.

8-03.3(13) IRRIGATION WATER SERVICE Replacement

(August 2016, City of Auburn)
Water meter(s) will be installed at location(s) shown on the Plans in accordance with Section 7-15 (Service Connections).

8-03.3(14) IRRIGATION ELECTRICAL SERVICE Replacement

(August 2016, City of Auburn)
Electrical service and or wires will be installed at location(s) shown on the Plans in accordance with Section 8-20.3(10) (Services transformer, Intelligent Transportation System Cabinet).

8-04 CURBS, GUTTERS AND SPILLWAYS

8-04.3(1) CEMENT CONCRETE CURBS, GUTTERS AND SPILLWAYS Supplement/Revision

(August 2016, City of Auburn)
This section is supplemented as follows:

Reinforcing shall be constructed at catch basins in accordance with the applicable Standard Detail(s).

When slip-form equipment is used to place the curb and gutter, the concrete mix design may be modified as follows: The Grade No. 2 coarse aggregate (1½ inch minus) may be replaced by Grade No. 5 coarse aggregate (1 inch minus) when required to accommodate the equipment.

(August 2016, City of Auburn)
The fourth paragraph is replaced with the following:

Joints in the curb and gutter shall be spaced to match joints in the abutting driveways and sidewalks or cement concrete pavement. All expansion/through joints shall extend entirely through the curb and gutter section. Maximum joint spacing shall be as follows:

A. ¾ inch expansion/through joints at 20-foot maximum spacing, or 3/8-inch expansion/through joints at 10-foot maximum spacing;

B. 1/8 inch x 1 inch deep saw cut or scored joints per Standard Specification 8-04.3(1) (Cement Concrete Curbs, Gutters, and Spillways) at intervening 10-foot maximum spacing.

8-04.3(1)A EXTRUDED CEMENT CONCRETE CURB Supplement

(August 2016, City of Auburn)
"Extruded Cement Concrete Curb" shall be type 6 as detailed in the applicable Standard Plan.

8-05 DEWATERING SYSTEM New Section

8-05.1 GENERAL

(August 2016, City of Auburn)
When dewatering trenches requires a dewatering system the Contractor shall design and provide a dewatering system using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. The Contractor shall design the system to prevent differential hydrostatic head that would result in floating out soil particles in a manner termed as a "quick" or "boiling" condition. The system shall not be dependent solely upon sumps or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation's stability.

Where the Engineer determines that the Contractor cannot sufficiently dewater the trench using the "Normal Trench Dewatering" described in Section 7-08.3(2)L (Dewatering Trenches) of these Special Provisions, the Contractor shall provide a dewatering system of sufficient size and capacity to prevent ground and surface water flow into the excavation and to allow all work to be installed in a dry condition.

The Contractor shall control, by acceptable means, all water regardless of source and be fully responsible for disposal of the water.

The Contractor shall confine discharge piping and/or ditches to available easements or to additional easements obtained by Contractor and provide necessary permits and/or additional easements.

The Contractor shall control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary to these purposes, the Contractor shall lower water levels in advance of excavation, utilizing wells, well points, jet educators, or similar positive methods. The water level as measured by piezometers shall be maintained a minimum of 2 feet below prevailing excavation level.

The Contractor shall commence dewatering prior to any appearance of water in excavation and continue until work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.

Open pumping with sumps and ditches shall be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes.

The Contractor shall install wells and/or well points, if required, with suitable screens and filters, so that continuous pumping of fines does not occur, arrange discharge to facilitate collection of samples by the City. During normal pumping, and upon development of well(s), levels of fine sand or silt in the discharge water shall not exceed 5 ppm. The Contractor shall install sand tester on discharge of each pump during testing to verify that levels are not exceeded.

The Contractor shall control grading around excavations to prevent surface water from flowing into excavation areas.

8-05.1(1) DESIGN

(August 2016, City of Auburn)
Contractor shall designate and obtain the services of a qualified dewatering specialist to provide a dewatering plan as may be necessary to complete the work.

Contractor shall be responsible for the accuracy of the drawings, design data, and operational records required.

Contractor shall be solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system.

8-05.1(2) DAMAGES

(August 2016, City of Auburn)
Contractor shall be responsible for and shall repair 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.

8-05.1(3) MAINTAINING DEWATERED EXCAVATION

(August 2016, City of Auburn)
Dewatering shall be a continuous operation. Interruptions due to power outages or any other reason will not be permitted.

The Contractor shall continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance.

The Contractor shall provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils.

System maintenance shall include but not be limited to 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components and any other work required to maintain excavation in dewatered condition.

8-05.1(4) SYSTEM REMOVAL

(August 2016, City of Auburn)
The Contractor shall abandon and remove from the site, in accordance with WAC Chapter 173-160 and RCW Chapter 18.104, all groundwater control and monitoring system elements. The Contractor shall be, or employ the services of, a water well contractor licensed in the State of Washington to abandon all wells, and/or well points. The Contractor shall assume ownership and responsibility for the disposal of all removed groundwater control pumps, pipes, and other assorted system hardware.

The Contractor shall abandon and remove the groundwater control and monitoring systems in such a manner that groundwater does not flow or seep through groundwater control or monitoring system penetrations into any structure or facility. Wells decommissioned within roadways shall be capped beneath the roadway base course with at least 24-inches of class

3000 concrete. Beneath the concrete cap, the Contractor may utilize bentonite to fill the well per Department of Ecology requirements.

8-06 CEMENT CONCRETE DRIVEWAY ENTRANCES

8-06.1 DESCRIPTION Supplement

(August 2016, City of Auburn)
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 Supplement

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 Revision/Supplement

The first paragraph is revised to read:

Cement concrete driveways shall be constructed with air entrained concrete Class 3000 conforming to the requirements of Section 6-02 (Concrete Structures).

(August 2016, City of Auburn)
This section is supplemented with the following:

The following additional specifications shall apply to commercial and industrial driveways:

Driveways shall be 8-inches thick with woven fabric reinforcement and the curb is poured with the driveway as one continuous section (monolithic).

The flush curb along the driveway shall be poured integral to the driveway with a 1-inch lip between the back of the curb and the driveway entrance.

The Contractor shall place 6-inch by 6-inch #10 welded wire fabric 3-inches from the bottom and 2-inches to the top of the driveway from all limits including the integral poured curb.

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. The Engineer shall make the decision when the use of a fog spray is necessary.

Additional requirements for curing in cold weather shall be as outlined in Section 5-05.3(14) (Cold Weather Work).

8-07 PRECAST TRAFFIC CURB

8-07.2 MATERIALS — Replacement

(August 2016, City of Auburn)
Materials shall meet the requirements of the following sections:

Precast Traffic Curb	9-18.1
Epoxy	9-26.2
Paint	9-34.2
Raised Pavement Markers	9-21.2
Type 3 Delineators	Per Plan

8-07.3 CONSTRUCTION REQUIREMENTS

8-07.3(1) INSTALLING CURBS — Revision/Supplement

(August 2016, City of Auburn)
Remove all references to mortar from this section.

Contractor shall affix the curb to the pavement surface with epoxy. Epoxy shall also be used to adhere each curb end to the adjoining curb end.

8-09 RAISED PAVEMENT MARKERS

8-09.3 CONSTRUICTION REQUIREMENTS

8-09.3(2) SURFACE PREPARATION Supplement

(August 2016, City of Auburn)
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.

8-09.3(8) REMOVE RAISED PAVEMENT MARKINGS New Section

(August 2016, City of Auburn)
All raised pavement markings shall be removed before placing a new asphalt concrete pavement overlay. Removal of markers shall be conducted in a manner that prevents damage to existing pavement. Damage to the existing pavement caused by Contractor's negligence shall be repaired by the Contractor at the Contractor's expense. Repairs shall be to the satisfaction of the Engineer.

8-13 MONUMENT CASES

8-13.1 DESCRIPTION Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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.

8-13.3 CONSTRUCTION REQUIREMENTS

8-13.3(1) REFERENCE POINTS New Section

(August 2016D, City of Auburn)
The Applicant's 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 and where directed by the Engineer. The Contractor shall carefully protect all reference points to the monuments and shall give the Applicant's Engineer reasonable notice of the schedule for monument work in order to avoid destruction of the points.

When project activities have the potential to remove, alter or destroy Survey monuments and land boundary corners that have the potential to be removed, altered or destroyed shall be preserved by the Contractor in accordance with Chapter 332.120 WAC. Submittal of the Washington State Department of Natural Resources "Application for Permit to Remove or Destroy a Survey Monument" in accordance with WAC 332.120.070, prepared by a Washington State Licensed professional surveyor or engineer, is required. Upon completion of the activity that caused the removal or destruction of the survey monument or land boundary corner, the surveyor licensed in the State of Washington shall reset a survey marker in compliance with state law and file a "Completion Report for Monument Removal or Destruction" in accordance with WAC 332.120.060.

8-13.3(2) INSTALLATION New Section

(August 2016, City of Auburn)
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.

The Contractor shall install monuments after the final course of surfacing has been placed. After the monument or monument case has been in place for a minimum of three days, the roadway surface shall be patched in a workman like manner with Class ½ inch asphalt concrete pavement as directed by the Engineer.

Where called for on the Plans, or where directed by the Engineer, the Contractor shall adjust existing monuments to the grade as staked or otherwise directed by the Engineer. The existing cast iron case and cover shall first be removed and thoroughly cleaned for reinstalling at the new grade.

The Applicant's Washington State Licensed Professional Surveyor is responsible to set survey monuments in compliance with RCW 58.09.120. The monument shall be permanently marked with the certificate number of the land surveyor setting it.

8-14 CEMENT CONCRETE SIDEWALKS

8-14.1 DESCRIPTION Replacement

(August 2016, City of Auburn)
This work shall consist of construction of cement concrete sidewalks, including curb ramps with detectable warning stripsPlans.

8-14.3 CONSTRUCTION REQUIREMENTS

8-14.3(1) EXCAVATION Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement/Revision

(August 2016, City of Auburn)
This section is supplemented as follows:

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)
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 Plans or if any dimension is less than a minimum dimension specified on the Standard Plans or 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.

8-14.3(3)B SPECIAL SIDEWALK New Section

(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 or as directed by the Engineer.

8-14.3(4) CURING Replacement

(August 2016, City of Auburn)
Concrete sidewalks shall be cured per methods described in Section 5-05.3(13) (Curing), with the following exceptions if the curing compound method is used:

- The Contractor shall use Type I clear curing compound per Section 9-23 (Concrete Curing Materials and Admixtures).
- The Contractor shall not use white pigmented curing compound.
- The curing agent shall be applied immediately after brushing and be maintained for a period of 5 calendar days.

The Contractor shall have readily available sufficient protective covering, such as waterproof paper or plastic membrane, to cover the pour of an entire day in event of rain or other unsuitable weather.

Additional requirements for curing in hot weather shall be as follows:

In periods of low humidity, drying winds, or high temperatures, a fog spray shall be applied to concrete after placement as soon as conditions warrant to prevent the formation of shrinkage cracks. The spray shall be continued until conditions permit the application of liquid curing membrane or other curing media.

Additional requirements for curing in cold weather shall be as outlined in Section 5-05.3(14) (Cold Weather Work).

8-18 MAILBOX SUPPORTS

8-18.2 MATERIALS Supplement

(August 2016, City of Auburn)
Anchor Bolts, Nuts, and Washers for the Neighborhood Delivery and Collection Box Unit shall be in accordance with Section 9-06.5 (Bolts) and Section 9-06.22 (Bolts, Washers, and Other Hardware).

8-20 ILLUMINATION, TRAFFIC SIGNAL SYSTEMS, AND ELECTRICAL

8-20.1(1) REGULATIONS AND CODE Revision

(August 2016, City of Auburn)
The third and fourth paragraphs are deleted and replaced with the following:

The Contractor shall obtain an electrical permit from Washington State Department of Labor and Industries. Electrical Service inspection will be performed by Labor and

Industries. Obtaining the permit and request for inspections is the responsibility of the Contractor. The Contractor is advised that safe-wiring labels required by Labor and Industries shall apply on this project.

The Contractor shall provide and install service wire and PVC conduit between the proposed service cabinet and the PSE point of service location as shown in the Plans or as directed by the Engineer.

8-20.2(1) EQUIPMENT LIST AND DRAWINGS Replacement

(March 2013, City of Auburn)
This section is deleted in its entirety and replaced 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. Shop drawings shall conform to the 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.

The Contractor shall surrender to the City of Auburn all guarantees or warranties acquired for materials as a normal trade practice in connection with the purchase or as provided by the manufacturer for all materials used. The effective beginning date for all guarantees or warranties shall be the date that activation of the system in which the part(s) are used is complete and operational.

8-20.3 CONSTRUCTION REQUIREMENTS

8-20.3(1) GENERAL Supplement

(August 2016, City of Auburn)
Signal downtime will not be allowed Monday thru Friday between the hours of 6:00 AM and 9:00 AM and between 3:00 PM and 6:00 PM

8-20.3(1)A TEMPORARY SIGNAGE FOR TRAFFIC SIGNALS New Section

(August 2016, City of Auburn)
Temporary “New Signal Ahead” (W20-902) signs with two warning flags shall be installed in advance of the intersection on all approaches to the new signal. Signs shall be mounted on

4-inch x 4-inch wooden posts and placed per plan and the Manual on Uniform Traffic Control Devices (MUTCD) requirements. The Contractor shall remove all temporary signs and posts no earlier than 3 months and no later than 6 months following the initial signal activation. Posthole voids shall be restored with native material.

(August 2016, City of Auburn)
Temporary "Traffic Signal Revision" (W20-903) signs with two warning flags shall be installed in advance of each intersection approach with signal modifications. A 12-inch x 12-inch warning placard shall be affixed to the top of each signal head being modified. Advanced warning signs shall be mounted on 4-inch x 4-inch wooden posts or as determined by the Engineer, and placed per plan and MUTCD requirements. The Contractor shall remove all temporary placards, signs and posts no earlier than 3 months and no later than 6 months following completion of the signal modifications. Posthole voids shall be restored with native material.

8-20.3(2) EXCAVATION AND BACKFILLING Revision

The third paragraph is deleted.

8-20.3(2)A CONDUIT TRENCH CONSTRUCTION New Section

(August 2016, City of Auburn)
Conduit shall be placed in accordance with the Standard Plans. Surfaces impacted by conduit trenches shall be restored to their original, or better conditions. Asphalt and cement concrete pavement, sidewalks, and driveways shall be replaced upon a firm unyielding base to match existing surface pavement thickness. The minimum asphalt concrete pavement repair section shall be 2 inches thick using HMA Class ½ inch.

8-20.3(2)B CONDUIT TRENCH BEDDING AND BACKFILL New Section

(August 2016, City of Auburn)
Bedding and Backfill for conduit trenches in the sidewalk or driveway sections shall be as per the Standard Detail. Bedding and Backfill for conduit trenches in roadway sections shall be crushed surfacing top course.

8-20.3(3)A REMOVE STREET LIGHT POLES AND LUMINAIRES New Section

(September 2016, City of Auburn)
Where shown on the plans, the Contractor shall remove existing street light poles and luminaires to new location.

Following removal of the existing street light poles and luminaires, the Contractor shall protect the fixture and all component parts from loss or damage until such time as all or part of the fixtures or poles are delivered to City of Auburn Maintenance and Operations building. The Contractor shall replace lost, damaged, or destroyed salvageable fixtures and component parts in kind at the Contractor's expense. The Contractor shall coordinate the receiving of equipment by the City and label each salvaged item with the City contract number and location from which it was salvaged. The label shall be a removable weather proof tag that will not damage or mark the salvaged item.

8-20.3(3)B REMOVAL OF FOUNDATIONS New Section

(August 2016, City of Auburn)
Abandoned pole foundations shall be removed completely and disposed of, unless otherwise shown on the Plans. When Plans show an abandoned pole foundation to remain, the foundation shall be removed to a minimum depth of two feet below finished grade. Abandoned controller cabinet foundations shall be removed completely and disposed of by the contractor. Abandoned conduits shall be cut below grade and plugged , unless otherwise shown on the Plans.

8-20.3(4) FOUNDATIONS Supplement

(August 2016, City of Auburn)
Foundations shall accommodate all required conduits.

Before placing the concrete, the Contractor shall block out around any other underground utilities that may lie in the excavated base to prevent foundation adherence to the utility line. Concrete foundations shall be troweled, brushed, and edged. Exposed anchor bolts and conduits shall be promptly cleaned of any concrete after installation.

Where no sidewalk is planned or exists the top of the foundation shall be 12 inches above roadway centerline, unless otherwise noted on the Plans.

All foundations shall be installed so that the traffic signal and/or luminaire mast arm is perpendicular to the centerline of the roadway it serves, unless otherwise noted on the Plans.

8-20.3(4)A FOUNDATIONS FOR LIGHT STANDARDS New Section

(August 2016, City of Auburn)
Each concrete base shall have one (1) 2-inch PVC, Schedule 40, conduit sweep from inside the pole through the concrete base for each direction of wire run shown on the Plans. The PVC conduit shall not extend more than 1½ inch above the concrete base. Anchor bolts shall be per Section 9-29.6(5) (Foundation Hardware).

Pole foundations next to or in sidewalks shall be placed 4 inches below the finished surface of the sidewalk. A 4-inch concrete pad shall be poured concurrently with the sidewalk. The pole foundation and sidewalk shall be separated by a ¾ inch expansion joint such that the foundation can be removed without damage to the surrounding sidewalk.

8-20.3(4)B FOUNDATION FOR CONTROLLER CABINET New Section

(August 2016, City of Auburn)
The joint between the cabinet and the foundation shall be sealed using a clear, waterproof, silicone caulk.

8-20.3(5) CONDUIT Supplement

(February 2016, City of Auburn)
Unless specified on the Plans or directed by the Engineer, metal conduit shall not be used.

Unless specified on the Plans or directed by the Engineer, open cut trenching in accordance with Section 8-20.3(2)A, 8-20.3(B), and 8-20.3(2)C will be allowed for the construction of conduits.

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 or as directed by the Engineer.

A pull rope shall be installed in all spare conduits for future conductors. The pull rope shall consist of a flat, woven, lubricated, soft-fiber polyester tape with a minimum tensile strength of 2,000 lbs and shall have printed sequential measurement markings at least every 3 feet. At least 2 feet of pull rope 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(5)A GENERAL Revision

(April 4, 2016, WSDOT Amendment)
The last paragraph is revised to read:

> Immediately after the sizing mandrel has been pulled through, install an equipment grounding conductor if applicable (see Section 8-20.3(9)) and any new or existing wire or cable as specified in the Plans. Where conduit is installed for future use, install a 200-pound minimum tensile strength pull string with the equipment grounding conductor. The pull string shall be attached to duct plugs or caps at both ends of the conduit.

8-20.3(5)A1 FIBER OPTIC CONDUIT Revision

(April 4, 2016, WSDOT Amendment)
The last paragraph is deleted.

8-20.3(5)D CONDUIT PLACEMENT Revision

(April 4, 2016, WSDOT Amendment)
Item number 2 is revised to read:

2. 24-inches below the top of the untreated surfacing on a Roadbed.

8-20.3(6) JUNCTION BOXES, CABLE VAULTS, and PULL BOXES Supplement

(August 2016, City of Auburn)
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.

The Contractor shall remove and dispose of junction boxes for the existing system that are no longer needed.

Junction boxes shall be installed in accordance with all provision 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.

The junction box or the foundation for the junction box (if required) shall rest on a pad of 5/8 inch minus crushed rock to a minimum depth of 6 inches. Six 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 Supplement

(August 2016, City of Auburn)
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.

8-20.3(9) BONDING, GROUNDING Revision/Supplement

(April 4, 2016, WSDOT Amendment)
The following two new paragraphs are inserted after the first paragraph:

> Install an equipment grounding conductor in all new conduit, whether or not the equipment grounding conductor is called for in the wire schedule.
>
> For each new conduit with innerduct install an equipment grounding conductor in only one of the innerducts unless otherwise required by the NEC or the Plans.

The fourth paragraph (after the preceding Amendments are applied) is revised to read:

> Bonding jumpers and equipment grounding conductors meeting the requirements of Section 9-29.3(2)A3 shall be minimum #8 AWG, installed in accordance with the NEC. Where existing conduits are used for the installation of new circuits, an equipment grounding conductor shall be installed unless an existing equipment ground conductor, which is appropriate for the largest circuit, is already present in the existing raceway. The equipment ground conductor between the isolation switch and the sign lighter fixtures shall be minimum #14 AWG stranded copper conductor. Where parallel circuits are enclosed in a common conduit, the equipment-grounding conductor shall be sized by the largest overcurrent device serving any circuit contained within the conduit.

The second sentence of the fifth paragraph (after the preceding Amendments are applied) is revised to read:

> A non-insulated stranded copper conductor, minimum #8 AWG with a full circle crimp on connector (crimped with a manufacturer recommended crimper) shall be connected to the junction box frame or frame bonding stud, the other end shall be crimped to the equipment bonding conductor, using a "C" type crimp connector.

The last two sentences of the sixth paragraph (after the preceding Amendments are applied) are revised to read:

> For light standards, signal standards, cantilever and sign bridge Structures the supplemental grounding conductor shall be #4 AWG non-insulated stranded copper conductor. For steel sign posts which support signs with sign lighting or flashing beacons the supplemental grounding conductor shall be #6 AWG non insulated stranded copper conductor.

The fourth to last paragraph is revised to read:

> Install a two grounding electrode system at each service entrance point, at each electrical service installation and at each separately derived power source. The service

entrance grounding electrode system shall conform to the "Service Ground" detail in the Standard Plans. If soil conditions make vertical grounding electrode installation impossible an alternate installation procedure as described in the NEC may be used. Maintain a minimum of 6 feet of separation between any two grounding electrodes within the grounding system. Grounding electrodes shall be bonded copper, ferrous core materials and shall be solid rods not less than 10 feet in length if they are ½ inch in diameter or not less than 8 feet in length if they are ⅝ inch or larger in diameter.

(August 2016, City of Auburn)
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 thorough any cable loops. In the case of Type 8 junction boxes, both lids shall be bonded.

When loop lead-in wires or interconnect wire are the only wires in the junction box, bonding is not required.

8-20.3(10) SERVICE, TRANSFORMER, AND INTELLIGENT TRANSPORTATION SYSTEM (ITS) CABINETS Replacement

(August 2016, City of Auburn)
A three-wire electrical service shall be used at 120/240 volts. The service shall be inspected by Washington Department of Labor and Industry per Section 8-20.1(1) (Regulations and Code).

Electrical service cabinets shall be per Section 9-29.24 (Service Cabinets) and shall be installed where shown on the Plans and as directed by the Engineer. The service cabinets shall be attached to foundation as shown in the Standard Details with 4 hot-dipped galvanized foundation bolts, washers, and nuts. The Pad shall be reinforced with 6 inch x 6 inch x #10 welded wire fabric.

Power service cabinets need to be labeled with the "City of Auburn" identification, the use of the service, and the site address, per PSE construction meter requirements. PSE requires a permanent engraved phenolic nameplate or die-cut adhesive label at least 1-inch high. The power meter will not be installed without this permanent label.

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.

8-20.3(11) TESTING Supplement/Revision

(August 2016, City of Auburn)
The section is supplemented 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 shall be fully covered with black plastic or yellow nylon cloth that is firmly attached, until the signal turn-on.

(August 2016, City of Auburn)
The last paragraph is revised to read:

Unless otherwise approved by the Engineer, signal turn-on will only be allowed Monday through Thursday (except for holidays or the day before a holiday), between the hours of 9:00 a.m. and 2:00 p,m.

8-20.3(13) ILLUMINATION SYSTEMS

8-20.3(13)A LIGHT STANDARDS Supplement

(August 2016, City of Auburn)
Anchor bases, shall be per Section 9-29.6(2) (Slip Base Hardware) .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 or as directed by the Engineer.

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 Supplement

(August 2016, City of Auburn)
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, as directed by the Engineer and as specified herein. Contractor shall furnish man-lift truck for use in final inspection of luminaire system. Luminaires shall be leveled in 2 planes. One plane perpendicular to the curb (parallel to davit arm), the other plane shall be 90 degrees to the first plane. All luminaires shall be installed with the handhole opposite of traffic flow.

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.

8-20.3(13)F LUMINAIRE FUSING New Section

(August 2016, City of Auburn)
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(13)G PHOTOELECTRIC CONTROLS New Section

(August 2016, City of Auburn)
Photocells shall be installed on the service cabinet in conformance with Section 9-29.11(2) (Photoelectric Controls) of the Standard Specifications.

8-20.3(14) SIGNAL SYSTEMS

8-20.3(14)B SIGNAL HEADS Supplement

(August 2016, City of Auburn)
Vehicular Signal Heads

All signal heads shall be Long Life LEDs and meet the requirements of Section 9-29.16(2) (Conventional Traffic Signal Heads). Lens sizes shall be as shown in 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 utilize a countdown LED display.

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)B.1 BACKPLATE TAPE New Section

(August 2016, City of Auburn)
Reflective backplate tape shall be a 1-inch wide strip of yellow retro-reflective, type IV prismatic sheeting, conforming to the requirements of Section 9-28.12 (Reflective Sheeting).

Prior to installing the tape, the existing backplate shall be cleaned per the tape manufacture's recommendations to ensure proper adhesion.

8-20.3(14)C INDUCTION LOOP VEHICLE DETECTORS Supplement

(August 2016, City of Auburn)
Saw cuts shall not remain empty for a duration longer than twenty-four hours after the saw cut is completed. New loops shall be terminated and functioning within 72 hours of removing an active loop from service, unless temporary detection is in place.

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 or directed by the Engineer, 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)D TEST FOR INDUCTION LOOPS AND LEAD-IN CABLE Supplement

(August 2016, City of Auburn)
Continuity checks of pre-formed loops shall be done before installation, and both continuity and resistance to ground after the loops are embedded in the pavement.

8-20.3(14)E SIGNAL STANDARDS Supplement

(August 2016, City of Auburn)
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 covers shall be fastened with a tamperproof bolt.

8-20.3(14)F EMERGENCY VEHICLE PRE-EMPTION New Section

(August 2016, City of Auburn)

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.

8-20.3(14)G INTERCONNECT NETWORK New Section

(August 2016, City of Auburn)

Traffic signal interconnect cable shall be installed as shown in the Plans and in accordance with all provisions of Section 9-29.3 (Fiber Optic Cable, Electrical Conductors, and Cable). All cable shall be installed in compliance with the manufacturer's installations and recommendations.

8-20.3(14)H PEDESTRIAN PUSH BUTTONS AND SIGNS New Section

(August 2016, City of Auburn)

Push buttons shall be in accordance with Section 9-29.19 (Pedestrian Push Buttons) and installed per the manufacturer's directions and recommendations.

Pedestrian push button assemblies shall be securely fastened to the signal standard or pedestrian pole using stainless steel fasteners. Signal standards shall be drilled and tapped for mounting push buttons. Push buttons shall be installed 42-inches from the centerline of push buttons above sidewalk or ground level.

8-20.3(14)I VIDEO DETECTION SYSTEM New Section

(August 2016, City of Auburn)
When video detection is shown in the Plans, the Contractor shall install a fully functional Traficon video detection camera system auxiliary equipment, cameras, housings, and mounts, and all required mounting hardware, cables, connectors, and wiring.

For "Traffic Video Detection Camera" the presence detector board shall be Traficon VIP3D.2, which monitors two cameras. The Contractor shall provide a VIP set-up keypad. The camera housings and internal cameras shall be the latest approved models supplied by Trafficon. The Video monitor shall be a minimum of a 9-inch LCD. Coaxial cable shall be 5 conductor cable ISDTEC X341667-00.

For "Wide Angle Video Detection Camera" the video detection card shall be a Trafficom 4TI Edge card, 24 volt power supply, and USB/A – USB/B converter and vendor recommended 5 conductor cable.

Cameras shall be installed where indicated on the Plans or as directed by the Engineer. Cameras shall be mounted on signal mast arms as shown in the plans utilizing 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 Contractor shall allow two weeks to schedule a Kar-Gor representative to assist with the system installation and turn on. The representative from Kar-Gor will terminate all video wiring in the traffic cabinet and install and program the VIP units.

Final adjustment of the cameras shall be done by the Contractor in the presence and at the direction of the City of Auburn Traffic Signal Technician.

8-20.3(14)J CLOSED CIRCUIT TELEVISION (CCTV) CAMERA SYSTEM New Section

8-20.3(14)J.1 DESCRIPTION

(August 2016, City of Auburn)
This work consists of providing a television surveillance camera system to include provision and installation of camera assemblies (camera, lens, and housing), pan and tilt drives, Ethernet switch, cables, patch cords and other equipment necessary to provide a complete and operable fiber optic-based closed circuit television (CCTV) system.

8-20.3(14)J.2 MATERIALS

(August 2016, City of Auburn)
CCTV system materials shall be per Section 9-29.27 (CCTV SYSTEM). The CCTV camera shall be a Cohu RISE 4260 HD and utilize a Cohu power and control cable ordered to

length. The camera pigtail shall be a custom length to construct the drip loop in the camera mounting detail. The ethernet switch shall be a Ruggedcom RS900G Switch.

Unless otherwise indicated in the Plans or specified in the Special Provisions, all materials shall be new.

8-20.3(14)J.2(1) MOUNTING

(August 2016, City of Auburn)
Mounting of camera on luminaire/signal poles shall utilize Cohu pole mounts and equipment and hardware shown in the Plans.

8-20.3(14)J.3 CONSTRUCTION REQUIREMENTS

(August 2016, City of Auburn)
For each new CCTV camera shown in the Plans, the Contractor shall furnish, install, setup, and test 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

(August 2016, City of Auburn)
The Contractor shall submit to the Engineer the method that is intended to be used to install the various cables. Any cable runs which have damaged jackets or do not pass the appropriate test will be rejected and shall be replaced by the Contractor.

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 RTV silicon rubber compound. The cables to the camera shall be encased in a flexible sheath to form one cable between the camera and the local control cabinet.

All cables shall be supported so that there is no weight being transferred from the camera cable to the entry points through poles or extrusions. All holes through poles shall be sealed with outdoor rated watertight grips.

All cables shall be tagged with permanent markers of PVC identifying their use. Cables shall be tagged at both ends and at every junction box location.

8-20.3(14)J.3(2) CAMERA CABLE

(August 2016, City of Auburn)
Camera cables shall extend from the camera control receiver to the camera and pan/ tilt drive unit. These cables shall provide camera power, environmental housing heater power, pan/ tilt drive power and controls, camera lens controls, and additional wires for preset positioning of pan/ tilt and lens. The number and size of wires required in the camera cable is dependent upon the vendor selected for pan/tilt drives. The Contractor shall provide and

install camera cables with the proper type and quantity of conductors to enable connection as recommended by the selected vendors and as required to provide for proper operation of the closed circuit television system.

Camera cables shall be as per the manufacturer's specifications and designed for long life operation under adverse weather conditions. Cable connectors at the camera housing and pan/tilt drive shall be waterproofed in accordance with vendor recommendations. Camera cables shall be terminated on terminals in the camera control cabinet.

8-20.3(14)J.3(3) SYSTEM SETUP

(August 2016, City of Auburn)
The Contractor shall set the vertical tilting up limit stop to prohibit the camera from tilting above the highest point on the horizon when at full zoom. The Contractor shall set the vertical tilting down limit stop so that the camera movement does not interfere with the pan/tilt/zoom (PTZ) cable.

8-20.3(14)J.3(4) CCTV SYSTEM PERFORMANCE TEST

(August 2016, City of Auburn)
The Contractor shall provide all required test equipment and shall carry out the test as specified in the plans. The Contractor shall provide all equipment necessary for complete testing of the CCTV system as required in these Special Provisions.

This test shall be started after all of the following conditions are met:

Installation of the television system is completed as specified.

All field located equipment and hardware checked by the City and found in compliance with the specified requirements.

8-20.3(14)J.3(5) CCTV SYSTEM TEST

(August 2016, City of Auburn)
The Contractor shall test the CCTV system using a Contractor-supplied NTSC-compatible video monitor and a Contractor-supplied camera control device. The control device may be an IBM-compatible laptop computer with a suitable EIA-422 converter running Vendor-supplied software. The control device and monitor shall remain the property of the Contractor. All test cables and connections shall be the responsibility of the Contractor.

During each testing phase, the Contractor shall repair, replace, or reconfigure each CCTV camera installation as necessary.

8-20.3(14)J.3(6) LOCAL CCTV TEST

(August 2016, City of Auburn)
At each camera control cabinet the Contractor shall connect the video monitor to the coaxial video cable and connect the camera control device to the camera control cable. The Contractor shall demonstrate to the Engineer the following features of the camera installation:

1. Display camera video on the Contractor-provided monitor.
2. Pan and tilt the camera.

3. Zoom and focus the camera in both fast and slow modes.
4. Turn the camera off and on.
5. Change the iris to auto and manual.

8-20.3(14)K WIRELESS BROADBAND COMMUNICATIONS SYSTEM

New Section

8-20.3(14)K.1 DESCRIPTION

(August 2016, City of Auburn)
The work specified in this section shall include the furnishing and installation of wireless interconnect communication system devices, cables, outdoor hardened Ethernet hub or switch, patch cords and associated components in accordance with the plans and specifications.

The Contractor shall provide materials, equipment, labor and the expertise required for the construction of a traffic signal/ITS wireless broadband communication system to interconnect the proposed traffic signal and ITS equipment with the City of Auburn's existing ITS system infrastructure as shown in the Plans and in accordance with these Special Provisions. All equipment shall be installed in compliance with the manufacturer's installations and recommendations.

8-20.3(14)K.2 WIRELESS BROADBAND SYSTEM MATERIALS

(August 2016, City of Auburn)
The Contractor shall provide all products and materials required for the installation and splicing of the specified communications cables and associated interface devices.

8-20.3(14)K.3 TESTING, MOUNTING AND WIRING

(August 2016, City of Auburn)
Broadband radio/panel antenna units shall be mounted on signal mast-arms or signal poles as indicated in the Plans. All units shall be installed utilizing Pelco Products, Inc. Astro-Brac or approved equivalent mounts per the wireless equipment manufacturer's recommendations for outdoor pole-mounted applications. All mountings shall have stainless steel hardware and provide a weather-tight cable passage between the wireless unit and the pole.

All wireless AP, and Ethernet setup, configurations and testing shall be done in consultation with the City's IT department and the Engineer.

The Contractor shall drill a 1-inch-diameter hole in the pole, deburr and provide rubber grommet prior to pulling cables. Cables shall be routed through traffic signal system conduits and junction boxes as shown in the plans and terminated in the local signal controller cabinet.

Sufficient cable, 10 feet where bending radius permits, shall be left in each cabinet to properly terminate the cables. No splicing of communication cables shall be allowed.

Ethernet cables shall be routed in the cabinet and be plugged into a Contractor-supplied RUGGEDCOM Ethernet switch. in the proposed signal cabinet and into the existing RUGGEDCOM rs900 switch in the existing signal cabinet.

8-21 PERMANENT SIGNING

8-21.3 CONSTRUCTION REQUIREMENTS Supplement

(August 2016, City of Auburn)
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.

8-22 PAVEMENT MARKING

8-22.1 DESCRIPTION Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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.

8-30 WOOD FENCE AND GATES New Section

8-30.1 DESCRIPTION

(August 2016, City of Auburn)
This work shall consist of installing new "Wood Fence" and "Wood Gate" where shown and as detailed on the Plans as directed by the Engineer.

8-30.2 CONSTRUCTION REQUIREMENTS

(August 2016, City of Auburn)
All work shall be in accordance with the applicable portions of Section 6-04 (Timber Structures), 8-11 (Guardrail), 8-12 (Chain Link Fence and Wire Fence), 9-06 (Structural Steel and Related Materials), 9-09 (Timber and Lumber), and 9-16 (Fence and Guardrail) of the Standard Specifications and these Special Provisions.

All lumber shall be Douglas Fir Surfaced four side (S4S), Number 1 Structural per Western Lumber Grading Rules unless otherwise noted. All lumber shall be pressure treated with ChemoniteTM 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.

8-31 FIBER OPTIC COMMUNICATIONS New Section

8-31.1 DESCRIPTION

(August 2016, City of Auburn)
The work specified in this section shall include the furnishing and installation of fiber optic cables, splices, splice enclosures, patch panels and associated components in accordance with the Contract Documents.

The Contractor shall provide materials, equipment, labor and the expertise required for the underground installation of fiber optic cables as components of the ITS network. Fiber optic communications materials shall be per Section 9-29.3 (Fiber Optic Cable, Electrical Conductors, and Cable).

8-31.2 CONSTRUCTION REQUIREMENTS

8-31.2(1) CONTRACTOR QUALIFICATIONS

(August 2016, City of Auburn)
Installation and testing of fiber optic communications is a specialized trade that requires specific skills that can only be gained by experience. The City has determined that the successful completion of the fiber optic communications work specified in the Contract Documents require that the Contractor or its subcontractor, whichever shall be completing the fiber optic communications work, meet the following minimum qualification requirements: 5-years experience installing fiber optic systems, including cable and splices, and fiber optic systems of similar type and size to those specified in the Contract Documents, ability to provide three (3), non City of Auburn, public agency references that can provide verification of the Contractor's or subcontractor's experience and confirm that the Contractor or subcontractor successfully completed the installation and testing of fiber optic systems of similar type and size to those specified in the Contract Documents. The Contractor or its subcontractor will not be allowed to begin work on fiber optic communications until the City has verified that the Contractor or its subcontractor satisfies these qualifications requirements.

8-31.2(2) QUALITY ASSURANCE

(August 2016, City of Auburn)
All work described in this section shall meet or exceed the applicable provisions of the following documents:

1. ANSI/EIA/TIA-455, Standard Test Procedures for Fiber Optic Fibers, Cables, Transducers, Connecting and Terminating Devices, and Other Fiber Optic Components.
2. ANSI/TIA/EIA-526-7, Measurement of Optical Power loss of Installed Single-Mode Fiber Cable Plant.
3. ANSI/TIA/EIA-568-B, Commercial Building Telecommunications Cabling Standard
4. ANSI/TIA/EIA-569-A, Commercial Building Standard for Telecommunication Pathways and Spaces.

5. ANSI/TIA/EIA-598, Optical Fiber Cable Color Coding.
6. ANSI/TIA/EIA-607, Commercial Building Grounding and Bonding Requirements for Telecommunications.
7. ANSI/TIA/EIA-758, Customer-Owned Outside Plant Telecommunications Cabling Standard.
8. BICSI: BICSI Telecommunications Cabling Installation Manual (TCIM).
9. BICSI: BICSI Telecommunications Distribution Methods Manual.
10. BISCI: BICSI Customer-Owned Outside Plant Design Manual.

8-31.2(3) FIBER OPTIC CABLE INSTALLATION

Fiber optic cables shall be installed in continuous lengths without intermediate splices throughout the entire project, except at the location(s) specified in the plans. The cable installation personnel shall be familiar with the cable manufacturer's recommended procedures including but not limited to the following:

1. Proper attachment to the cable strength elements for pulling during installation.
2. Cable tensile limitations and the tension monitoring procedure.
3. Cable bending radius limitations.

The Contractor shall comply with the cable manufacturer's specifications.

To accommodate long continuous installation lengths, bi-directional pulling of the fiber optic cable is approved and shall be implemented as follows:

From the midpoint, pull the fiber optic cable into the conduit from the shipping reel.. When this portion of the pull is complete, the remainder of the cable must be removed from the reel to make the inside end available for pulling in the opposite direction. This is accomplished by hand pulling the cable from the reel and laying into large figure eight loops on the ground. The purpose of the figure eight pattern is to avoid cable tangling and kinking. The loops must be laid carefully one upon the other (to prevent subsequent tangling) and must be in a protected area. The inside reel end of the cable is then available for installation. In some cases, it may be necessary to set up the winch at an intermediate cable vault. The required length of cable is pulled to that point, and brought out of the cable vault and coiled into a figure eight. The figure eight is then turned over to gain access to the free cable end which can then be reinserted into the duct system for installation into the next section.

Installation shall involve the placement of the fiber optic cables in a specified innerduct or conduit as defined in the Plans. The Contractor shall ensure that innerducts are secured to prevent movement during the cable installation.

Prior to pulling fiber optic cables through existing conduits, the Contractor shall verify that the conduits are clear of any debris and that the conduits have enough room to accommodate the new fiber and any existing conductors (where present and not specified for removal). Where noted on the plans, the Contractor shall remove the existing copper interconnect cable prior to installing the new fiber optic cable.

The pulling eye/sheath termination hardware on the fiber optic cables shall not be pulled over any sheaves.

When power equipment is used to install the fiber optic cables, it must be designed to be used with fiber optic cable. Low speeds shall be used, not to exceed 100 feet per minute. The equipment must show the rate of pull, tension and automatically shut down if any cable pulling parameters are exceeded. The tensile and bending limitation for fiber optic cables shall not be exceeded under any circumstances. The use of large diameter wheels, pulling sheaves, and cable guides shall be used to maintain the appropriate bending radius. Tension monitoring shall be accomplished using commercial dynamometers or load-cell instruments.

8-31.2(4) FIBER OPTIC CABLE SPLICING

(August 2016, City of Auburn)
This section describes minimum requirements for splicing and connecting of the specified fiber optic cables. Field splices for mainline to lateral cables and for end-to-end mainline cables shall be located as shown in the plans. No additional splices shall be allowed without the approval of the Engineer

All fusion splicing equipment shall be in good working order, properly calibrated, and meet all industry standards and safety regulations. Cable preparation, closure installation, and splicing shall be accomplished in accordance with accepted and approved industry standards.

Upon completion of the splicing operation, all waste material shall be deposited in suitable containers, removed from the job-site, and disposed of in an environmentally acceptable manner.

The Contractor shall use the fusion method with local injection and detection for all fiber optic splicing.

The average splice loss of each fiber shall be 0.10 dB or less. The average splice loss is defined as the summation of the attenuation as measured in both directions through the fusion splice, divided in half.

No individual splice loss measured in a single direction shall exceed 0.15 dB.

The Contractor shall seal all cables where the cable jacket is removed. The cable shall be sealed per the cable manufacturer's recommendation with an approved blocking material.

All below ground splices shall be contained in re-enterable waterproof splice enclosures.

All splices shall be contained in splice trays utilizing strain relief, such as heat shrink wraps, as recommended by the splice tray manufacturer.

Upon sealing the splice closure, the Contractor shall show that the closure maintains 100 psi of pressure for a 24-hour period.

At all fiber optic splice locations, the Contractor shall neatly coil and secure a slack loop of fiber optic cable in a manner that is consistent with optical fiber specifications, including minimum bend radius.

8-31.2(5) FIBER OPTIC CABLE LABELING

(August 2016, City of Auburn)
Permanent cable labels shall be used to identify fibers and patch cords at each termination point. The cable labels shall consist of white colored heat shrink wraps with identification showing the cable segment, and the far end of the cable. The cable shall be labeled with non-fading permanent ink.

8-31.2(6) FIBER OPTIC CABLE RACKING IN CABLE VAULTS

(August 2016, City of Auburn)
After the cables are installed and spliced, cables, and innerducts shall be racked with spare conduits and innerducts sealed. Since there is substantial risk of damage to optical fibers by careless handling of the cables, much care shall be exercised, especially with regard to observing the minimum bending limitations. Cables shall be racked in vertical figure eight loops, which shall permit pulling slack from the vault without introducing twist to the cable.

Lateral cables shall be placed behind the main cables when changing levels. Cables or innerducts shall be secured in racked position with outdoor rated cable ties.

City of Auburn identification/warning tags shall be securely attached to the cables or innerducts in at least two locations in each cable vault or pull box and once in every J-box passed through. The Identification Tag shall be a custom orange label saying **"COA Fiber Optic Cable, If Damaged Call 911"** and label origin and destination of the fiber identified.

All coiled cable shall be suitably protected to prevent damage to the cable and fibers. Racking shall include securing cables or innerducts to brackets (racking hardware) that extend from the side walls of the cable vault or pull box. The Contractor shall provide all required brackets and other racking hardware required for the fiber optic cable racking operations as specified. All racking hardware shall be stainless steel.

8-31.2(7) FIBER OPTIC PATCH PANELS

(August 2016, City of Auburn)
A fiber optic patch panel shall be installed in every signal controller cabinet where a new fiber optic connection is shown in the plans per Section 9-29.13 (Traffic Signal Controllers).

The patch panel shall be attached to Contractor supplied ¼-inch aluminum plate attached to the signal side rails with spring nuts.

8-31.2(8) FIBER OPTIC SPLICE CASE

(August 2016, City of Auburn)
Splice enclosures shall be supplied and installed where shown the plans that specify installation of a new fiber optic connection in a Vault or Pull box per Section 9.29.3(1)A (Singlemode FiberOptic Cable) (SCF).

The SCF splice closures shall be available in canister (butt) and in-line styles to fit most applications. All end-caps feature two express ports for uncut feeder cables. QUICK-SEAL™ Mechanical Seal drop ports shall be utilized because they allow for rapid and easy installation during initial build or future expansions.

The Splice Closure Housing shall be non-metallic. It shall be resistant to solvents, stress cracking and creep. The housing materials shall also be compatible with chemicals and other materials to which they might be exposed in normal applications. The optical fiber closure shall be capable of accepting any optical fiber cable commonly used in interoffice, outside plant and building entrance facilities. As an option, the ability to double the cable capacity of an installed canister splice closure by use of a kit shall be available. Such a conversion shall not disturb existing cables or splices.

Encapsulation shall not be required to resist water penetration. The splice closure shall be re-enterable. The closure end-cap shall be capable of accepting additional cables without removal of the sheath retention or strength-member-clamping hardware on previously installed cables or disturbing existing splices. The optical fiber splice closure shall provide a clamping mechanism to prevent pistoning of the central member or strength members and to prevent cable sheath slip or pullout. The splice closure shall have appropriate hardware and installation procedures to facilitate the bonding and grounding of metal components in the closure and the armored cable sheath. The cable bonding hardware shall be able to accommodate a copper conductor equivalent to or larger than 6 AWG.

8-31.3 FIBER OPTIC CABLE TESTING

(August 2016, City of Auburn)
The Contractor shall provide certified documentation or test results that demonstrate that all fiber optic cables meet the specified optical and mechanical performance criteria before and after installation.

Upon completion of the fiber optic cable installation (and splicing) the Contractor shall perform testing specified herein. The Contractor shall provide the Engineer with a minimum of 7 calendar days prior notice of the start of testing. The installed optical fiber cable shall comply with the transmission requirements of this specification, the cable and hardware manufacturer's specifications, and prescribed industry standards and practices.

All backbone and horizontal cabling, which is terminated by the contractor, shall be tested to applicable EIA/TIA Standards.

Upon completion of the tests all fiber optic cable coils shall be secured with ends capped to prevent intrusion of dirt and water.

8-31.3(1) INSERTION LOSS TESTING

(August 2016, City of Auburn)
Insertion loss testing shall be used to measure end-to-end attenuation on each new fiber installed between a field device and the TMC.

The insertion loss for each mated fiber optic connector pair shall be ≤ 0.75 dB. Reflectance for single-mode single fiber UPC cable assemblies shall be ≤ -55 dB. Mated connector pair loss testing shall be based on one unidirectional optical time domain reflectometer (OTDR) inspection in accordance with the OTDR operating manual for systems greater than 300 feet.

In addition to connector insertion loss for each mated pair, the contractor shall perform end-to-end insertion loss testing for each multimode fiber at 850 nm and 1300 nm from one

direction for each terminated fiber span in accordance with EIA/TIA-526-14A (OFSTP 14) and single-mode fibers at 1310 nm and 1550 nm from one direction for each terminated fiber span in accordance with TIA/EIA-526-7 (OFSTP 7). For spans greater than 300 feet, each tested span must test to a value less than or equal to the value determined by calculating a link loss budget. For horizontal spans less than or equal to 300 feet, each tested span must be < 2.0 dB.

The Contractor shall inspect each terminated multimode fiber span for continuity and anomalies with an OTDR at 1300 nm from one direction in accordance with the OTDR operating manual for systems greater than 300 feet. The Contractor shall inspect each terminated single-mode fiber span for continuity and anomalies with an OTDR at 1550 nm from one direction in accordance with OTDR operating manual for systems greater than 300 feet.

Prior to commencing testing, the Contractor shall submit the manufacturer and model number of the test equipment along with certification that it has been calibrated within 6 months of the proposed test dates.

The following information shall be documented for each fiber test measurement:

- Wavelength
- Fiber type
- Cable, tube and fiber IDs
- Near end and far end test locations
- End-to-End Insertion Loss Data
- Individual Splice Loss Data
- Date, time, and operator

8-31.3(2) OPTICAL TIME DOMAIN REFLECTOMETER (OTDR) TESTING

(August 2016, City of Auburn)
A recording optical time domain reflectometer (OTDR) shall be utilized to test for end-to-end continuity and attenuation of each optical fiber. The OTDR shall be equipped with a 1,310 nm and 1,550 nm light source for single-mode optical fibers. The OTDR shall have an X-Y plotter to provide a hard copy record of each test measurement.

The OTDR shall be equipped with sufficient internal masking to allow the entire cable section to be tested. This may be achieved by using an optical fiber pigtail of sufficient length to display the required cable section, or by using an OTDR with sufficient normalization to display the required cable section. A hard copy X-Y plot shall be provided for all fiber optic attenuation tests.

Prior to commencing testing, the Contractor shall submit the manufacturer and model number of the OTDR test unit along with certification that it has been calibrated within 6 months of the proposed test dates.

Each new mainline and lateral fiber shall be tested in both directions at the 1310 and 1550 nanometer wavelengths. Existing mainline and lateral fibers that are spliced to or re-spliced

as part of this contract shall also be tested in both directions and at both wavelengths. Splices to existing fibers shall also be measured and recorded.

The following information shall be documented for each fiber test measurement:

X-Y plot scaled for fiber length

Wavelength

Refraction index

Fiber type

Averaging time

Pulse width

Cable and fiber IDs

Near end and far end test locations

Date, time, and operator

Event table that includes: event ID, type, location, loss, and reflection.

8-31.3(3) FIBER CABLE TESTING DOCUMENTATION

The Contractor shall submit the fiber test results to the Engineer for approval per Section 1-06.7 (Submittals). 1 licensed copy if 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

END OF DIVISION 8

DIVISION 9 MATERIALS

9-05 DRAINAGE STRUCTURES AND CULVERTS

9-05.7(1) PLAIN CONCRETE STORM SEWER PIPE Supplement

(August 2016, City of Auburn)
Concrete storm drainpipe shall conform to ASTM C14 Class 3.

9-05.7(2) REINFORCED CONCRETE STORM SEWER PIPE Supplement

(August 2016, City of Auburn)
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 Revision

(August 2016, City of Auburn)
Revise the first sentence of the second paragraph to the following:

Solid wall PVC pipe shall meet the requirements of ASTM D3034 for the class or SDR of pipe specified.

9-05.13 DUCTILE IRON SEWER PIPE Revision

(August 2016, City of Auburn)
Delete the first sentence of the last paragraph and replace it with the following:

All fittings shall be ductile. All joints including fittings shall be push-on rubber gasket joints. Mechanical joints shall not be used.

9-14 EROSION CONTROL AND ROADSIDE PLANTING

9-14.1 SOIL

9-14.1(1) TOPSOIL TYPE A Supplement

(August 2016, City of Auburn)
The topsoil shall be a loamy sandy loam textural class as determined by the U.S. Department of Agriculture Classification System, free from materials toxic to plant growth, noxious weed seeds, rhizomes, roots, subsoil, and debris. The Contractor shall furnish sufficient quantities of topsoil for placement in all seeding areas (4 inch depth topsoil) and planting areas (6 inch depth topsoil) and for tree and shrub planting soil requirements, plus a reserve quantity for restoring additional areas outside designated planting and seeding areas that are disturbed by the Contractor's activities.

9-14.1(3) TOPSOIL TYPE C Supplement

(August 2016, City of Auburn)
Small tree/brush stumps and roots shall be removed and topsoil shall contain no more than two percent (2%) aggregate by weight remaining on a ½ inch sieve.

9-14.4 MULCH AND AMENDMENTS Supplement

(August 2016, City of Auburn)
Specific topsoil amendment and fertilizer specification for the plant types specified on the plans shall be as per a certified soils laboratory recommendations from, representative topsoil samples furnished by the Contractor to the approved Soils Laboratory.

9-14.4(3) BARK OR WOOD CHIPS Supplement

(July 2010, City of Auburn)
The Contractor shall submit sample of the bark or wood chips for approval before delivery to the job site. Bark shall be free from weed seeds, sawdust and splinters, and shall not contain wood fiber or other compounds detrimental to plant life. Source shall be from freshwater mill.

9-14.5(1) POLYACRYLAMIDE (PAM) Supplement

(August 2016, City of Auburn)
PAM will only be used upon approval of the Engineer.

9-14.6 plant materials

9-14.6(4) TAGGING Replacement

(August 2016, City of Auburn)
All plant material except groundcover shall be legibly tagged. Tagging may be by species or variety with minimum of one tag per 10 trees or shrubs.

9-14.6(5) INSPECTION Supplement

(August 2016, City of Auburn)
Samples may be submitted to the Engineer for approval as to size, grade, and overall specifications.

9-15 IRRIGATION SYSTEM Supplement

9-15.1(2) POLYVINYL CHLORIDE PIPE AND FITTINGS Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
The Double check valve assembly shall be a Febco 805Y or approved equivalent sized to match the irrigation meter size.

The Double-Check Valve Backflow Assembly Vault for ¾ inch to 2 inch assemblies shall be a Carson molded box, or approved equivalent, and for assemblies larger than 2 inch a No. 25-TA Concrete Vault with Locking Metal Cover as manufactured by PIPE, Incorporated or approved equivalent.

9-15.17 ELECTRICAL WIRE AND SPLICES Supplement

(August 2016, City of Auburn)
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 four (4) extra valve wires (yellow) routed from the controller through each valve box to the farthest valve.

9-15.18 DETECTABLE MARKING TAPE Supplement

(August 2016, City of Auburn)
Detectable marking tape shall be 3-inch wide detectable tape on main lines only.

9-29 ILLUMINATION, SIGNAL, ELECTRICAL Revision

9-29.1 CONDUIT, INNERDUCT, OUTERDUCT Supplement

(August 2016, City of Auburn)
Traffic Signal, ITS, and Street light conduit shall be Schedule 80 PVC-ASTM D1785 and as shown on the Plans. As allowed in 8-20.3(5), Schedule 40 PVC may be used for conduit runs completely located under sidewalk, driveways, or landscape areas. PVC conduit ends shall have bell end PVC bushings.

9-29.2 JUNCTION BOXES, CABLE VAULTS, AND PULL BOXES Supplement

(August 2016, City of Auburn)
All junction boxes shall have a galvanized frames and lids with a slip-resistant coating and bonding screws. Both the slip-resistant lid and slip-resistant frame shall be treated with either Mebac#1 as manufactured by Harsco Industrial IKG, or SlipNOT Grade 3-coarse as manufactured by W.S. Molnar Co. Where the exposed portion of the frame is ½ inch wide or less the slip-resistant treatment may be omitted on that portion of the frame. The slip-resistant lid shall be identified with permanent marking on the underside indicating the type of surface treatment ("M1" for Mebac#1; or "S3" for SlipNOT Grade 3-coarse) and the year manufactured. The permanent marking shall be $^{1}/_{8}$ inch line thickness formed with a stainless steel weld bead.

(August 2016, City of Auburn)

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, ROME 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. Signal Cable shall have stranded copper conductors and shall conform to IMSA Spec No 20-1.

2. 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.

3. Pedestrian Push Button cable shall be multiconductor per the manufacturer's recommendation.

4. 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.

5. 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.

6. 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 fiber with a minimum of 48 count.

7. 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 3¼″ 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.

8. For wide angel traffic detection camera, cable shall be a Kar-Gor 5 conductor cable without coax meeting requirements the vendor.

9-29.3(1)A SINGLEMODE FIBER OPTIC CABLE Supplement

(August 2016, City of Auburn)

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 (Ib/1000ft)	Minimum Installed Bend Radius (in)
12	49	4.1
48	49	4.1
288	131	7.2

All optical fibers shall be identifiable by standard color codes as defined in ANSI/TIA/EIA-598.

Fiber optic cable shall be tested according to Section 8-31.3 (Fiber Optic Cable Testing).

Splice cases shall be Corning, Tyco or approved equivalent.

9-29.6(1)A LIGHTING & SIGNAL STANDARDS & DAVIT ARMS New Section

(August 2016, City of Auburn)

Lighting Standards

All lighting standards furnished and installed under this contract shall be aluminum, davit-style units in accordance with Section 9-29.6 (Light and Signal Standard) of Project Specifications.

Mounting heights for light fixtures shall be 35 feet, or 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 and bracket arms shall be designed for the street lighting luminaire with a minimum weight of 50 pounds and to withstand pressures caused by wind loads of 90-miles per hour with a gust factor of 1.3.

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.

The shafts shall be provided with a 4 inch x 6 inch (minimum dimensions) non-flush handhole near the base designed to prevent loss of shaft strength and provided with matching metal covers secured with stainless steel hex-head screws or bolts. The handholes shall be located near the base and on the side of the shaft opposite approaching traffic. 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 shafts shall be round and tapered

All bolts, nuts, screws, and washers, but not including anchor bolts and unless otherwise specifically designated herein, shall be stainless steel. Handhole bolts shall be tamperproof heads.

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.

Terminal cabinets shall be attached to the backside of the signal pole no lower than 7 feet high.

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.

9-29.6(1)B WRAPPING New Section

(August 2016, City of Auburn)
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.

9-29.6(2)A ANCHOR BASES New Section

(August 2016, City of Auburn)
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 four (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 Supplement

(August 2016, City of Auburn)
All welds shall be deburred.

9-29.6(5) FOUNDATION HARDWARE Revision

(August 2016, City of Auburn)
Four high-strength steel anchor bolts shall be furnished with the poles. Each anchor bolt shall have an "L" bend at the bottom end and threaded at the top end. Threaded ends and all nuts and washers shall be hot-dipped galvanized. The anchor bolts shall be capable of resisting at yield-strength stress the bending movement of the shaft at its yield-strength stress.

9-29.7 LUMINAIRE FUSING & ELECTRICAL CONNECTIONS AT LIGHT STANDARD BASES, CANTILEVER BASES AND SIGN BRIDGE BASES Replacement

(February 24, 2010, City of Auburn)
This section and sub-sections are deleted and replaced with the following:

Fuses shall be Bussmann KTK 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 Supplement

(March 19, 2013, City of Auburn)
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 Replacement

(August 2016, City of Auburn)
This section and sub-sections are deleted and replaced 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 either a 3-pin or 7-pin photocell with field adjustable drive current. Photocontrol shall be rotatable without tools. Housing shall have a leveling bubble for adjusting the head.

Light Emitting Diodes

Hi-flux/Hi-power white LEDs shall produce a minimum of 90% of initial intensity at 100,000 hours of life at 700mA, TM-21 Calculator required. LEDs shall be tested in accordance with IESNA LM-80 testing procedures. They shall have a mean correlated color temperature of 4000K (standard) ± 300K and a minimum CRI >70.

Optical Systems

Micro-lens optical systems shall produce IESNA Type 2, and 3 distributions. Fixture shall not use acrylic or plastic secondary exterior lens over the LEDs. Emitters shall be of single LED per die design. Luminaire shall be classified as "full-cutoff" and produce 0% total lumens above 90^0 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.

All LED Roadway luminaires supplied to the project shall be of the same manufacturer and model line and shall be one of the following luminaires that have been preapproved for the lighting layout shown in the Plans:

American Electric Lighting
Line: Autobahn
Model: ATB2 80LEDE85 MVOLT
Contact: 855-209-6363
WesternSalesSupport@Holophane.com

Leotek
Line: GreenCobra
Model: GCL1-80G-MV-NW
Contact: 206-708-8067
earisto@seataclighting.com

9-29.11(2) PHOTOELECTRIC CONTROLS Supplement

The photoelectric control shall be SST-IES or approved equivalent.

9-29.12(1) ILLUMINATION CIRCUIT SPLICES Supplement

(August 2016, City of Auburn)

Approved copper splice "C" crimp connectors shall be used to connect bonding wires.

9-29.12(2) TRAFFIC SIGNAL SPLICE MATERIAL Supplement

(August 2016, City of Auburn)
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.

9-29.12(3) SEALANTS New Section

(August 2016, City of Auburn)
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. Crafco 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)A TRAFFIC SIGNAL CONTROLLER ASSEMBLY TESTING Replacement

(August 2016, City of Auburn)
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 CONTROLLERS Revised

(August 2016, City of Auburn)

General
The traffic signal controller shall be the Cobalt model by Econolite.

9-29.13(6) EMERGENCY PREEMPTION Supplement

(August 2016, City of Auburn)

Emergency Preemption System equipment shall be compatible with the operational requirements of the existing Opticom brand (3M Company) emitters, detectors, and phase selectors owned by the City.

9-29.13(10) NEMA, TYPE 170E, 2070 CONTROLLERS AND CABINETS Replacement

(October 2016, City of Auburn)
Section 9-29.13(10) including title is replaced with the following:

9-29.13(10) TRAFFIC SIGNAL CONTROLLER CABINET UNIT

Controller cabinet furnished and installed by the Contractor shall be one of the following types, as specified in the Plans:

Western Systems Modified P plus Cabinet Requirements

Western Systems controller cabinets shall be NEMA Type 2 TS-1 P style cabinet per the City of Auburn approved Western Systems Part # 3012500000 with Alpha BBS. The cabinet shall be fully loaded with BIU's, MMU Smart Monitor, 16 detector cards, load switches, and a GTT 3M 764 Opticom.

Econolite P 44 Cabinet Requirements

Econolite controller cabinets shall be NEMA Type 2 TS-1 P style cabinet per City of Auburn approved Econolite part #166799B. The cabinet shall be fully loaded with BIU's, MMU SmartMonitor, 16 detector cards, load switches, and a GTT 3M 764 opticom.

The cabinet shall meet the following additional requirements:

- Wired and tested to the 2003 NEMA Traffic Controller Assemblies specification with NTCIP Requirements Version 02.06 (as amended herein).

- Equipped with all auxiliary equipment and plug-ins required to operate 8 vehicle phases, 4 pedestrian phases and 4 overlap phases (NEMA TS-2, Type 1).

- Designed for 16 channel operation where each load switch socket can be configured for a vehicle phase, pedestrian phase or overlap operation. These load switch sockets shall be configured in this manor without rewiring the back side of the load-bay. BIU load switch drivers 1-16 shall be wired to appropriate load switch sockets via a terminal block located on the front side of the load bay so as to allow checking voltage inputs to the load switch sockets without dropping the load bay.

- Wired for up to a minimum of (32) channels of detection, (4) channels of Opticom™ preemption.

- The complete cabinet assembly with electronics shall undergo complete input/output function testing by the manufacturer before being released to the City of Auburn.

- Field Terminal Labels
  Field terminals shall be labeled with City of Auburn numbering as well as manufacturers.

- Device Labeling
  Every module or device shall have affixed thereto; permanent nametags or nameplates stating the component's function within the composite signal control system. Specifically each loop detector unit shall be labeled, so as to indicate the loop numbers connected to each channel. The front of the shelf where each item is to be placed shall have a similar label so those items can be replaced during maintenance in an expedient fashion.

- Schematics, Software and Manuals
  The controller cabinet shall have a waterproof envelope with a side access attached to the inside of the cabinet door. At the time of delivery, the envelope shall have one complete set of schematics and manuals for each assembly and subassembly located in the cabinet, and a complete wiring diagram for the cabinet and the controller assembly. In addition, a duplicate copy of the above shall be provided to the City of Auburn Traffic Engineering Section.

- Fiber Optic Patch Panels
  Where fiber optic connections are shown in the Plans, the fiber patch panel shall be a pre-terminated Corning 12 port Single-Panel Housing (SPH-01P) with a 12 ct pigtail ordered to length or approved equivalent utilizing SC connectors.

9-29.16 VEHICULAR SIGNAL HEADS, DISPLAYS, AND HOUSING Revision

(August 2016, City of Auburn)
Replace the first sentence of the second paragraph with the following:

Backplates shall be constructed of 5-inch-wide, .050-inch-thick corrosion-resistant flat black finish, louvered aluminum, attached with stainless steel hardware.

9-29.16(2) CONVENTIONAL TRAFFIC SIGNAL HEADS Supplement

(August 2016, City of Auburn)
Vehicle signal head housings shall be rigid mount type M.

9-29.16(2)A OPTICAL UNITS Supplement

(August 2016, City of Auburn)
The LED's shall have a 15 year manufacturer's warranty. The LED shall be Dialight Light Emitting Diode (LED). Part numbers for Dialight LEDs are as follows:

Size	Description	Part Number
12 inch	RED Ball	433-1210-003XL15
12 inch	AMBER Ball	433-3230-901XL15
12 inch	GREEN Ball	433-2220-001XL15
12 inch	RED Arrow	432-1314-001XOD15
12 inch	AMBER Arrow	431-3334-901XOD15
12 inch	GREEN Arrow	432-2374-001XOD15
12 inch	GREEN/AMBER Arrow	430-6370-001

9-29.16(2)E PAINTING SIGNAL HEADS Replacement

(August 2016, City of Auburn)
Traffic signal heads shall be finished with dark green (Federal Standard 595) oven baked powder coating comprised of resins and pigments. Aluminum end caps shall be painted to match the color of the signal housing.

9-29.18 VEHICLE DETECTOR Supplement

(August 2016, City of Auburn)
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 Revision

(August 2016, City of Auburn)
Replace the first paragraph with the following:

The Pedestrian Push Button Assembly shall be a Advisor AGPS manufactured by H.D. Campbell Company, 1486 NW 70th Street, Seattle, WA 98117 and shall be black in color with a white button.

9-29.20 PEDESTRIAN SIGNALS Supplement

(August 2016, City of Auburn)
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.

9-29.22 REGTANGULAR RAPID FLASHING BEACON (RRFB) New Section

(August 2016, City of Auburn)
The contractor shall provide and install a hardwired 120 volt power RRFB with hardwire communication between the multiple beacons. The beacons shall conform to the latest MUTCD.

9-29.24 SERVICE CABINETS Supplement

(August 2016, City of Auburn)
Service cabinet shall be a metered aluminum Skyline Electric Series 47700-A1-R1 with Underwriters Laboratory label on the panel boards as in accordance with the applicable City of Auburn Standard Details. The service cabinet shall comply with all requirements of Puget Sound Energy and Washington State Labor and Industries. It shall be the Contractor's responsibility to obtain these requirements and ensure that the cabinet complies with the requirements. The service cabinet shall be equipped with a stainless steel handle, a three-point locking system, and a Best six-tumbler mortise cabinet lock with dead bolt.

Two copper ground rods shall be installed per WSDOT and the NEC.

The cabinet shall contain the following branch breakers as applicable:

20 AMP	2 pole	Lighting Circuit A
20 AMP	2 pole	Lighting Circuit B
20 AMP	1 pole	Traffic Signal
100 AMP	2 pole	Main

9-29.26 TRAFFIC SIGNAL BATTERY BACKUP SYSTEM New Section

(August 2016, City of Auburn)
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.

9-29.27 CCTV SYSTEM New Section

(August 2016, City of Auburn)
CCTV cameras shall be Cohu Rise HD Hybrid camera model # 4260 with power over Ethernet and utilize Cohu cable ordered to length. The Camera shall come with a cohu supplied POE + injector.

The camera cable pigtail may have to be a custom length to construct the drip loop per the camera mounting details.

The ethernet switches shall be shelf mount Ruggedcom RS900G gigabit ethernet switches with SM fiber ports and necessary 120 volt power cords and ethernet cords.

Camera mounting equipment shall be Pelco pole mounts and mast arm mounts and other equipment and hardware as shown in the plans and as required for a complete and operational CCTV camera system. The signal pole mount may have to be modified as shown in the plans.

9-30 WATER DISTRIBUTION MATERIALS

9-30.1 PIPE

9-30.1(1) DUCTILE IRON PIPE Supplement

(August 2016, City of Auburn)
All ductile iron pipe used on this project shall be "Special Class 52", except pipe to be joined using bolted flange joints shall be "Special Class 53".

9-30.2 FITTINGS

9-30.2(1) DUCTILE IRON PIPE Supplement

(August 2016, City of Auburn)
All pipe fittings, adapters and joints for ductile iron pipe shall be ductile iron designed to AWWA Specification (unless otherwise approved in writing by the Engineer) with sufficient tangent at the ends to allow for proper joint connections and shall be coated to give protection to them equal to that given the pipe. Field fabrication fittings will not be permitted. Flexible couplings shall be of the style as required for specific application.

9-30.2(6) RESTRAINED JOINTS Replacement

(August 2016, City of Auburn)

Bolted restrained joint (R.J.) fittings shall be Megalug or Engineer 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 DI pipe may be restrained by utilizing a joint restraint gasket which includes a stainless steel locking segment vulcanized into the rubber gasket. The gasket shall be rated for operating pressures up to 250 psi based on the performance requirements of ANSI/ A WW A C 111/ A21.11.

9-30.3 VALVES

9-30.3(1) GATE VALVES (3-INCHES TO 12-INCHES) Replacement

(August 2016, City of Auburn)

Resilient wedge gate valves shall be used on all 12" and smaller water lines and shall be manufactured by Clow, American Flow Control, Waterous, Dresser, M & H or Mueller with epoxy-coated valve interiors. The valves shall conform to ANSI/AWWA Specifications C509 or C515 with a 200-psi working pressure rating (minimum). They shall be iron bodied, bronze-mounted, non-rising stem and counterclockwise opening with a 2 inch square operating nut. All valves on the fire hydrant line(s) shall be 6-inch diameter mechanical joint by flange. All other valves shall be either mechanical joint by flange or Mechanical joint shackled to tees or crosses. Valve stems shall be provided with O-ring seals.

9-30.3(3) BUTTERFLY VALVES Supplement

(August 2016, City of Auburn)
Butterfly valves conforming to AWWA Specification C-504, Class 150 B shall be used on all 14 inch and larger water mains. They shall have Mechanical joint ends and be rated at 150 psi working pressure. Operator shall have standard AWWA 2 inch square nut.

9-30.3(4) VALVE BOXES Supplement

(August 2016, City of Auburn)
Valve boxes shall be two-piece, adjustable, cast-iron (with additional extension pieces, if necessary), as manufactured by the Olympic Foundry Company, 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 be of a design and thickness so traffic will not allow them to be flipped out.

9-30.3(8) TAPPING SLEEVE AND VALVE ASSEMBLY Supplement

(August 2016, City of Auburn)
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 Supplement

(August 2016, City of Auburn)
Fire hydrants shall have two 2½-inch hose ports (National Standard Thread) and one 4½-inch pumper port (National Standard Thread) with caps and no chains, 1¼ inch pentagonal operating nut (counterclockwise) opening, O-ring-type stuffing box, automatic barrel drain, and 5¼ inch valve opening. Hydrants shall be equipped with a 5" Storz adapter with blind cap, or approved equivalent. Hydrants shall conform to the latest revision of AWWA Standard Specification No. C-502 for dry-barrel fire hydrants for ordinary water service. Hydrants shall be Mueller "Centurion" #A-423, M & H Style 929 Resilient (Brass-to-Brass Seats), or American AVK 2780.

9-30.6 WATER SERVICE CONNECTIONS (2-INCHES & SMALLER)

9-30.6(1) SADDLES Replacement
(July 2014, City of Auburn)

Saddles for 1 inch, 1½ inch, and 2 inch pipe taps shall be epoxy-coated ductile iron, with double stainless steel straps and cemented in place neoprene gaskets. Saddles shall have I.P.S. female threads.

9-30.6(2) CORPORATION STOPS Supplement
(July 2014, City of Auburn)
Corporation stops for 1 inch service shall have AWWA tapered thread inlets for insertion directly into the pipe main and the outlets shall have a compression connection suitable for connecting to Type K copper tubing per Section 9-30.6(3)A (Copper Tubing). Corporation stops shall be Mueller B-25008N, Ford FB1000-4-Q-NL or approved equivalent for 1 inch service.

The City allows 1 inch corporation stops to be installed with saddle at the pipe main. If a saddle is used, corporation stops shall be Mueller B20013N with H-15451N outlet coupling or Ford FB500-4-NL with C14-44-Q-NL outlet coupling, or approved equivalent for 1-inch service.

Corporation stops for 1½ inch, and 2 inch services shall be installed with saddle at the pipe main. Corporation stops shall be Mueller B-2969N with H-15451N outlet coupling or Ford FB500-6-NL with C14-66-Q-NL outlet coupling or approved equivalent for 1½ inch service. Corporation stops shall be Mueller B-2969N with H-15451N outlet coupling or Ford FB500-7-NL with C14-77-Q-NL outlet coupling or approved equivalent for 2 inch service. Outlet coupling shall be suitable for connecting to Type K copper tubing per Section 9-30.6(3)A (Copper Tubing) or high density polyethylene (HPDE) SDR-9 (in copper tube size).

9-30.6(3) SERVICE PIPES Supplement
(July 2014, City of Auburn)
The City allows Type K copper tubing for all water service connections. For 1½ inch and 2 inch service, high density polyethylene (HPDE) SDR-9 (copper tube size) with stainless steel liners in all couplings and wrapped with a #10 insulated copper tracer wire is acceptable.

9-30.6(5) METER SETTERS Supplement
(July 2014, City of Auburn)
Meter yokes shall be equal to the following:

A. 1 inch service meter yokes shall have multi-purpose threaded ends, lock wing angle ball valve and angle dual check valve. Meter yokes shall be Mueller B-2404R-2N reduced port with H-14222N inlet and H-14227N outlet couplings or approved equivalent. Contractor shall provide meter adapters for replacement projects. Meter adapters shall be Mueller H-10879 5/8 inch x ¾ inch x 1 inch for ¾ inch meters, or approved equivalent.

B. 1½ inch and 2 inch service meter yokes shall have F.I.P. threaded ends, lock angle ball valve, angle dual check valve, and bypass with lock wing ball valve and check valve.

C. 1½ inch service meter yokes shall be Mueller B-2423-2N with H-15428N outlet coupling or Ford VBHH76-12BHC-11-66-NL with C84-66-Q-NL outlet coupling or approved equivalent.

D. 2 inch service meter yokes shall be Mueller B-2423-2N with H-15428N outlet coupling or Ford VBHH77-12BHC-11-77-NL with C84-77-Q-NL outlet coupling or approved equivalent.

E. All meter yokes shall be set with a spacer pipe with hole drilled in pipe. Do not install gaskets with spacer pipe.

9-30.6(5)A CURB VALVES New Section

(July 2014, City of Auburn)

Curb valves shall be straight ball-type, having outlets suitable for connecting to bronze threaded nipples per Section 9-30.6(6) (Bronze Nipples and Fittings) and equal to the following:

A. 1-inch service: curb valves shall be Mueller B-20200N with H-15428N inlet coupling or Ford B11-444W-NL with C84-44-Q-NL inlet coupling suitable for connecting to Type K copper tubing per Section 9-30.6(3)A (Copper Tubing);

B. 1½ inch service: curb valves shall be Mueller B-20200N with H-15428N inlet coupling or Ford B11-666W-NL with C84-66-Q-NL inlet coupling suitable for connecting to Type K copper tubing per Section 9-30.6(3)A (Copper Tubing) or high density polyethylene (HPDE) SDR-9 (in copper tube size);

C. 2 inch service: curb valves shall be Mueller B-20200N with H-15428N inlet coupling or Ford B11-777W-NL with C84-77-Q-NL inlet coupling suitable for connecting to Type K copper tubing per Section 9-30.6(3)A (Copper Tubing) or high density polyethylene (HPDE) SDR-9 (in copper tube size);

D. Locate curb valves in the meter boxes where possible and 1 foot outside the meter boxes where the inside room is not available.

9-30.6(7) METER BOXES Supplement

(July 2014, City of Auburn)

Meter boxes shall be the following:

- A. Boxes for 1 inch service shall be Raven RMB 13”x24”x12” and the AMR port shall be plugged. Lids shall be ductile or cast iron reader cover with 2 inch AMR port. Traffic rated cover shall be used in areas of vehicular traffic or as required by the Engineer;
- B. Boxes for 1½ inch and 2 inch services shall be Raven RMB 17”x30”x12” and the AMR port shall be plugged. Lids shall be ductile or cast iron reader cover with 2 inch AMR port. Traffic rated cover shall be used in areas of vehicular traffic or as required by the Engineer.

9-30.6(8) SHUT-OFF VALVES New Section

(September 2014, City of Auburn)

Private shut-off valves shall be straight ball-type with lever handle, having outlets suitable for connecting to bronze threaded nipples per Section 9-30.6(6) and equal to the following:

1 inch, 1 ½ inch, and 2 inch shut-off valves shall be Mueller B-20200N with B-202989900 short handle, or approved equivalent.

Shut-off valves shall be provided with ADS riser pipe and cap.

9-37 FILTER FABRIC

9-37.1 FILTER FABRIC FOR INFILTRATION SYSTEMS New Section

(August 2016, City of Auburn)
Filter fabric for permanent infiltration systems shall be a non-woven polypropylene geotextile fabric, Contech C45-NW as manufactured by Contech Construction Products Inc., or approved equivalent.

END OF DIVISION 9