

SECTION 00290 – ENVIRONMENTAL PROTECTION

Comply with Section 00290 of the Standard Specifications supplemented and/or modified as follows:

00290.20 Hazardous Waste and Hazardous Substances – Revise this subsection as follows:

(b) Fuel Storage – Add the following paragraph:

If above-ground fuel storage will exceed 2498 L (660 gallons) per container or 4996 L (1,320 gallons) aggregate, develop and submit for approval 10 days before the pre-construction conference, a spill prevention control and countermeasures (SPCC) plan, signed and stamped by a professional Engineer, in accordance with 40 CFR 112. The SPCC plan requirement is in addition to the PCP requirement described above. Employees must be trained as specified in 40 CFR 112 and the SPCC plan. Maintain a copy of the SPCC plan on-site at all times during construction activities, readily available to employees and inspectors.

(c) Waste Management – Add the following paragraph:

Retain landfill disposal receipts for all non-inert solid waste generated from the Project site for at least one year after completion of the Project. Provide landfill disposal receipts to the Engineer if requested.

(d) Hazardous Waste Management – Add the following to the end of this subsection:

If the quantity of hazardous waste projected to be generated meets the requirements for a Conditionally Exempt Generator (CEG), in accordance with 40 CFR 261.5, store hazardous wastes on-site for no more than 180 days, with the total stored not to exceed 1000 kg (2,200 pounds) at any one time. All hazardous waste containers shall be in good condition, sealed and labeled with the words "Hazardous Waste" and the accumulation start and end dates. All employees involved in the handling and/or management of hazardous wastes shall comply with the federal and State regulatory requirements for hazardous waste management. If the quantity of hazardous waste generated in a given month exceeds the CEG limits, immediately comply with the requirements for small and large quantity generators, as set forth below, and for the remainder of the calendar year. Within 30 days of such exceedance, complete additional documentation and training required as a result of this change in status.

If the quantity of hazardous waste projected to be generated meets the requirements for a Small Quantity Generator (SQG) or a Large Quantity Generator (LQG), prepare a Hazardous Waste Contingency Plan, in accordance with 40 CFR 262.34 and 265.51. Maintain a copy of the Contingency Plan on-site at all times during construction activities, readily available to employees and inspectors. Employees must receive hazardous waste training as specified in 40 CFR 262.34 and 265.16. On-Site storage of hazardous waste shall comply with the requirements of 40 CFR 262 and 265, OAR 340-102-034 and all other applicable federal, State and local laws

and regulations. Submit monthly records of hazardous waste generation, transportation and disposal to the Engineer by the 15th day of the following month. A Certified Hazardous Materials Manager (CHMM) in good standing and with experience managing the hazardous wastes associated with the Project must be available to oversee and direct hazardous waste management at the site.

If hazardous waste is to be treated on-site, all treatment activities shall comply with 40 CFR 262.34 and 268, and ORS 466.095. No on-site hazardous waste treatment may begin prior to receipt of Engineer approval.

SECTION 00330 – EARTHWORK

Comply with Section 00330 of the Standard Specifications supplemented and/or modified as follows:

00330.02 Definitions – Add the following to the definition of “General Excavation”:

Excavation includes all curbs, walks, surfacings, aggregate and earth as necessary to excavate to subgrade depth for the proposed parthway, curb, walks, walls and play areas and related excavation as shown on the Plans and in the typical sections. Excavation also includes any necessary and or required saw cutting of surfaces.

00330.03 Basis of Performance – Perform all earthwork under this Section on the excavation basis.

00330.41(a-6) Excavation of Existing Surfaces – Add the following:

Remove surfacings as shown on the Plans. Surfacing to be removed shall be cut in neat, straight lines with vertical edges along the limits of removal.

Take care not to disturb existing irrigation lines or system when removing various types of pavement or existing pavers. If irrigation lines are located, notify the Engineer immediately. Repair irrigation lines or other utilities damaged during pavement removal.

00330.91(d) General Excavation – Delete the last bulleted item and add the following bulleted items:

- No payment will be made for removal of any item outside the limits shown in the Contract without written authorization from the Engineer. Similarly, no payment will be made for additional materials required in areas of excess removal outside the limits shown on the Plans without prior authorization from the Engineer.

00330.92 Kinds of Incidental Earthwork – Add the following bulleted item to the end of this subsection:

- Earthwork outside the neat lines as shown on the Typical Sections, necessary to construct retaining walls.

SECTION 00331 – SUBGRADE STABILIZATION

Comply with Section 00331 of the Standard Specifications.

SECTION 00340 – WATERING

Comply with Section 00340 of the Standard Specifications supplemented and/or modified as follows:

00340.10 Water – Add the following:

In order to use water from fire hydrants, obtain a fire hydrant meter from the City of Troutdale Public Works. A \$100.00 refundable deposit is required and refunded to the general Contractor upon return of the meter. All costs for water shall be incidental.

PART 00400 – DRAINAGE AND SEWERS

SECTION 00405 – TRENCH EXCAVATION, BEDDING AND BACKFILL

Comply with Section 00405 of the Standard Specifications supplemented and/or modified as follows:

00405.41 Trench Excavation – Add the following:

Take care not to disturb existing irrigation lines or system when excavating. If irrigation lines are located, notify the Engineer immediately. Repair irrigation lines or other utilities damaged during excavation.

00405.41(a) Within Paved Areas to be Preserved – Add the following:

Cutting of existing pavements and structures shall be performed with a rotary saw. Existing structures shall be cut to the full depth of the structure, up to seven-inches thick. Pavement cuts shall be parallel or perpendicular to the centerline of the trench.

Pavement cuts in concrete for vacuum type excavation shall be square and no greater than 24" wide. Pavement cuts for vacuum type excavation for AC paving shall be round and no greater than 12" in diameter.

00405.41(b) Open Trench Limit – Replace this Subsection with the following:

00405.41(b) Open Trench Limit – Limit the length of open trench to 100 feet. Related surfacing shall be completed within 900 feet of the open trench limit. Backfill trenches at the end of each work day until such time as the trench resurfacing is placed. Do not leave trench open outside of working hours. Backfill trench to provide solid driving surface, or provide steel plates anchored with asphalt. Provide reflective cones and appropriate signing as required by Sections 00220 and 00225. Clean work area and roadway surrounding trench of any loose material or aggregate prior to leaving site at the end of each day. Control dust in accordance with Section 00280.44(c) or as directed by the Engineer.

00405.41(c) Trench Width – Replace the first sentence with the following:

Trench width for pipes 12-inches and smaller shall be the pipe outside diameter plus 12-inches. Trench width for pipes greater than 12-inches shall be the pipe outside diameter plus 18-inches.

00405.46(a) General – Add the following after the sentence that begins “Test for density according...”:

The depth of each sample taken shall be at the direction of the Engineer or City Inspector.

00405.82 Trench Foundation – Replace the indented bullet labeled “Width” with the following:

- **Width** – The width will be the minimum trench width as defined in Section 00405.41(c) of the Special Provisions unless otherwise approved by the Engineer.

00405.90 Payment – Supplement this section with the following:

Items (a) and (b) include all additional costs due to lost time/production. These items also include additional backfill and compaction costs outside of the minimum trench width if the Contractor’s excavation exceeds the minimum width.

Changes to the quantities for items (a), (b), and (c) shall be considered Insignificant Changed Work, per Section 00195.20(a) of the Standard Specifications, regardless of the final quantity.

SECTION 00440 – COMMERCIAL GRADE CONCRETE

Comply with Section 00440 of the Standard Specifications supplemented and/or modified as follows:

00440.40(b) Placing – Add the following bulleted item:

- For sign supports, signal supports, and luminaire supports, place concrete according to 00540.48(a).

00440.40(c) Forms – Add the following paragraph:

For sign supports, signal supports, and luminaire supports, remove forms and perform subsequent loading according to Table 00540-1 included in Section 00540.52 of the Standard Specifications.

SECTION 00445 – SANITARY, STORM, CULVERT, SIPHON AND IRRIGATION PIPE

Comply with Section 00445 of the Standard Specifications supplemented and/or modified as follows:

00445.91 Payment – Add the following:

Payment for item (a) includes connections to existing pipe with approved watertight, prefabricated, coupling or fitting as shown on Contract Plans, and all other miscellaneous work.

00445.91 Payment Replace the sentence: “Trench resurfacing will be paid for according to 00495.90” with “Trench resurfacing shall be considered incidental work for which no separate payment will be made.” Resurfacing is to match the existing cross section or proposed cross section whichever is greater.

SECTION 00470 – MANHOLES, CATCH BASINS AND INLETS

Comply with Section 00470 of the Standard Specifications supplemented and/or modified as follows:

00470.90 Payment – Add the following:

Payment for item (c) includes removal of existing manholes, connections to existing pipe, and all other miscellaneous work to install the manhole, complete.

Payment for item (k) includes removal of existing catch basins, connections to existing pipe, and all other miscellaneous work to install the catch basin, complete.

SECTION 00490 – WORK ON EXISTING SEWERS AND STRUCTURES

Comply with Section 00490 of the Standard Specifications modified as follows:

00490.00 Scope - Add the following:

This work also includes connecting new stormlines to existing manholes.

PART 00600 – BASES**SECTION 00641 – AGGREGATE SUBBASE, BASE AND SHOULDERS**

Comply with Section 00641 of the Standard Specifications supplemented and/or modified as follows:

00641.80(b) Volume – Replace this subsection, except for the subsection number and title, with the following:

Measurement shall be per cubic yard of compacted material in place as determined by cross section from design survey and design grades as shown on the Contract Plans or as directed by the Engineer. For purposes of measurement, depth of crushed surfacing shall be per the typical section shown on the Contract Plans unless otherwise directed in writing by the Engineer.

00641.90 General – Add the following to the sentence that begins “In item (c)...”:

Payment for item (c) includes aggregate base below Roadway Asphalt sections.

SECTION 00759 – MISCELLANEOUS PORTLAND CEMENT CONCRETE STRUCTURES

Comply with Section 00165 of the Standard Specifications supplemented and/or modified as follows:

SECTION 00759.90: Replace last sentence at end of section with “When aggregate is not included as separate pay items, no separate or additional payment will be made for aggregate”.

PART 00700 – WEARING SURFACES

Comply with Section 00700 of the Standard Specifications supplemented and/or modified as follows:

Add Section 703- Pervious Concrete Surface as follows.

SECTION 00703 PERVIOUS CONCRETE PAVEMENT**00703.20 GENERAL****00703.21 Scope of Work:**

- A. The Work described by this guide addresses the labor, materials and equipment necessary for construction of pervious concrete pavement, including subgrade testing and preparation in conformance with the plans, specifications and other contract documents, for paths, sidewalks and other pedestrian areas.

00703.22 References:

- A. American Concrete Institute (ACI)
1. ACI 211.3R “Guide for Selecting Proportions for No- Slump Concrete”
 2. ACI 305 “Hot Weather Concreting”
 3. ACI 306 “Cold Weather Concreting”
 4. ACI 522 “Report on Pervious Concrete”
 5. ACI 522.1-13 “Specification for Pervious Concrete Pavement”
 6. ACI Flatwork Finisher Certification Program
 7. ACI Field Technician Certification Program
- B. American Society for Testing and Materials (ASTM)
1. ASTM C 29 “Test for Bulk Density (Unit Weight) and Voids in Aggregate”
 2. ASTM C 33 “Specification for Concrete Aggregates”
 3. ASTM C 42 “Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete”
 4. ASTM C 94 “Specification for Ready-Mixed Concrete”
 5. ASTM C 117 “Test Method for Material Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing”
 6. ASTM C 150 “Specification for Portland Cement”
 7. ASTM C 172 “Practice for Sampling Freshly Mixed Concrete”
 8. ASTM C 260 “Specification for Air-Entraining Admixtures for Concrete”
 9. ASTM C 494 “Specification for Chemical Admixtures for Concrete”
 10. ASTM C 595 “Specification for Blended Hydraulic Cements”
 11. ASTM C 618 “Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete”
 12. ASTM C 979 “Specification for Pigments for Integrally Colored Concrete”
 13. ASTM C 989 “Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars”
 14. ASTM C 1077 “Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.”
 15. ASTM C 1116 “Specification for Fiber-Reinforced Concrete”

16. ASTM C 1542 “Standard Test Method for Measuring Length of Concrete Cores”
 17. ASTM C 1602 “Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete”
 18. ASTM C 1688 “Test Method for Density and Void Content of Freshly Mixed Pervious Concrete”
 19. ASTM C 1701 “Test Method for Infiltration Rate of In Place Pervious Concrete”
 20. ASTM C 1754 "Standard Test Method for Density and Void Content of Hardened Pervious Concrete"
 21. ASTM D 448 “Classification for Sizes of Aggregate for Road and Bridge Construction”
 22. ASTM D 1557 “Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³)”
 23. ASTM D 1751 “Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)”
 24. ASTM D 1752 “Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction”
 25. ASTM D 2434 “Test Method for Permeability of Granular Soils (Constant Head)”
 26. ASTM D 3385 “Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer”
 27. ASTM D 3665 "Standard Practice for Random Sampling of Construction Materials"
 28. ASTM D 5084 “Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Falling Head, Method C)”
 29. ASTM D 5093 “Test Method for Field Measurement of Infiltration Rate Using a Double-Ring Infiltrometer with a Sealed-Inner Ring”
 30. ASTM D 6391 “Test Method for Field Measurement of Hydraulic Conductivity Limits of Porous Materials Using Two Stages of Infiltration from a Borehole”
 31. ASTM D7357 “Specification for Cellulose Fibers for Fiber-Reinforced Concrete”
 32. ASTM E 329 “Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction”
- C. National Ready Mixed Concrete Association (NRMCA)
1. NRMCA Pervious Concrete Contractor Certification
- D. Ohio Aggregate & Industrial Minerals Association (OAIMA)
1. ‘Going Green with Rocks’ Technical Guide for Void Percentages
- E. State of Ohio Department of Transportation (ODOT) Construction and Material Specifications
1. Item 703.02 Aggregate for Portland Cement Concrete
- F. Ohio Department of Natural Resources (ODNR), Division of Soil and Water Resources
1. Rainwater and Land Development Manual
 - a. Chapter 2 - Post Construction Stormwater Management Practices

00703.23 Quality Assurance:

- A. Prospective Bidder/Contractors shall attend a pre-bid meeting where the pervious concrete pavement construction process will be described (see Section 1.08) by industry representatives from the Ohio Ready Mixed Concrete Association/Ohio Concrete or other comparable entity.
- B. Prior to award, the Bidder/Contractor shall submit evidence of two successful pervious concrete pavement projects, each greater than 1,000 ft² (93 m²), including but not limited to the following:
 - 1. Project name and address, owner name and contact information.
 - 2. Fresh density (unit weight) and void content test results per ASTM C1688 and, if determined, in-place hardened density (unit weight) and void content of pervious concrete mixture per ASTM C 1754.This requirement may be waived by the Architect/Engineer provided the Bidder/Contractor demonstrates successful experience in the concrete industry and constructs test panel(s) for inspection and testing, per Section 1.06 of this guide.
- C. The Bidder/Contractor shall employ no less than one NRMCA certified Pervious Concrete Craftsman who must be on site, overseeing each placement crew during all concrete placement, or employ no less than three NRMCA certified Pervious Concrete Installers, who shall be on site as members of each placement crew during all concrete placement, or employ no less than five NRMCA certified Pervious Concrete Technicians, who shall be on site working as members of each placement crew during all concrete placement unless otherwise specified. The minimum number of certified individuals listed above must be present on each pervious concrete placement including any test panel placements (see section 1.06), and a certified individual must be in charge of the placement crew and procedures.
- D. If the placing contractor and concrete producer have insufficient experience with pervious concrete pavement (less than two successful projects), the placing contractor shall retain an experienced consultant to monitor production, handling, and placement operations at the Contractor's expense.
- E. Qualifications of testing laboratories -The testing laboratory shall have its laboratory equipment and procedures inspected at intervals not to exceed 2 years by a qualified national authority as evidence of its competence to perform the required tests and material designs. Acceptable national authority will include the AASHTO Materials Reference Laboratory (AMRL) or the Cement and Concrete Reference Laboratory (CCRL) as appropriate. In addition, testing machines and equipment must be calibrated annually or more frequently by impartial means using devices of accuracy traceable to the National Bureau of Standards.

Field tests of pervious concrete shall be performed by individuals certified as both an NRMCA

Certified Pervious Concrete Technician or equivalent and as an ACI Concrete Field Testing Technician – Grade I. In fields other than those covered by the referenced ASTM standards, the testing laboratory shall accept only those assignments which it

is able to perform competently by use of its own personnel and equipment. Any work to be subcontracted must be to laboratories meeting the same criteria.

The testing laboratory shall have demonstrated its competence in the applicable fields for a period of not less than 3 years.

The inspection and testing services of the testing laboratory shall be under the direction of a full-time employee registered as a professional engineer in the State of Ohio. He shall have a minimum of 5 years of professional engineering experience in inspection and testing of concrete construction.

00703.24 Special Equipment: Pervious concrete requires specific equipment for compaction and jointing. The pervious concrete pavement shall be jointed and compacted using the methods listed, or alternatives as demonstrated and approved by the Architect/Engineer. For example, large installations may warrant mechanized placement techniques.

- A. Rolling compaction shall be achieved using a steel pipe roller or a motorized or hydraulically actuated rotating tube screed that spans the width of the section placed and exerts a vertical pressure of 10 psi (68.95 kPa) to 30 psi (206.85 kPa) on the concrete.
- B. Plate compaction (for small areas) shall be achieved using a standard soil plate compactor that has a base area of at least two square feet and exerts a minimum of 10 psi (69 kPa) vertical pressure on the pavement surface (through a temporary cover of $\frac{3}{4}$ in. (19 mm) plywood).
- C. When contraction joints are created in pervious pavements, they may be constructed by rolling, forming or sawing. Rolled joints shall be formed using a “pizza cutter roller” to which a beveled fin with a minimum depth of $\frac{1}{4}$ the thickness of the slab has been welded around the circumference of a steel roller.

00703.25 Submittals: Administrative Requirements, for submittal procedures.

Prior to commencement of the work the contractor shall submit the following: A. Concrete materials:

- 1. Proposed pervious concrete mixture proportions including all material weights, watercementitious ratio, absolute volumes including density (unit weight) and void content of freshly mixed pervious concrete mixture per ASTM C 1688. (*The fresh density and void content calculated from this procedure will differ from in-place density and void content and is only used to check mixture proportion consistency*).
- 2. Aggregate type, source, grading, dry-rodded unit weight, percent passing number 4 sieve and void content.
- 3. Cement, supplementary cementitious materials, synthetic (polypropylene) or cellulose fibers and chemical admixture manufacturer certifications.
- 4. In-place hardened density (unit weight) and void content of proposed pervious concrete mixture per ASTM C 1754 from previous work completed in the last 24 months, if tested, when required by the Architect/Engineer. (*The in-place density*

and void content calculated from this procedure will differ from the fresh density and void content and is only used for quality assurance).

- B. Aggregate base materials: Washed aggregate type, source, grading and void content (percent porosity).
- C. Qualifications: Evidence of qualifications listed under Quality Assurance in Section 1.03 of this guide.
- D. Project details: Specific plans including a jointing plan, details, schedule, construction procedures and quality control plan.
- E. Subcontractors: List all materials suppliers, subcontractors and testing laboratories to be used on the project.

00703.26 Test Panels: Prior to construction, test panel(s) shall be placed with the crew meeting the requirement of NRMCA certified personnel per section 1.03 C. and approved by the Architect/Engineer. The Architect/Engineer may waive this requirement based on Contractor qualifications. At Contractor's option, test panels may be constructed on approved sections of project aggregate detention (or groundwater recharge) layer.

- A. Test panel(s) shall be constructed in accordance with the plans and specifications. Regardless of qualification, the contractor is to place two test panels, each approximately 225 ft² (20.9 m²) at the required project thickness, consolidated, jointed and cured using materials, equipment, and personnel proposed for the project, and on the same aggregate base proposed. This is to demonstrate to the Architect/Engineer's satisfaction that the pervious concrete mixture as submitted is validated and also to confirm that the contractor's ability to place the mixture under anticipated project conditions produces a satisfactory pavement intended for the site location which can be quantitatively and qualitatively evaluated.
- B. Test panel(s) cost and removal, if necessary, shall be included as a line item in the contract proposal and contract. Test panels may be placed at any of the specified pervious concrete pavement locations on the project or at another test site.
- C. Quality: Test panels shall have acceptable surface finish, joint details, thickness, porosity and curing procedures and shall comply with the testing and acceptance standards listed in the Quality Control section (C.8.) of this specification. Test density and void content of fresh concrete for the test panels in accordance with ASTM C 1688. Select three core locations per ASTM D 3665, obtain hardened 4 inch (100 mm) diameter concrete cores from the test panels in accordance with ASTM C 42 and determine individual core thicknesses in accordance with ASTM C 1542. Determine the hardened densities (unit weights) and void contents in accordance with ASTM C 1754 when the test panel is found satisfactory per below D.
- D. Satisfactory performance of the test panels shall be determined by:
 - 1. Fresh concrete results
 - a. Density (unit weight) plus or minus 5 lb/ft³ (80 kg/m³) of the submitted fresh density (unit weight) using ASTM C 1688 procedures.
 - 2. Hardened thickness tolerances
 - a. Average length of three cores not less than 3/8 in. (10 mm) and not greater than 1.5 in. (38 mm) of specified pavement thickness.

b.Length of any individual core not less than 3/4 in. (19 mm) of specified pavement thickness.

- E. If test panels are found to be unsatisfactory, they shall be removed at the Contractor's expense and disposed of in an approved landfill or recycling facility. If test panels are found to be satisfactory, they may be left in-place and included in the completed work, at no additional cost to the project. If accepted, use the average hardened density (unit weight) from the accepted test panel(s) as a basis for acceptance of the remainder pavement when required by the Architect/Engineer.

00703.27 Project Conditions A. Weather Limitations

1. The Contractor shall not place pervious concrete for pavement when the ambient temperature is predicted by the National Weather Service Point Forecast for the jobsite to be 40 °F (4 °C) or lower during the seven days following placement, unless otherwise permitted in writing by the Architect/Engineer. *(Note: In cold weather the pervious concrete is more susceptible to freezing because its porous nature prevents pervious concrete from generating and retaining heat of hydration. Any freezing of the pavement will likely result in damage. Construction should not be scheduled when there is a chance for liquid precipitation or when a cold front with freezing temperatures is expected. Due to rapid evaporation causing insufficient water for cement hydration, hot water should not be used in batching pervious concrete mixtures. Besides protecting the freshly placed concrete from freezing, the concrete must be maintained at a reasonably warm temperature for the first 7 days to sustain hydration of cementitious materials. Curing duration before opening to traffic may need to be extended in cold weather.)*
2. The contractor shall not place pervious concrete for pavement when the ambient temperature is predicted by the National Weather Service Point Forecast for the jobsite to rise above 90 °F (32 °C) during placement, unless otherwise permitted in writing by the Architect/Engineer. Extra measures may be required to assure that concrete receives proper moist curing following placement.
3. Pervious concrete pavement shall not be placed on frozen coarse aggregate or subgrade.
4. Evaporation control measures shall be applied from the time of discharge until the pavement is covered with polyethylene sheeting to prevent moisture loss during placement operations (refer to section 2.09).

00703.28 Pre-paving Conference

A pre-paving conference with the Architect/Engineer shall be held within one week prior to beginning placing the pervious concrete. The contractor shall have the pervious concrete supplier, contracted testing agency, the foreman and the entire concrete crew that will form and place the concrete in attendance at this meeting. A qualified representative from ORMCA/Ohio Concrete shall also be in attendance for assistance.

As a guide for the meeting, the document *Checklist for the Concrete Pre-Construction Conference*

(available from the National Ready Mixed Concrete Association or the American Society of Concrete Contractors) shall be used to review all requirements of the contract during the meeting. Meeting emphasis shall be on how paving with pervious concrete differs from paving with conventional concrete, maintaining moisture retention of fresh mixture, timing and proper placement of cure sheeting, and securing of sheet throughout curing period (minimum seven days).

00703.30 PRODUCTS PERVIOUS CONCRETE PAVEMENT

00703.31 Cement: Portland cement Type I, Type II or V conforming to ASTM C 150 or Portland cement Type IP or IS conforming to ASTM C 595.

00703.32 Supplementary Cementitious Materials:

- A. Fly ash conforming to ASTM C 618
- B. Ground Granulated Blast-Furnace Slag conforming to ASTM C 989

00703.33 Admixtures:

- A. Air entraining admixtures with ASTM C 260.
- B. Chemical admixtures shall comply with ASTM C 494.
 - 1. Mid-range water reducing admixtures (water reducers) Type A or High Range water reducing admixtures Type F or G are permitted due to low water-cementitious ratios specified for pervious concrete.
 - 2. Extended set control admixtures (hydration stabilizers) meeting requirements of ASTM C 494 Type B Retarding or Type D Water Reducing/Retarding admixtures are recommended to increase concrete placement time or to improve finishing operations. Note: this stabilizer suspends cement hydration by forming a protective barrier around the cementitious particles, which delays the particles initial set. If this mix heats up in the truck a standard retarder will not prevent premature hydration where the stabilizer will.
 - 3. Viscosity modifying admixtures (VMA's) are permitted to facilitate discharge of the concrete from the truck and placement in the forms.
- C. Superabsorbent Polymer (SAP). SAP is a crushed crystalline partial sodium salt of cross-linked polypromanic acid rated at 2,000 times absorption for pure water.

00703.34 Fiber Reinforcement:

- A. Synthetic fiber shall be in accordance to ASTM C 1116 Type III made of polypropylene.
- B. Cellulose fibers shall be in accordance to ASTM C 1116 Type IV made of natural fibers conforming to ASTM D 7357.
- C. Macrosynthetic fibers are gaining acceptance and use in certain areas.

00703.35 Aggregates for pervious concrete:

- A. Coarse aggregate shall meet the size and grading requirements as defined in ASTM D 448 (or Standard Sizes of Coarse Aggregate, Table 4, AASHTO Specifications, Part I, 13th Ed., 1982 or later) and shall comply with ASTM C 33 and ODOT Item 703.02. Use No.67, No. 7, No. 8, No. 89 or No. 9 unless an alternate size is approved for use based on meeting the project requirements. Data for proposed alternate material shall be submitted for approval per Section 1.05A of this guide. Fine aggregate complying with ASTM C33, if used, shall not exceed 3 ft³ per yd³ (0.11 m³ per 1.0 m³).
- B. Larger aggregate sizes may increase porosity but can decrease workability. No. 8 (3/8 in. or 9.5 mm) size coarse aggregate is the common size used in pervious concrete pavements. Well graded aggregates shall be avoided as they may reduce porosity, and may not provide adequate void content.

Note: Suggested maximum limit when using a number 8 coarse aggregate pervious mix is 15% passing No. 4 sieve (4.75 mm)

- a. For 5 to 10% passing No. 4 sieve (4.75 mm), add 125 lb/yd³ (74 kg/m³) fine aggregate
- b. For 0 to 5% passing No. 4 sieve (4.75 mm), add 200 lb/yd³ (119 kg/m³) fine aggregate

00703.36 Water: Water shall be potable and comply with ASTM C 1602.

00703.37 Pigments – Use pigments complying with ASTM C 979 if specified in the project plan documents. Trial mixtures and placements to be conducted when required per the project documents for acceptance approval.

00703.38 Mixture Proportions: The Contractor shall furnish a proposed mix design with all proportions of materials prior to commencement of work. The data shall include densities (unit weights) and void contents determined in accordance with ASTM C 1688 for fresh mixed properties and, when required by the Architect/Engineer, ASTM C 1754 for hardened concrete properties of the same proposed mixture. The composition of the proposed concrete mixture shall be submitted to the Architect/Engineer for review and/or approval and shall comply with the following provisions unless an alternative composition is demonstrated to comply with the project requirements. Mixture performance will be affected by properties of the particular materials used. Trial mixtures must be tested to establish proper proportions and determine expected behavior. Concrete producers may have mixture proportions for pervious concrete optimized for performance with local materials by use of available software programs. Appendix 6 of ACI 211.3R provides a guide for pervious concrete mixture proportioning. General mixture proportions are as follows:

- A. Aggregate/cementitious ratio: range of 4:1 to 5:1.
- B. Concrete mixture unit weight: range of 115 lb/ft³ to 135 lb/ft³ (1840 kg/m³ to 2080 kg/m³)
- C. Concrete mixture void content: range of 13% to 30%.

- D. Cementitious content: range of 450 lbs/yd³ to 600 lb/yd³ (267 kg/m³ to 356 kg/m³), total cementitious content.
- E. Supplementary cementitious content: Fly ash: 25 % maximum; Slag: 25 % maximum, or Combined supplementary cementitious content: 35 % maximum. F. Water - cementitious ratio: range from 0.28 to 0.35.
- G. Fiber reinforcement is recommended for added performance:
- Synthetic polypropylene, target 0.1% volume of mixture or range 1 lb/yd³ to 1.5 lb/yd³ (0.593 kg/m³ to 0.890 kg/m³)
 - Cellulose, range 1.5 lb/yd³ to 3 lb/yd³ (0.890 kg/m³ to 1.78 kg/m³)
 - Macrosynthetic fibers, range per manufacture's recommendation.
- H. Aggregate content: The bulk volume of aggregate per cubic yard (cubic meter) shall be 27 ft³ (1 m³) when calculated from the dry rodded density (unit weight) determined in accordance with ASTM C 29 using the jiggling or rodding procedure.
- I. Admixtures: Admixtures shall be used in accordance with the manufacturer's instructions and recommendations.
- Air-entraining admixture is required and the recommended dosage shall be a minimum of 2 oz/cwt (130 mL/100kg) of cementitious material.
 - Hydration stabilizing admixture suggested dosage range: 7 - 18 oz/cwt (455 mL/100kg - 1170 mL/100kg)
 - Viscosity modifying admixture suggested dosage range: 0.5 - 1.0 gal/cy (2.5 - 5.0 L/m³)
- J. **Mix Water:** The quantity of mixing water shall be established to produce a pervious concrete mixture of the desirable workability to facilitate placing, compaction and finishing to the desired surface characteristics. Note: Mix water shall be such that the cement paste displays a wet metallic sheen without causing the paste to flow from the aggregate. (A cement paste with a dull-dry appearance has insufficient mix water for hydration.) Insufficient mix water results in inconsistency in the mix and poor bond strength. Jobsite addition of mix water is permitted to adjust for dry mixtures in concrete transit mixers; add water at 0.5 gal/cy (2.5 L/m³) and remix for two minutes. Note: High water content results in the paste sealing the void system primarily at the bottom and poor surface bond. Use of hot water is not permitted as mix water.

703.40 EXECUTION PERVIOUS CONCRETE PAVEMENT

00703.41 Pavement Thickness:

Pavement thickness for all applications (excluding heavy traffic loads) shall be single-course placement 6 in. (152 mm) thick unless otherwise specified in the plans. Pavements for vehicles heavier than single axle service/delivery trucks will require special design thicknesses which may require two-course construction. Note: Thicknesses greater than 6 in. (152 mm) have been successfully installed with singlecourse construction, and design has been verified with cores. Cores from a test slab may be used to confirm that consolidation and infiltration in the bottom of the slab is consistent with design objectives. Cores may also be used to determine relative compressive and flexural strengths.

00703.42 Formwork:

- a. Form materials are permitted to be of wood or steel and shall be the full depth of the pavement. Caution: protect impermeable membranes from puncture or tear when placing forms and form pins. Forms shall be of sufficient strength and stability to support mechanical equipment without deformation of plan profiles following spreading, strike-off and compaction operations. Forms may have a removable spacer of $\frac{1}{2}$ in. to $\frac{3}{4}$ in. (13 mm to 19 mm) thickness placed above the depth of pavement. The spacers shall be removed following placement and vibratory strike-off to allow roller compaction. (Removable spacers may not be necessary if other means of strike-off and consolidation are used, such as a hydraulically actuated pipe roller screed.)
- b. The Contractor will be restricted to pavement placement widths of a maximum of 20 ft (6.1 m) [*Note: Parking stall area is typically 19 feet (5.8 m) wide.*], unless the Contractor can demonstrate competence to provide pavement placement widths greater than the maximum specified to the satisfaction of the Architect/Engineer. Large scale mechanized placement of pervious concrete with slipform concrete paving machines, laser screeds or asphalt paving machines may preclude use of fixed forms.

00703.43 Mixing and Hauling:

- a. Production: Pervious concrete shall be manufactured and delivered in accordance with ASTM C 94.
- b. Mixing: Mixtures shall be produced in central mixers or in transit (truck) mixers. When concrete is delivered in agitating or non-agitating units, the concrete shall be mixed in the central mixer for a minimum of 1.0 minute or until a homogenous mix is achieved. Concrete mixed in transit mixers shall be mixed at the speed designated as mixing speed by the manufacturer for 75 – 100 revolutions.
- c. Transportation: The pervious concrete mixture may be transported or mixed on site and discharge of individual loads shall be completed within one (1) hour of the introduction of mix water to the cement. Delivery times may be extended to 90 minutes when a hydration stabilizer is used.
- d. Discharge: Each truckload shall be visually inspected for consistency of concrete mixture. Water addition shall be permitted at the point of discharge to obtain the required mix consistency, provided a measurable quantity is discharged, and provided no more than half of the batch amount has been discharged. A minimum of 30 revolutions at the manufacturer's designated mixing speed shall be counted following the addition of any water to the mix, prior to further discharge. Discharge shall be a continuous operation and shall be completed as quickly as possible. Concrete shall be deposited as close to its final position as practical and such that discharged concrete is incorporated into previously placed plastic concrete. If consolidation occurs during concrete discharge, placement shall be halted and wet concrete removed (this may happen towards the end of some loads).

00703.44 Placing and Finishing:

- e. Prior to placing concrete, the surface of the aggregate detention layer (or recharge bed) shall be soaked and in a wet condition at time of placement. Failure to moisten the aggregate surface will result in a reduction in strength of the pavement.
- f. Concrete may be deposited into the forms by mixer truck chute or buggy.
- g. Unless otherwise permitted, the Contractor shall utilize a mechanical vibratory screed to strike off the concrete ½ in. to ¾ in. (13 mm to 19 mm) above final height, utilizing the form spacers described in Formwork. An alternative method to strike off and compact the concrete is to use a hydraulically actuated pipe roller screed as described under 1.04 Special Equipment. If approved by the Architect/Engineer in writing, the Contractor may place the pervious concrete with either slip form or vibratory form riding equipment with a following compactive unit that will provide a minimum of 10 psi (69 kPa) vertical force to the concrete. Similarly, strike off by hand straightedge may be permitted for sidewalks and other small areas followed by compaction.
- h. Care must be taken to prevent closing the void structure of pervious concrete. After mechanical or other approved strike-off and compaction operation, no other finishing operation will be allowed. Internal vibration shall not be permitted. If vibration, internal or surface applied, is used, it shall be shut off immediately when forward progress is halted for any reason.
- i. Placed concrete shall not be disturbed while in the plastic state. Low spots after the screeding operation shall be over-filled for surface repair and either tamped to desired elevation with hand tampers or passing the screed a second time to correct the elevation.
- j. Following strike-off, remove spacers and compact the concrete to the form level, utilizing a steel roller, a plate compactor on plywood or other method approved by the Architect/Engineer. Longitudinal rolling shall be followed immediately by cross rolling and joint rolling (if specified). Care shall be taken during compaction that sufficient compactive force is achieved without excessively working the concrete surface that might result in sealing off the surface porosity. Rollers may require cleaning and treatment to prevent aggregate pick-up during rolling operations.
- k. Hand tampers and an edging tool with ¼ in. (6 mm) radius shall be used to compact the concrete along the slab edges immediately adjacent to the forms. After compaction, inspection and surface repair, no further finishing shall be performed on the concrete. Surface curing shall begin immediately.
- l. The pervious concrete pavement shall be compacted to the required cross-section and shall not deviate more than +/- 3/8 in. in 10 ft (+/- 9 mm in 3 m) from profile grade.

703.45 Jointing

- a. Joints in pervious pavements can be precluded at the option of the owner, who may, instead, choose to accept or prefer the appearance of random cracking.
- b. Although longer joint spacings may control cracking, for conservative design, contraction (control) joints shall be installed at regular intervals not to exceed 20 ft (6.1 m), and slab length shall not exceed 1.25 times the width of the slab. Transverse contraction joints shall be installed at $\frac{1}{4}$ the depth of the thickness of the pavement. These joints can be installed in the plastic concrete or saw cut after the concrete has hardened; in either case, careful attention is necessary to prevent raveling.
- c. Jointing plastic concrete: Joints installed in the plastic concrete may be constructed utilizing a small rolling groover as described in the Special Equipment section of this guide specification. When this option is used it shall be performed immediately after roller compaction with one single pass and prior to curing. Note: Improper use of the rolling groover may cause “de-consolidation” of material within a 2-in. band along either side of the groove joint, and result in raveling under traffic. Rollers may require cleaning and treatment to prevent aggregate pick-up during rolling operations.
- d. Jointing hardened concrete: Saw-cuts shall be made as soon as the pavement has hardened sufficiently to prevent raveling and uncontrolled cracking. [Note: jointing of hardened concrete has successfully occurred after the seven day minimum curing period with minimal to no uncontrolled cracks.] Early entry sawing occurs later with pervious concrete than with conventional concrete. For either method, the curing cover shall be temporarily removed and the surface kept misted to prevent moisture loss during sawing. Sawdust or slurry shall be promptly removed to protect the pervious concrete pores. After sawing, the curing cover shall be securely replaced for the remainder of the curing cycle.
- e. Transverse construction joints: Transverse construction joints shall be installed whenever placing is suspended for 30 minutes or whenever concrete is no longer workable.
- f. Isolation joints: Isolation joints shall be used when abutting fixed vertical structures such as light pole bases, building foundations, etc.
- g. Edging, using a tool with $\frac{1}{4}$ in. (6 mm) radius, and additional compaction with hand tamping tools shall be performed along all form lines and along all isolation joints and construction joints to reduce potential for raveling under traffic.

00703.46 Curing:

- a. Curing procedures shall begin immediately, no later than 10 minutes, from the time the pervious concrete is discharged from the truck. Placing, finishing and tooled jointing and edging must be completed within the 10-minute window from discharge. The pavement surface shall be covered with a minimum of 6 mil thick clear polyethylene sheet or other approved covering material. Prior to covering, an evaporative reducer shall be sprayed above the surface when required due to ambient conditions (high temperature, high wind, and low humidity). The cover shall overlap all exposed edges and shall be secured

(without using dirt or stone) to prevent dislocation due to winds or adjacent traffic conditions. For additional guidance on hot weather concreting, see ACI 305, and for cold weather concreting see ACI 306.

- b. Immediately after screeding, the surface shall be kept moist and evaporation prevented using a spray applied curing compound and/or evaporation retarder immediately after screeding. Note: The low water/cementitious ratio and high amount of exposed surface of pervious concrete makes it especially susceptible to drying out. Immediately after each transverse jointing the polyethylene sheet curing shall be applied then cross rolling shall be performed.
- c. The curing cover shall remain securely in place for a minimum of 7 days, uninterrupted. No vehicular traffic shall be permitted on the pavement until curing is complete (7 days) and no truck traffic shall be permitted for at least 14 days. Pedestrian traffic may be permitted on the curing concrete after 24 hours. The Architect/Engineer may permit earlier traffic opening times.

00703.46 **Sealing** –When pervious concrete is produced with an integral color pigment, a UV resistant, nonyellowing acrylic based sealer per ASTM C 309 shall be lightly broadcast onto the cured pavement surface to brighten and highlight the color pigment without clogging the surface pores of the pervious matrix and disrupting its permeability. Some surface preparation may have to be conducted to prepare the sealer. Subsequent applications of the sealer shall be a part of the maintenance plan and not included in this contract.

00703.47 **Quality Control - Concrete:**

- a. The Architect/Engineer shall employ a testing laboratory that conforms to the requirements of ASTM E329 and ASTM C1077. All personnel engaged in concrete testing shall be certified by the American Concrete Institute as ACI Concrete Field Technicians or equivalent.
- b. Traditional concrete testing procedures for strength and slump control are not applicable to this type of pavement material. Procedures to be used per this guide specification include: ASTM C 172, ASTM C 29, ASTM C 42, ASTM C 1688, and ASTM C 1754.
- c. Concrete tests shall be performed for each 50 yd³ (38 m³) or fraction thereof with a minimum of one set of tests for each day's placement.
- d. Sampling - Plastic concrete shall be sampled in accordance with ASTM C 172.
- e. Density (unit weight) – Density (unit weight) of the fresh concrete shall be measured in accordance with ASTM C 1688. The density (unit weight) of the delivered concrete shall be +/- 5 lb/ft³ (80 kg/m³) of the submitted fresh density (unit weight).
- f. When required by the Architect/Engineer, after a minimum of seven (7) days, hardened concrete shall be tested at a rate of one set of three cores per 50 yd³ (38 m³) of concrete placed on one day or fraction thereof. Select core

locations per ASTM D 3665, obtain hardened 4 inch (100 mm) diameter concrete cores in accordance with ASTM C 42 and determine individual core thicknesses in accordance with ASTM C 1542. Cores shall be taken at minimum 2 ft (0.6 m) away from the edge of placement to ensure a representative sample.

- g. Thickness – Untrimmed hardened core samples shall be used to determine placement thickness. The average length of three cores shall not be less than 3/8 in. (10 mm) and not greater than 1.5 in. (38 mm) of specified pavement thickness. Length of any individual core shall not be less than 3/4 in. (19 mm) of specified pavement thickness.
- h. Core density (unit weight) - The average hardened density (unit weight) of cores trimmed from a lot and tested in the saturated condition, per ASTM C 1754 shall be +/- 5 % of the approved hardened density from the test panels.

00703.48 **Basis of Payment**

Pervious concrete pavement shall be paid for based on the square yards or square feet (square meters) of in-place product including materials and labor, thickness, and void content.

00703.49 **Performance and Inspection/Maintenance**

Excessive raveling – At or before 28 days after placement, any areas of excessive surface raveling, as determined by the Architect/Engineer, shall be removed and replaced or repaired by the Contractor, [optional language – a) at the unit price established in the contract; or b) at no additional cost to the project].

00703.50 **Surface drainage** – At or before 28 days after placement either the average infiltration rate of multiple locations or the infiltration rate of a determined localized area of the in-place pervious concrete shall be determined per ASTM C 1701. Any areas of insufficient surface porosity, as determined by the Architect/Engineer, shall be removed and replaced by the Contractor, [optional language – a) at the unit price established in the contract; or b) at no additional cost to the project].

00703.51 **Inspection/Maintenance** – At or before 28 days after placement, the contractor shall submit to the Architect/Engineer a written inspection/maintenance plan to prevent the clogging of the pervious concrete pavement. The plan shall include periodic testing of the infiltration rate per ASTM C1701 and methods to restore porosity if the rate drops below 75% of the original determined rate. Acceptable methods to restore levels of porosity are either to vacuum or vacuum with simultaneous power wash the pervious concrete sections. Fee for preparation of the inspection/maintenance plan shall be [optional language – a) at the unit price established in the contract; or b) at no additional cost to the project].

SECTION 01030 - SEEDING

Comply with Section 01030 of the Standard Specifications modified as follows:

01030.13(c) Pure Live Seed - Replace this subsection, except subsection number and title, with the following subsection:

Use the PLS specified rate listed in 01030.13(f) for determining PLS application rates. Ensure the PLS application rate meets the PLS specified rate. Apply pre blended seed mixes, with multiple species, at a PLS application rate ensuring all species meet or exceed the PLS specified rate for each species in the seed mix.

PLS application rate for an individual seed species is determined as follows:

- PLS specified rate is listed in 01030.13(f)
- PLS factor is obtained by multiplying the seed label germination percentage times the seed label purity percentage. Use the purity and germination percentages from the label on actual bags of seed to be used on the Project.
- PLS application rate is obtained by dividing the PLS specified rate by the PLS factor.

For a seed mix, make this calculation for each seed species in the mix and then adjust as follows:

- Using the seed tag, determine the weight of each seed species in the bag and use this information to find the percentage, by weight, of each seed species is in 1 pound for the pre-blended mix.
- Divide the percentage by weight of each seed species, per pound, for the pre-blended mix, by the PLS application rate for that specific seed species.

Determine the highest application rate in the seed mix and apply the seed mix at that application rate.

01030.13(f) Types of Seed Mixes - Add the following to the end of this subsection:

Provide the following seed mix formulas:

- **Pollinator Seeding:**

Botanical Name (Common Name)	PLS Specified Rate (lb/acre)
<i>Achillea millefolia</i> * (White Yarrow)	1.0

<i>Acemison americanus*</i> (Spanish Clover)	6.0
<i>Bromus carinatus*</i> (California Brome)	14.0
<i>Clarkia amoena*</i> (Farewell to Spring)	4.0
<i>Danthonia californica*</i> (California Oatgrass)	10.0
<i>Deschampsia elongata*</i> (Slender Hairgrass)	6.0
<i>Eriophyllum lanatum*</i> (Oregon Sunshine)	2.0
<i>Eschscholzia californica*</i> (California Poppy)	4.0
<i>Festuca romerii*</i> (Romer's Fescue)	13.0
<i>Gilia capitata*</i> (Blue Gilia)	4.0
<i>Lupinus bicolor*</i> (Bi-color Lupine)	8.0
<i>Prunella lanceolata</i> (Self Heal)	2.0
<i>Sidalcea malviflora</i> (Rose Checkermallow)	2.0
<i>Trifolium wormskioldii*</i> (Streambank Clover)	6.0

* Oregon Certified Seed

01030.13(g) Availability - Add the following sentence to the end of this subsection:

Submit the seed and seed mixes to be used on the project according to 00150.37.

01030.40 General - Add the following sentence after the sentence beginning "Notify the Agency...":

Notify the Agency of the acreage to be seeded at least 7 Days before seeding begins.

01030.42 Weed Control - Add the following paragraph and bullets after the paragraph that begins "If a pesticide has been approved for..." and before subsection (a):

The Specified Weeds and plant species to be removed include the Class A and Class B noxious weeds on the Oregon Department of Agriculture Noxious Weed List, and the following:

- *Rhus diversiloba* (Poison oak)

Pre-treat Himalayan blackberry, English ivy, thistles and other noxious weeds from designated areas by mowing and spraying with herbicide.

Schedule pre-treatment such that weeds are dead prior to clearing, grubbing, or planting operations.

If wind speed is greater than 5 mph, do not broadcast spray herbicides within 50 feet of any waterway, wetland, or Waters of the United States. If wind speed is less than 5 mph, do not broadcast spray herbicides within 15 feet of any waterway, wetland, or Waters of the United States. Only herbicides approved for use in aquatic systems may be used within 15 feet of any waterway, wetlands, or Waters of the United States.

Do not spray or otherwise harm plants not designated for removal.

Do not spray within 50 feet of the Sandy River.

Add the following subsection:

01030.43(c) Seed Application Rates - Determine the seeding application rate according to 01030.13(c). Apply seed mixes at the highest application rate calculated to provide not less than the specified application rate for each individual seed species in the mix.

01030.60 General - Add the following sentence(s) after the last bullet:

The minimum living plant coverage for native plant seeding is 80 percent of ground surface.

01030.80 Measurement - Add the following to the end of this subsection:

Soil testing will be measured according to 01040.80

01030.90 Payment - Add the following to the end of this subsection:

Soil testing will be paid for according to 01040.90.

SECTION 01040 - PLANTING

Comply with Section 01040 of the Standard Specifications modified as follows:

001040.02 Definitions - Add the following definition:

Weed Free - See 01030.02 for weed free definition

01040.20(e) Wood Chip Mulch - Add the following to the end of this subsection:

Provide wood chip mulch in the following size range:

- 1 inch to 3 inches

10.40.53(b) Non-Ornamental Plant Bed Areas – Apply mulch as follows:

2) Wood Chips – Apply a minimum of 2 inches of wood chips.

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01040.48 Planting Area Preparation - Replace the sentence that begins "Identify, kill, and remove..." with the following sentence:

Identify, kill, and remove Weeds according to 01030.62(b)(3).

SECTION 01120 - IRRIGATION SYSTEMS

Comply with Section 01120 of the Standard Specifications.

PART 01100 – WATER SUPPLY SYSTEMS

SECTION 01140 – POTABLE WATER PIPE AND FITTINGS

Comply with Section 01140 of the Standard Specifications supplemented and/or modified as follows:

01140.90 Payment – Replace sentence: “Trench resurfacing will be paid for according to 00495.90” with “Trench resurfacing shall be considered incidental work for which no separate payment will be made. Resurfacing is to match the existing cross section or proposed cross section whichever is greater.”

SECTION 01150 – POTABLE WATER VALVES

Comply with Section 01150 of the Standard Specifications.

SECTION 01160 – HYDRANTS AND APPURTENANCES

Comply with Section 01160 of the Standard Specifications supplemented and/or modified as follows:

1160.90 Payment – Item (a) also includes lateral pipe to hydrant, mechanical restraints, and connection into waterline main and all additional materials and or work necessary to construct the fire hydrant.

SECTION 01170 – POTABLE WATER SERVICE CONNECTIONS, 2 INCH AND SMALLER

Comply with Section 01170 of the Standard Specifications supplemented and/or modified as follows:

01170.00 Scope – Supplement this section with the following:

Work also consists of all associated work required to relocate existing water meters as shown on the Contract Plans.

Add section 01170.43 to specifications as follows:

01170.43 Water Meter Relocation – Supplement this section with the following:

Water meters shall be relocated per City Inspector’s direction and detail as shown on the plans. The Contractor shall notify the property owner a minimum of 48 hours prior to relocating their service. The Contractor is responsible for any plumbing permits required for the reconnection.

01170.90 Payment – Supplement this section with the following:

Pay Item	Unit of Measurement
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(d) Water Meter Relocation.....	Each
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Item (d) includes excavating, backfill and surface restoration, freezing the existing service, relocating the existing meter and meter box as shown on the Contract Plans, extending the existing service to the new meter box location, reconnecting both the private and public side of the service, disinfection, and coordination with the property owner.

(e) Pressure Reducing Valve (PRV).....	Each
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Item (e) includes all work required to install pressure reducing valves for all water services reconnected to the new 8” C900 Waterline. Installation of the PRV valves to be supervised by a licensed plumber. The Water Pressure Reducing Valves shall be “Legend Valve” Model No. T-6801.

(f) Temporary Water Service.....	Each
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Item (f) includes all work and materials required and or needed (including the disinfection and testing of temporary lines) to install and or provide temporary water service line (s) to provide continuous potable water to residents.