

1 Quick coupler valves and hose bibs shall be installed in valve boxes, either separately or within a
2 control valve assembly box upstream of the control valves. Valves, quick couplers, and hose bibs
3 shall have 3-inches of clearance on all sides within the valve box.
4

5 In the fifth paragraph "an" is revised to read "a minimum".
6

7 The following new paragraph is inserted after the fifth paragraph:
8

9 Automatic controller pedestals or container cabinets shall be installed on a concrete base as
10 shown in the Plans or in accordance with the manufacturer's recommendations. Provide three 1-
11 inch diameter galvanized metal or PVC electrical wire conduits through the base and 3-inches
12 minimum beyond the edge or side of the base both inside and outside of the pedestal.
13

14 **8-03.3(6) Electrical Wire Installation**

15 This section is revised to read:
16

17 All electrical work shall conform to the National Electric Code, NEMA Specifications and in
18 accordance with Section 8-20. Electrical wiring between the automatic controller and automatic
19 valves shall be direct burial and may share a common neutral. Separate control conductors shall
20 be run from the automatic controller to each valve. When more than one automatic controller is
21 required, a separate common neutral shall be provided for each controller and the automatic
22 valves which it controls. Electrical wire shall be installed in the trench adjacent to or above the
23 irrigation pipe, but no less than 12-inches deep. Plastic tape or nylon tie wraps shall be used to
24 bundle wires together at 10-foot intervals. If it is necessary to run electrical wire in a separate
25 trench from the irrigation pipe, the wire shall be placed at a minimum depth of 18-inches and be
26 "snaked" from side to side in the trench. Each circuit shall be identified at both ends and at all
27 splices with a permanent marker identifying zone and/or station.
28

29 Wiring placed under pavement and walls, or through walls, shall be placed in an electrical conduit
30 or within an irrigation sleeve. Electrical conduit shall not be less than 1-inch in diameter, and shall
31 meet conduit specifications for PVC conduit as required in Section 9-29.1.
32

33 Splices will be permitted only in approved electrical junction boxes, valve boxes, pole bases, or
34 within control equipment boxes or pedestals. A minimum of 18-inches of excess conductor shall
35 be left at all splices, terminals and control valves to facilitate inspection and future splicing. The
36 excess wire shall be neatly coiled to fit easily into the boxes.
37

38 All 120-volt electrical conductors and conduit shall be installed by a certified electrician including
39 all wire splices and wire terminations.
40

41 All wiring shall be tested in accordance with Section 8-20.3(11).
42

43 Continuity ground and functionality testing shall be performed for all 24-volt direct burial circuits.
44 The Megger test, confirming insulation resistance of not less than 2 megohms to ground in
45 accordance with Section 8-20.3(11), is required.
46

47 **8-03.3(7) Flushing and Testing**

48 In the first paragraph "correct" is revised to read "as accurate" and "ordered" is revised to read
49 "required".
50

51 The third paragraph is revised to read:

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Main Line Flushing

All main supply lines shall receive two fully open flushing's to remove debris that may have entered the line during construction: The first before placement of valves and the second after placement of valves and prior to testing.

The fourth paragraph is revised to read:

Main Line Testing

All main supply lines shall be purged of air and tested with a minimum static water pressure of 150-psi for 60-minutes without introduction of additional service or pumping pressure. Testing shall be done with one pressure gauge installed on the line, in the location required by the Engineer. For systems using a pump, an additional pressure gauge shall be installed at the pump when required by the Engineer. Lines that show loss of pressure exceeding 5-psi at the ends of specified test periods will be rejected.

The fifth paragraph is deleted.

In the sixth paragraph, "any" is revised to read "all".

In the seventh paragraph, the second sentence is revised to read:

The operating line pressure shall be maintained for 30-minutes with valves closed and without introduction of additional service or pumping pressure.

In the eighth paragraph, the fourth and fifth sentences are revised to read:

The Contractor shall then conduct a thorough inspection of all sprinkler heads, emitters, etc., located downstream of the break or disruption of service, and make all needed repairs to ensure that the entire irrigation system is operating properly.

8-03.3(8) Adjusting System

In the first paragraph, the last sentence is revised to read:

Unless otherwise specified, sprinkler spray patterns will not be permitted to apply water to pavement, walks, or Structures.

8-03.3(11) System Operation

In the first paragraph, the last sentence is revised to read:

The final inspection of the irrigation system will coincide with the end of the Contract or the end of first-year plant establishment, which ever is later.

In the second paragraph "ordered" is revised to read "required".

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 local health authority in accordance with Section 8-03.3(12).

1 The fourth paragraph is revised to read:

2
3 In the spring, when the drip irrigation system is in full operation, the Contractor shall make a full
4 inspection of all emitters, and irrigation heads. This shall involve visual inspection of each emitter
5 and irrigation head under operating conditions. All adjustments, flushing, or replacements to the
6 system shall be made at this time to ensure the proper operation of all emitters and irrigation
7 heads.

8
9 **8-03.3(12) Cross Connection Control Device Installation**

10 In the first sentence of the first paragraph "serving utility" is revised to read "local health authority".

11
12 **8-03.3(13) Irrigation Water Service**

13 The first paragraph is revised to read:

14
15 All water meter(s) shall be installed by the serving utility. The Contracting Agency shall arrange for
16 a water meter installation(s) for the irrigation system at the locations and sizes as shown in the
17 Plans at no cost to the Contractor. It shall be the Contractor's responsibility to contact the
18 Engineer to schedule the water meter installation. The Contractor shall provide a minimum of 60-
19 calendar days notice to the Engineer prior to the desired water meter installation date.

20
21 In the second paragraph, "will" is revised to read "shall".

22
23 **8-03.3(14) Irrigation Electrical Service**

24 The first paragraph is revised to read:

25
26 The Contracting Agency shall arrange for electrical service connection(s) for operation of the
27 automatic electrical controller(s) at the locations as shown in the Plans. The Contractor shall
28 splice and run conduit and wire from the electrical service connection(s), or service cabinet to the
29 automatic electrical controller and connect the conductors to the circuit(s) per the controller
30 manufacturer's diagrams or recommendations.

31
32 In the second paragraph, "conduit" is revised to read "conduits".

33
34 08.AP8

35 **SECTION 8-08, RUMBLE STRIPS**

36 **April 5, 2010**

37 **8-08.3 Construction Requirements**

38 In the fourth paragraph, the first and second sentences are combined to read:

39
40 When shown in the Plans, the rumble strips shall be fog sealed in accordance with the
41 requirements of Section 5-02 following the completion of the shoulder rumble strip.
42

1 14.AP8

2 **SECTION 8-14, CEMENT CONCRETE SIDEWALKS**
3 **April 5, 2010**

4 **8-14.3(5) Curb Ramp Detectable Warning Surface Retrofit**

5 This section including heading is revised to read:

6

7 **8-14.3(5) Detectable Warning Surface**

8 Detectable warning surfaces shall consist of truncated domes as shown in the Plans. Where a
9 detectable warning surface is to be applied, the Contractor shall attach the detectable warning
10 surface to the pavement surface according to the manufacturer's recommendations. The
11 detectable warning surface shall be located as shown in the Plans.

12

13 The Contractor shall use one of the detectable warning surface products listed in the Qualified
14 Products List or submit another product for approval by the Project Engineer. If the Plans require,
15 the detectable warning surface shall be capable of being bonded to a cement concrete surface or
16 to an asphalt concrete surface. Vertical edges of the detectable warning surface shall be flush with
17 the adjoining surface to the extent possible (otherwise not be more than 1/4-inch above the
18 surface of the pavement) after installation.

19

20 **8-14.4 Measurement**

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

22

23 Cement concrete curb ramp type _____ will be measured per each for the complete curb ramp
24 type installed and includes the installation of the detectable warning surface.

25

26 The second paragraph is revised to read:

27

28 Detectable warning surface will be measured by the square foot of detectable warning surface
29 material installed as shown in the Plans.

30

31 **8-14.5 Payment**

32 The pay item "Cement Conc. Curb Ramp Type_____" is supplemented with the following new
33 paragraph:

34

35 The unit Contract price per each for "Cement Concrete Curb Ramp Type_____", shall be full pay for
36 installing the curb ramp as specified including the "Detectable Warning Surface".

37

38 The pay item "Curb Ramp Detectable Warning Surface Retrofit" is revised to read "Detectable Warning
39 Surface".

40

41 15.AP8

42 **SECTION 8-15, RIPRAP**
43 **January 4, 2010**

44 **8-15.2 Materials**

45 The referenced sections for the following items are revised to read:

46

47 Heavy Loose Riprap

9-13

1	Light Loose Riprap	9-13
2	Hand Placed Riprap	9-13
3	Sack Riprap	9-13
4	Quarry Spalls	9-13

5
6 17.AP8

7 **SECTION 8-17, IMPACT ATTENUATOR SYSTEMS**
8 **April 5, 2010**

9 **8-17.4 Measurement**

10 The first paragraph is supplemented with the following new sentence:

11
12 Only the maximum number of temporary impact attenuators installed at any one time within the
13 project limits will be measured for payment.

14
15 **8-17.5 Payment**

16 In the second paragraph following the bid item "Resetting Impact Attenuator", the first sentence is
17 revised to read:

18
19 If an impact attenuator is damaged by a third party, repairs shall be made in accordance with
20 Section 1-07.13(4) under the Bid item "Reimbursement For Third Party Damage".
21

22 20.AP8

23 **SECTION 8-20, ILLUMINATION, TRAFFIC SIGNAL SYSTEMS, AND ELECTRICAL**
24 **April 5, 2010**

25 **8-20.1 Description**

26 In the first paragraph item number 3 is revised to read:

27
28 3. Intelligent Transportation Systems (ITS)

29
30 **8-20.3(4) Foundations**

31 In the 12th paragraph, item number 2 is revised to read:

32
33 2. The top heavy-hex nuts for type ASTM F1554 grade 105 anchor bolts shall be tightened by
34 the Turn-Of-Nut Tightening Method to minimum rotation of ¼-turn (90 degrees) and a
35 maximum rotation of ½-turn (120 degrees) past snug tight. Permanent marks shall be set on
36 the base plate and nuts to indicate nut rotation past snug tight.

37
38 In the 12th paragraph, the following is inserted after item number 2:

39
40 3. The top hex nuts for type ASTM F1554 grade 55 anchor bolts shall be tightened by the Turn-
41 of-Nut Tightening Method to minimum rotation of 1/8-turn (45 degrees) and a maximum
42 rotation of 1/6-turn (60 degrees) past snug tight. Permanent marks shall be set on the base
43 plate and nuts to indicate nut rotation past snug tight.

44
45 **8-20.3(5) Conduit**

46 In the fifth sentence of the fourth paragraph, "conforms" is revised to read "conforming".

1
2 **8-20.3(6) Junction Boxes, Cable Vaults, and Pull boxes**

3 In item number 2 of the second paragraph, "top course" is deleted and "per" is revised to read "in
4 accordance with".
5

6 **8-20.3(8) Wiring**

7 The following new two paragraphs are inserted after the first table:
8

9 Splices and taps on underground circuits shall be made with solderless crimp connectors meeting
10 the requirements of Section 9-29.12.
11

12 Only one conductor or one multi conductor cable per wire entrance will be allowed in any rigid
13 mold splice.
14

15 In the eleventh paragraph item number 5 is revised to read:
16

17 5. Video detection camera lead-in cable - the numbers of the phases the camera served.
18

19 In the eleventh paragraph the following is added after item number 5:
20

21 6. For ITS cameras – the number of the camera indicated in the Contract and the number of the
22 associated cabinet as indicated on the Plans.
23

24 7. Communication cable -- labeled as Comm.
25

26 This section is supplemented with the following new paragraph:
27

28 Installation of coaxial or coaxial/Siamese cable or data cables with a 600 VAC rating will be
29 allowed in the same raceway with 480 VAC illumination cable.
30

31 **8-20.4 Measurement**

32 The first sentence is revised to read:
33

34 No specific unit of measurement will apply to the lump sum items for illumination system,
35 intelligent transportation system (ITS), or traffic signal systems, but measurement will be for the
36 sum total of all items for a complete system to be furnished and installed.
37

38 **8-20.5 Payment**

39 All references to "Intelligent Transportation System" are revised to read "ITS".
40

41 21.AP8

42 **SECTION 8-21, PERMANENT SIGNING**
43 **January 4, 2010**

44 **8-21.3(4) Sign Removal**

45 In the fourth paragraph, the following sentence is inserted after the second sentence:
46

47 Where signs are removed from existing overhead sign Structures, the existing vertical sign
48 support braces shall also be removed.

1
2 In the fourth paragraph, the third sentence is revised to read:

3
4 Aluminum signs, wood signs, wood sign posts, wood structures, metal sign posts, wind beams,
5 and other metal structural members, and all existing fastening hardware connecting such
6 members being removed, shall become the property of the Contractor and shall be removed from
7 the project.
8

9 01.AP9

10 **SECTION 9-01, PORTLAND CEMENT**
11 **April 5, 2010**

12 **9-01.2(1) Portland Cement**

13 In the first paragraph, all the text after "shall not exceed 8-percent by weight" is deleted and the
14 paragraph ends.

15
16 In the second paragraph, "per" is revised to read "in accordance with".
17

18 03.AP9

19 **SECTION 9-03, AGGREGATES**
20 **January 4, 2010**

21 In this Division, all references to "AASHTO TP 61" are revised to read "AASHTO T 335".
22

23 04.AP9

24 **SECTION 9-04, JOINT AND CRACK SEALING MATERIALS**
25 **January 4, 2010**

26 **9-04.11 Butyl Rubber**

27 This section including title is revised to read:

28
29 **9-04.11 Butyl Rubber and Nitrile Rubber**

30 Butyl rubber shall conform to ASTM D 2000, M1 BA 610. If the Engineer determines that the area
31 will be exposed to petroleum products Nitrile rubber shall be utilized and conform to ASTM D
32 2000, M1 BG 610.
33

34 05.AP9

35 **SECTION 9-05, DRAINAGE STRUCTURES, CULVERTS, AND CONDUITS**
36 **January 4, 2010**

37 **9-05.12(2) Profile Wall PVC Culvert Pipe, Profile Wall PVC Storm Sewer Pipe, and**
38 **Profile Wall PVC Sanitary Sewer Pipe**

39 In the fourth paragraph, the word "producer's" is revised to read "Manufacturer's".
40

41 **9-05.13 Ductile Iron Sewer Pipe**

42 The second and third paragraphs are revised to read:

1
2 Ductile iron pipe shall conform to ANSI A 21.51 or AWWA C151 and shall be cement mortar lined
3 and have a 1- mil seal coat per AWWA C104, or a Ceramic Filled Amine cured Novalac Epoxy
4 lining, as indicated on the Plans or in the Special Provisions. The ductile iron pipe shall be Special
5 Thickness Class 50, Minimum Pressure Class 350, or the Class indicated on the Plans or in the
6 Special Provisions.

7
8 Nonrestrained joints shall be either rubber gasket type, push on type, or mechanical type meeting
9 the requirements of AWWA C111.

10
11 Division 9-05 is supplemented with the following new sections:

12
13 **9-05.21 Steel Rib Reinforced Polyethylene Culvert Pipe**

14 Steel rib reinforced polyethylene culvert pipe shall meet the requirements of ASTM F2562 Class 1
15 for steel reinforced thermoplastic ribbed pipe and fittings for pipe 24-inch to 60-inch diameter with
16 silt-tight joints.

17
18 Silt-tight joints for steel reinforced polyethylene culvert pipe shall be made with a bell/bell or bell
19 and spigot coupling and incorporate the use of a gasket conforming to the requirements of ASTM
20 F 477. All gaskets shall be installed on the pipe by the manufacturer.

21
22 Qualification for each manufacturer of steel reinforced polyethylene culvert pipe requires an
23 approved joint system and a formal quality control plan for each plant proposed for consideration.

24
25 A Manufacturer's Certificate of Compliance shall be required and shall accompany the materials
26 delivered to the project. The certificate shall clearly identify production lots for all materials
27 represented. The Contracting Agency may conduct verification tests of pipe stiffness or other
28 properties as it deems appropriate.

29
30 **9-05.22 Steel Rib Reinforced Polyethylene Storm Sewer Pipe**

31 Steel rib reinforced polyethylene storm sewer pipe shall meet the requirements of ASTM F2562
32 Class 1 for steel reinforced thermoplastic ribbed pipe and fittings. The maximum diameter for steel
33 reinforced polyethylene storm sewer pipe shall be the diameter for which a manufacturer has
34 submitted a qualified joint. Qualified manufacturers and approved joints are listed in the Qualified
35 Products Lists. Fittings shall be rotationally molded, injection molded, or factory welded.

36
37 All joints for steel reinforced polyethylene storm sewer pipe shall be made with a bell and spigot
38 coupling and conform to ASTM D 3212 using elastomeric gaskets conforming to ASTM F 477. All
39 gaskets shall be installed on the pipe by the manufacturer.

40
41 Qualification for each manufacturer of steel reinforced polyethylene storm sewer pipe requires
42 joint system conformance to ASTM D 3212 using elastomeric gaskets conforming to ASTM F 477
43 and a formal quality control plan for each plant proposed for consideration.

44
45 A Manufacturer's Certificate of Compliance shall be required and shall accompany the materials
46 delivered to the project. The certificate shall clearly identify production lots for all materials
47 represented. The Contracting Agency may conduct verification tests of pipe stiffness or other
48 properties as it deems appropriate.

1 **9-05.23 High Density Polyethylene (HDPE) Pipe**

2 HDPE pipe shall be manufactured from resins meeting the requirements of ASTM D3350 with a
3 cell classification of 345464C and a Plastic Pipe Institute (PPI) designation of PE 3408.

4
5 The pipes shall have a minimum standard dimension ratio (SDR) of 32.5.

6
7 HDPE pipe shall be joined into a continuous length by an approved joining method.

8
9 The joints shall not create an increase in the outside diameter of the pipe. The joints shall be
10 fused, snap together or threaded. The joints shall be water tight, rubber gasketed if applicable,
11 and pressure testable to the requirements of ASTM D 3212.

12
13 Joints to be welded by butt fusion, shall meet the requirements of ASTM F 2620 and the
14 manufacturer's recommendations. Fusion equipment used in the joining procedure shall be
15 capable of meeting all conditions recommended by the pipe manufacturer, including but not limited
16 to fusion temperature, alignment, and fusion pressure. All field welds shall be made with fusion
17 equipment equipped with a Data Logger. Temperature, fusion pressure and a graphic
18 representation of the fusion cycle shall be part of the Quality Control records. Electro fusion may
19 be used for field closures as necessary. Joint strength shall be equal or greater than the tensile
20 strength of the pipe.

21
22 Fittings shall be manufactured from the same resins and Cell Classification as the pipe unless
23 specified otherwise in the Plans or Specifications. Butt fusion fittings and Flanged or Mechanical
24 joint adapters shall have a manufacturing standard of ASTM D3261. Electro fusion fittings shall
25 have a manufacturing standard of ASTM F1055.

26
27 HDPE pipe to be used as liner pipe shall meet the requirements of AASHTO M 326 and this
28 specification.

29
30 The supplier shall furnish a Manufacturer's Certification of Compliance stating the materials meet
31 the requirements of ASTM D 3350 with the correct cell classification with the physical properties
32 listed above. The supplier shall certify the dimensions meet the requirements of ASTM F 714 or
33 as indicated in this Specification or the Plans.

34
35 At the time of manufacture, each lot of pipe, liner, and fittings shall be inspected for defects and
36 tested for Elevated Temperature Sustain Pressure in accordance with ASTM F 714. The
37 Contractor shall not install any pipe that is more than 2 years old from the date of manufacture.

38
39 At the time of delivery, the pipe shall be homogeneous throughout, uniform in color, free of cracks,
40 holes, foreign materials, blisters, or deleterious faults.

41
42 Pipe shall be marked at 5 foot intervals or less with a coded number which identifies the
43 manufacturer, SDR, size, material, machine, and date on which the pipe was manufactured.

44
45 07.AP9

46 **SECTION 9-07, REINFORCING STEEL**
47 **January 4, 2010**

48 **9-07.5(1) Epoxy Coated Dowel Bars (For Cement Concrete Pavement)**

49 This sections title is revised to read:

City of Arlington
Airport Boulevard Road Improvements
Contract Documents
112736/General/Specifications

1
2 **9-07.5(1) Epoxy Coated Dowel Bars (For Cement Concrete Pavement**
3 **Rehabilitation)**
4

5 08.AP9

6 **SECTION 9-08, PAINTS AND RELATED MATERIALS**
7 **January 4, 2010**

8 **9-08.1(2)C Inorganic Zinc Rich Primer**

9 In the first paragraph, the reference to "Type II" is revised to read "Type I".

10
11 **9-08.1(2)D Organic Zinc Rich Primer**

12 This section is revised to read:

13
14 Organic zinc rich primer shall be a high performance two-component epoxy conforming to SSPC
15 Paint 20 Type II.
16

17 14.AP9

18 **SECTION 9-14, EROSION CONTROL AND ROADSIDE PLANTING**
19 **April 5, 2010**

20 **9-14.3 Fertilizer**

21 In the first paragraph, the second sentence is revised to read:

22
23 It may be separate or in a mixture containing the percentage of total nitrogen, available
24 phosphoric acid, water-soluble potash, or sulfur in the amounts specified.
25

26 **9-14.4(1) Straw**

27 This section is revised to read:

28
29 Straw shall be in an air dried condition free of noxious weeds, seeds, and other materials
30 detrimental to plant life. Hay is not acceptable.
31

32 All straw material shall be Certified Weed Free Straw using North American Weed Management
33 Association (NAWMA) standards or the Washington Wilderness Hay and Mulch (WWHAM)
34 program run by the Washington State Noxious Weed Control Board. Information can be found at
35 <http://www.nwcb.wa.gov>.
36

37 In lieu of Certified Weed Free Straw, the Contractor shall provide documentation that the material
38 is steam or heat treated to kill seeds, or shall provide U.S., Washington, or other State's
39 Department of Agriculture laboratory test reports, dated within 90 days prior to the date of
40 application, showing there are no viable seeds in the straw.
41

42 Straw mulch shall be suitable for spreading with mulch blower equipment.
43

44 **9-14.4(2) Wood Cellulose Fiber**

45 This section including title is revised to read:
46

1 **9-14.4(2) Fiber Mulch**

2 All Fiber Mulch materials shall be in a dry condition free of noxious weeds, seeds, and other
3 materials detrimental to plant life. Fiber Mulch shall be suitable for spreading with a hydroseeder
4 or mulch blower equipment.
5

6 This section is supplemented with the following new sub-sections:
7

8 **9-14.4(2)A Cellulose Fiber Mulch**

9 Cellulose Fiber Mulch shall be recycled (pulp) fiber such as newsprint, magazine stock,
10 corrugated cardboard, cotton or straw. It shall be free from chemical printing ink, germination
11 inhibitors, and chlorine bleach and shall contain no rock, metal, and plastic.
12

13 If Cellulose Fiber Mulch contains cotton or straw, the Contractor shall provide documentation that
14 the material is steam or heat treated to kill seeds, or shall provide U.S., Washington, or other
15 State's Department of Agriculture laboratory test reports, dated within 90 days prior to the date of
16 application, showing there are no viable seeds in the mulch.
17

18 Cellulose Fiber Mulch shall be manufactured in such a manner that when agitated in slurry tanks
19 with water, the fibers will become uniformly suspended, without clumping, to form a homogeneous
20 slurry. When hydraulically applied, the material shall form a strong moisture-holding mat that
21 allows the continuous absorption and infiltration of water.
22

23 Cellulose Fiber Mulch shall contain a dye to facilitate placement and inspection of the material.
24 Dye shall be non-toxic to plants, animals, and aquatic life and shall not stain concrete or painted
25 surfaces.
26

27 Cellulose Fiber Mulch furnished by the Contractor shall be pre-packaged by the manufacturer.
28 The Contractor shall supply independent test results from the National Transportation Product
29 Evaluation Program (NTPEP) or other accredited, independent testing laboratory as approved by
30 the Engineer to assure compliance with the minimum requirements in the following table:
31

Properties	Test Method	Requirements
Water Holding Capacity	ASTM D 7367	1,000 percent minimum
Organic Matter Content	ASTM D 586*	90 percent minimum
Moisture Content	ASTM D 644*	15 percent maximum
Seed Germination Enhancement	ASTM D 7322*	200 percent minimum
Performance in Protecting Slopes from Rainfall-Induced Erosion	ASTM D 6459 with 0.12-inch average raindrop size. Test in one soil type. Soil tested shall be loam as defined by the National Resources Conservation Service (NRCS) Soil Texture Triangle ***	C Factor = 0.15 maximum using Revised Universal Soil Loss Equation (RUSLE)

32 * ASTM test methods developed for Rolled Erosion Control Products (RECPs) with the only
33 modification being that Hydraulic Erosion Control Products (HECPs) are applied to the test
34 plot.
35

1 ***Available at: http://soils.usda.gov/education/resources/lessons/texture/textural_tri_hi.jpg

2
3 **9-14.4(2)B Wood Fiber Mulch**

4 Wood Fiber Mulch shall be thermally processed, defibrated, wood fiber from natural or recycled
5 wood chips or similar woody material. The wood shall be manufactured to produce long-strand
6 fibers that physically interlock to form a strong moisture holding mat that allows the absorption and
7 infiltration of water. Wood Fiber Mulch shall be free from paper, straw, cotton, jute, hemp, coconut,
8 rock, metal, and plastic.

9
10 Wood Fiber Mulch shall contain a dye to facilitate placement and inspection of the material. Dye
11 shall be non-toxic to plants, animals, and aquatic life and shall not stain concrete or painted
12 surfaces.

13
14 Wood Fiber Mulch shall be manufactured in such a manner that when agitated in slurry tanks with
15 water, the fibers will be uniformly suspended to form a homogeneous slurry.

16
17 Wood Fiber Mulch furnished by the Contractor shall be pre-packaged by the manufacturer. The
18 Contractor shall supply independent test results from the National Transportation Product
19 Evaluation Program (NTPEP) or other accredited, independent testing laboratory as approved by
20 the Engineer to assure compliance with the minimum requirements in the following table:
21

Properties	Test Method	Requirements
Long Strand Fibers	WSDOT Test Method T 126	A minimum of 50% of the fiber, by mass, is collected on the combination of No. 8, No. 16, and No. 24 sieves
Water Holding Capacity	ASTM D 7367	1,300 percent minimum
Organic Matter Content	ASTM D 586*	90 percent minimum
Moisture Content	ASTM D 644*	15 percent maximum
Seed Germination Enhancement	ASTM D 7322*	300 percent minimum
Performance in Protecting Slopes from Rainfall-Induced Erosion	ASTM D 6459 with 0.12-inch average raindrop size. Test in one soil type. Soil tested shall be loam as defined by the NRCS Soil Texture Triangle ***	C Factor = 0.15 maximum using Revised Universal Soil Loss Equation (RUSLE)

22 * ASTM test methods developed for Rolled Erosion Control Products (RECPs) with the only
23 modification being that Hydraulic Erosion Control Products (HECPs) are applied to the test
24 plot.
25

26 ***Available at: http://soils.usda.gov/education/resources/lessons/texture/textural_tri_hi.jpg

27
28 **9-14.4(3) Bark or Wood Chips**

29 The first paragraph is revised to read:
30

1 Bark or wood chip mulch shall be derived from Douglas fir, pine, or hemlock species and shall not
2 contain resin, tannin, or other compounds in quantities that would be detrimental to plant life.
3 Sawdust shall not be used as mulch.
4

5 This section is supplemented with the following:

6
7 Bark or wood chips when tested shall be according to WSDOT Test Method T 123 prior to
8 placement and shall meet the following loose volume gradation:
9

Sieve Size	Percent Passing	
	Minimum	Maximum
2"	95	100
No. 4	0	30

10
11
12 **9-14.4(4) Wood Strand Mulch**

13 This first paragraph is revised to read:

14
15 Wood strand mulch shall be a blend of angular, loose, long, thin wood pieces that are frayed, with
16 a high length-to-width ratio and shall be derived from native conifer or deciduous trees. A
17 minimum of 95 percent of the wood strand shall have lengths between 2 and 10-inches. At least 5
18 percent of the length of each strand shall have a width and thickness between $\frac{1}{16}$ and $\frac{1}{2}$ -inch. No
19 single strand shall have a width or thickness greater than $\frac{1}{2}$ -inch.
20

21 The mulch shall not contain salt, preservatives, glue, resin, tannin, or other compounds in
22 quantities that would be detrimental to plant life. Sawdust or wood chips or shavings shall not be
23 acceptable. Products shall be tested according to WSDOT Test Method 125 prior to acceptance.
24

25 **9-14.4(6) Gypsum**

26 This section is revised to read:

27
28 Gypsum shall consist of Calcium Sulfate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) in a pelletized or granular form. 100
29 percent shall pass through a No. 8 sieve.
30

31 **9-14.4(7) Tackifier**

32 This section is revised to read:

33
34 Tackifiers are used as a tie-down for soil, compost, seed, and/or mulch. Tackifier shall contain no
35 growth or germination inhibiting materials, and shall not reduce infiltration rates. Tackifier shall
36 hydrate in water and readily blend with other slurry materials.
37

38 All tackifiers shall meet the following requirements:
39

Properties	Test Method	Requirements
Viscosity*	ASTM D 2364	4000 cPs minimum

40
41 *Testing shall be performed by an accredited independent laboratory.
42

43 This section is supplemented with the following new sub-sections:

1
2 **9-14.4(7)A Organic Tackifier**

3 Organic tackifier shall be derived from natural plant sources and shall have an MSDS that
4 demonstrates to the satisfaction of the Engineer that the product is not harmful to plants, animals,
5 and aquatic life.
6

7 **9-14.4(7)B Synthetic Tackifier**

8 Synthetic tackifier shall have an MSDS that demonstrates to the satisfaction of the Engineer that
9 the product is not harmful to plants, animals, and aquatic life.
10

11 **9-14.4(8) Compost**

12 In the third paragraph, number 1. is revised to read:

- 13
14 1. Compost material shall be tested in accordance with U.S. Composting Council Testing
15 Methods for the Examination of Compost and Composting (TMECC) 02.02-B, "Sample
16 Sieving for Aggregate Size Classification".
17 Fine Compost shall meet the following gradation:
18

Sieve Size	Percent Passing	
	Minimum	Maximum
2"	100	
1"	95	100
5/8"	90	100
1/4"	75	100

19 Maximum particle length of 6-inches.

20 Medium Compost shall meet the following gradation:

21
22

Sieve Size	Percent Passing	
	Minimum	Maximum
2"	100	
1"	95	100
5/8"	90	100
1/4"	75	85

23 Maximum particle length of 6-inches.

24
25 Medium Compost shall have a Carbon to Nitrogen ratio (C:N) between 18:1 and 30:1. The
26 Carbon to Nitrogen ratio shall be calculated using the dry weight of "Organic Carbon" using
27 TMECC 04.01A divided by the dry weight of "Total N" using TMECC 04.02D.
28

29 Coarse Compost shall meet the following gradation:
30

Sieve Size	Percent Passing	
	Minimum	Maximum
3"	100	
1"	90	100
3/4"	70	100
1/4"	40	60

31 Maximum particle length of 6-inches.
32

1 In number 8. of the third paragraph, the reference to "manufacturer" is revised to read "Contractor".

2
3 **9-14.4(8)A Compost Approval**

4 This sections title is revised to read:

5
6 **9-14.4(8)A Compost Submittal Requirements**

7
8 The first sentence is revised to read:

9
10 The Contractor shall submit the following information to the Engineer for approval:

11
12 Number 1. is revised to read:

- 13
14 1. The Qualified Products List printed page or a Request for Approval of Material (DOT Form
15 350-071EF).

16
17 In number 3., the reference to "manufacturer" is revised to read "Contractor" and the reference to
18 "analyses" is revised to read "analysis".

19
20 **9-14.4(8)B Compost Acceptance**

21 This section is revised to read:

22
23 Fourteen days prior to application, the Contractor shall submit a sample of the compost approved
24 for use, and a STA test report dated within 90 calendar days of the application, and the list of feed
25 stocks by volume for each compost type to the Engineer for review.

26
27 The Contractor shall use only compost that has been tested within 90 calendar days of application
28 and meets the requirements in Section 9-14.4(8). Compost not conforming to the above
29 requirements or taken from a source other than those tested and accepted shall not be used.

30
31 **9-14.4(9) Bonded Fiber Matrix (BFM)**

32 This section is revised to read:

33
34 Bonded Fiber Matrix (BFM) shall be a hydraulically-applied blanket/mulch/matrix comprised of
35 biodegradable, thermally processed, defibrated, long strand fibers from natural or recycled wood
36 chips or similar woody material, weed free straw, cotton, coconut, jute, and/or hemp. The fibers
37 shall physically interlock to form a strong moisture holding mat that allows the absorption and
38 infiltration of water. BFM shall be free from rock, metal, or plastic. It shall contain no more than
39 15 percent recycled paper and meets the requirements in Section 9-14.4(2)A.

40
41 The BFM shall be manufactured in such a manner that when agitated in slurry tanks with water,
42 the fibers will be uniformly suspended to form a homogeneous slurry.

43
44 Within 48 hours the BFM shall bond with the soil surface to create a continuous, absorbent,
45 flexible erosion resistant blanket that allows for seed germination and plant growth.

46
47 BFM shall contain a dye to facilitate placement and inspection of the material. Dye shall be non-
48 toxic to plants, animal, and aquatic life and shall not stain concrete or painted surfaces.

49
50 BFM shall be furnished premixed by the manufacturer. The BFM shall be furnished with an MSDS
51 that demonstrates to the satisfaction of the Engineer that the product is not harmful to plants,

1 animals, and aquatic life. Under no circumstances will field mixing of additives or components be
 2 acceptable.

3
 4 The Contractor shall supply independent test results from the National Transportation Product
 5 Evaluation Program (NTPEP) or other accredited independent testing laboratory as approved by
 6 the Engineer to assure compliance with the minimum requirements in the following table:
 7

Properties	Test Method	Requirements
Long Strand Fibers	WSDOT Test Method T 126	A minimum of 50% of the fiber, by mass, is collected on the combination of No. 8, No. 16, and No. 24 sieves
Tackifier, Type A or Type B	See Section 9-14.4(7)A	Minimum 10 percent by weight of a cross-linked, polysaccharide, hydro-colloid tackifier
Water Holding Capacity	ASTM D 7367	1,300 percent minimum
Organic Matter Content	ASTM D 586*	90 percent minimum
Moisture Content	ASTM D 644*	15 percent maximum
Seed Germination Enhancement	ASTM D 7322*	500 percent minimum
Performance in Protecting Slopes from Rainfall-Induced Erosion	ASTM D 6459 with 0.12-inch average raindrop size.** Test in one soil type. Soil tested shall be loam as defined by the NRCS Soil Texture Triangle ***	C Factor = 0.10 maximum using Revised Universal Soil Loss Equation (RUSLE)
Thickness	ASTM D 6525*	0.10-inch minimum
Ground Cover	ASTM D 6567*	97 percent minimum
Mass Per Unit Area	ASTM D 6566*	10.0 oz/yd ² minimum

8 * ASTM test methods developed for Rolled Erosion Control Products (RECPs) with the only
 9 modification being that Hydraulic Erosion Control Products (HECPs) are applied to the test
 10 plot.

11
 12 ** Utah State Protocol of 2.5:1 slope with rainfall simulated at 5-inches per hour for 60 minute
 13 duration, or TTI Protocol of 2:1 slope with rainfall simulated at 3.5-inches per hour with three
 14 successive test durations of 30 minutes each test in 24 hour intervals may be substituted.

15
 16 *** Available at: http://soils.usda.gov/education/resources/lessons/texture/textural_tri_hi.jpg
 17
 18

19 **9-14.4(10) Mechanically Bonded Fiber Matrix (MBFM)**

20 This section including title is revised to read:
 21

9-14.4(10) Mechanically Bonded Fiber Matrix (MBFM) or Fiber Reinforced Matrix (FRM)

The MBFM/FRM shall be a hydraulically-applied blanket/mulch/matrix comprised of biodegradable, thermally processed, defibrated, long-strand fibers from natural or recycled wood chips or similar woody material, straw, coconut, jute, and/or hemp. The MBFM/FRM shall contain a minimum of 5% by weight of biodegradable or photodegradable polyfibers that are bent in multiple locations on each strand and that physically interlock with the wood fibers to form a strong moisture holding mat that allows the absorption and infiltration of water. The MBFM/FRM shall contain a cross-linked polysaccharide tackifier. MBFM/FRM shall be free from paper, rock, metal, and plastic.

MBFM/FRM shall be manufactured in such a manner that when agitated in slurry tanks with water, the fibers will be uniformly suspended to form a homogeneous slurry.

The MBFM/FRM shall require no curing period upon application, and shall bond with the soil surface to create a continuous, porous, absorbent, and flexible erosion resistant blanket that allows for seed germination and plant growth.

MBFM/FRM shall be furnished premixed by the manufacturer. The MBFM/FRM shall be furnished with an MSDS that demonstrates to the satisfaction of the Engineer that the product is not harmful to plants, animals, and aquatic life. Under no circumstances will field mixing of additives or components be acceptable.

The Contractor shall supply independent test results from the National Transportation Product Evaluation Program (NTPEP) or other accredited independent testing laboratory as approved by the Engineer to assure compliance with the minimum requirements in the following table:

Properties	Test Method	Requirements
Long Strand Fibers	WSDOT Test Method T 126	A minimum of 50% of the fiber, by mass, is collected on the combination of No. 8, No. 16, and No. 24 sieves
Tackifier, Type A or Type B	See Section 9-14.4(7)A	Minimum 10 percent by weight of a cross-linked, polysaccharide, hydro-colloid tackifier
Water Holding Capacity	ASTM D 7367	1,500 percent minimum
Organic Matter Content	ASTM D 586*	90 percent minimum
Moisture Content	ASTM D 644*	15 percent maximum
Seed Germination Enhancement	ASTM D 7322*	500 percent minimum
Performance in Protecting Slopes from Rainfall-Induced Erosion	ASTM D 6459 with 0.12-inch average raindrop size.** Test in one soil type. Soil tested shall be loam as defined by the NRCS Soil	C Factor = 0.05 maximum using Revised Universal Soil Loss Equation (RUSLE)

	Texture Triangle ***	
Thickness	ASTM D 6525*	0.15-inch minimum
Ground Cover	ASTM D 6567*	98 percent minimum
Mass Per Unit Area	ASTM D 6566*	11.0 oz/yd ² minimum

* ASTM test methods developed for Rolled Erosion Control Products (RECPs) with the only modification being that Hydraulic Erosion Control Products (HECPs) are applied to the test plot.

** Utah State Protocol of 2.5:1 slope with rainfall simulated at 5-inches per hour for 60 minute duration, or TTI Protocol of 2:1 slope with rainfall simulated at 3.5-inches per hour with three successive test durations of 30 minutes each test in 24 hour intervals may be substituted.

*** Available at: http://soils.usda.gov/education/resources/lessons/texture/textural_tri_hi.jpg

9-14.5(1) Polyacrylamide (PAM)

The third and fourth sentences are revised to read:

The minimum average molecular weight shall be greater than 5 mg/mole and minimum 30 percent charge density. The product shall contain at least 80 percent active ingredients and have a moisture content not exceeding 10 percent by weight.

This section is supplemented with the following:

PAM shall be delivered in a dry granular or powder form.

9-14.5(2) Erosion Control Blanket

This section is revised to read:

Temporary erosion control blanket shall be made of natural plant fibers and meet the following requirements:

Properties	ASTM Test Method	Requirements
Protecting Slopes from Rainfall-Induced Erosion	D 6459 with 0.12-inch average raindrop size.* Test in one soil type. Soil tested shall be loam as defined by the NRCS Soil Texture Triangle**	Maximum C factor of 0.15 using Revised Universal Soil Loss Equation (RUSLE)
Dry Weight per Unit Area	D 6475	0.36 lb/sq. yd. minimum
Performance in Protecting Earthen Channels from Stormwater-Induced Erosion	D 6460 Test in one soil type. Soil tested shall be loam as defined by the NRCS Soil Texture Triangle**	1.0 lb/sq. ft. minimum
Seed Germination Enhancement	D 7322*	200 percent minimum

Netting, if present, shall be biodegradable with a life span not to exceed one year.

1 * Utah State Protocol of 2.5:1 slope with rainfall simulated at 5-inches per hour for 60 minute
2 duration, or TTI Protocol of 2:1 slope with rainfall simulated at 3.5-inches per hour with three
3 successive test durations of 30 minutes each test in 24 hour intervals may be substituted.
4

5 ** Available at: http://soils.usda.gov/education/resources/lessons/texture/textural_tri_hi.jpg
6

7 Permanent erosion control blanket or turf reinforcing mat shall consist of UV stabilized fibers,
8 filaments, or netting and shall meet the following requirements:
9

Properties	ASTM Test Method	Requirements
UV Stability	D 4355	Minimum 80 percent strength retained after 500 hours in a xenon arc device
Protecting Slopes from Rainfall-Induced Erosion	D 6459 with 0.12-inch average raindrop size.* Test in one soil type. Soil tested shall be loam as defined by the NRCS Soil Texture Triangle **	Maximum C factor of 0.15 using Revised Universal Soil Loss Equation (RUSLE)
Dry Weight per Unit Area	D 6475	0.50 lb/sq. yd. minimum
Performance in Protecting Earthen Channels from Stormwater-Induced Erosion	D 6460 Test in one soil type. Soil tested shall be loam as defined by the NRCS Soil Texture Triangle**	2.0 lb/sq. ft. minimum
Seed Germination Enhancement	D 7322	200 percent minimum

10 * Utah State Protocol of 2.5:1 slope with rainfall simulated at 5-inches per hour for 60 minute
11 duration, or TTI Protocol of 2:1 slope with rainfall simulated at 3.5-inches per hour with three
12 successive test durations of 30 minutes each test in 24 hour intervals may be substituted.

13 ** Available at: http://soils.usda.gov/education/resources/lessons/texture/textural_tri_hi.jpg
14

15 This section is supplemented with the following new sub-section:
16

17 **9-14.5(2)A Erosion Control Blanket Approval**

18 The Contractor shall select Erosion Control Blanket products that bear the Quality and Data
19 Oversight and Review (QDOR) seal from the Erosion Control and Technology Council (ECTC). All
20 materials selected shall be currently listed on the QDOR products list available at
21 <http://www.ectc.org/qdor>.
22

23 **9-14.5(4) Geotextile - Encased Check Dam**

24 In the second paragraph, the second and third sentences are revised to read:
25

26 The geotextile material shall overhang the foam by at least 6-inches at each end, and shall have
27 apron type flaps that extend a minimum of 24-inches on each side of the check dam. The
28 geotextile material shall meet the requirements for Temporary Silt Fence in Section 9-33.
29

1 **9-14.5(5) Wattles**

2 This section is revised to read:

3
4 Wattles shall consist of cylinders of biodegradable plant material such as straw, coir, compost,
5 wood chips, excelsior, or wood fiber or shavings encased within biodegradable netting. Wattles
6 shall be a minimum of 5-inches in diameter. Netting material shall be clean, evenly woven, and
7 free of encrusted concrete or other contaminating materials such as preservatives. Netting
8 material shall be free from cuts, tears, or weak places and shall have a minimum lifespan of 6
9 months.

10
11 Compost filler shall be Coarse Compost and shall meet the material requirements as specified in
12 Section 9-14.4(8). If wood chips are used they shall meet the material requirements as specified
13 in Section 9-14.4(3). If wood shavings are used, 80 percent of the fibers shall have a minimum
14 length of 6-inches between 0.030 and 0.50-inches wide, and between 0.017 and 0.13-inches
15 thick.

16
17 **9-14.5(6) Compost Sock**

18 This section is revised to read:

19
20 Compost socks shall consist of extra heavy weight biodegradable fabric, with a minimum strand
21 thickness of 5 mils. The fabric shall be filled with Coarse Compost. Compost Socks shall be at
22 least 8-inches in diameter. The fabric shall be clean, evenly woven, and free of encrusted
23 concrete or other contaminating materials and shall be free from cuts, tears, broken or missing
24 yarns, and be free of thin, open, or weak areas and shall be free of any type of preservative.

25
26 Coarse Compost filler shall meet the material requirements as specified in Section 9-14.4(8).

27
28 Wood stakes for compost socks shall be made from untreated Douglas fir, hemlock, or pine
29 species. Wood stakes shall be 2-inch by 2-inch nominal dimension and 36-inches in length,

30
31 **9-14.5(7) Coir Log**

32 This section is revised to read:

33
34 Coir logs shall be made of 100 percent durable coconut (coir) fiber uniformly compacted within
35 woven netting made of bristle coir twine with minimum strength of 80 lbs tensile strength. The
36 netting shall have nominal 2-inch by 2-inch openings. Log segments shall have a maximum length
37 of 20 feet, with a minimum diameter as shown in the Plans. Logs shall have a minimum density of
38 7 lbs/cf.

39
40 Stakes shall be untreated Douglas fir, hemlock, or pine species. Wood stakes shall have a notch
41 to secure the rope ties. Rope ties shall be of ¼-inch diameter commercially available hemp rope.

42
43 **9-14.6(1) Description**

44 The fourth paragraph is revised to read:

45
46 Cuttings are live plant material without a previously developed root system. Source plants for
47 cuttings shall be dormant when cuttings are taken. All cuts shall be made with a sharp instrument.
48 Cuttings may be collected. If cuttings are collected, the requirement to be nursery grown or held in
49 nursery conditions does not apply. Written permission shall be obtained from property owners and
50 provided to the Engineer before cuttings are collected. The Contractor shall collect cuttings in

1 accordance with applicable sensitive area ordinances. Cuttings shall meet the following
2 requirements:

- 3
- 4 A. Live branch cuttings shall have flexible top growth with terminal buds and may have side
5 branches. The rooting end shall be cut at an approximate 45 degree angle.
- 6
- 7 B. Live stake cuttings shall have a straight top cut immediately above a bud. The lower,
8 rooting end shall be cut at an approximate 45 degree angle. Live stakes are cut from one
9 to two year old wood. Live stake cuttings shall be cut and installed with the bark intact
10 with no branches or stems attached, and be ½ to 1½-inch in diameter.
- 11
- 12 C. Live pole cuttings shall have a minimum 2-inch diameter and no more than three
13 branches which shall be pruned back to the first bud from the main stem.

14

15 Rhizomes shall be a prostrate or subterranean stem, usually rooting at the nodes and becoming
16 erect at the apex. Rhizomes shall have a minimum of two growth points. Tubers shall be a
17 thickened and short subterranean branch having numerous buds or eyes.

18

19 **9-14.6(2) Quality**

20 The first paragraph is revised to read:

21

22 At the time of delivery all plant material furnished shall meet the grades established by the latest
23 edition of the American Standard for Nursery Stock, (ASNS) ANSI Z60.1 and shall conform to the
24 size and acceptable conditions as listed in the Contract, and shall be free of all foreign plant
25 material.

26

27 The third paragraph is revised to read:

28

29 All plant material shall be purchased from a nursery licensed to produce plants for sale in
30 Washington State.

31

32 This section is supplemented with the following new paragraph:

33

34 All nurseries and nursery vendors must have a business license issued by the Washington State
35 Department of Licensing with a "Nursery" endorsement. Upon request, the Contractor shall
36 furnish the Engineer with copies of the applicable licenses and endorsements.

37

38 **9-14.6(3) Handling and Shipping**

39 Item numbers 8 and 9 are revised to read:

- 40
- 41 8. Size. (Height, runner length, caliper, etc. as required.)
- 42
- 43 9. Signature of shipper by authorized representative.

44

45 Item numbers 10 and 11 are deleted.

46

47 **9-14.6(7) Temporary Storage**

48 The first paragraph is revised to read:

49

50 Plants stored under temporary conditions prior to installation shall be the responsibility of the
51 Contractor.

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15.AP9

SECTION 9-15, IRRIGATION SYSTEM
January 4, 2010

The first paragraph is supplemented with the following:

When the water supply for the irrigation system is from a non-potable source, irrigation components shall have lavender indicators supplied by the equipment manufacturer.

9-15.3 Automatic Controllers

This section is revised to read:

The automatic controller shall be an electronic timing device for automatically opening and closing control valves for predetermined periods of time. The automatic controller shall be enclosed in a weatherproof, painted, metal housing fabricated from 16 gauge sheet aluminum alloy 6061-T6 or 16 gauge sheet steel or unpainted, non-rusting industrial grade stainless steel. The pedestal shall have a completely removable locking faceplate to allow easy access to wiring.

The automatic controller housing shall have hasp and lock or locking device. All locks or locking devices shall be master keyed and three sets of keys provided to the Engineer. The controller shall be compatible with and capable of operating the irrigation system as designed and constructed and shall include the following operating features:

1. Each controller station shall be adjustable for setting to remain open for any desired period of time, from five minutes or less to at least 99 minutes.
2. Adjustments shall be provided whereby any number of days may be omitted and whereby any one or more positions on the controller can be skipped. When adjustments are made, they shall continue automatically within a 14-day cycle until the operator desires to make new adjustments.
3. Controls shall allow any position to be operated manually, both on or off, whenever desired, without disrupting the 14 day cycle.
4. Controls shall provide for resetting the start of the irrigation cycle at any time and advancing from one position to another.
5. Controllers shall contain a power on-off switch and fuse assembly.
6. Output shall be 24 volt AC with battery back up for memory retention of the 14 day cycle.
7. Both normally-open or normally-closed rain sensor compatibility.

9-15.4 Irrigation Heads

This section is supplemented with the following new paragraph:

All instructions, special wrenches, clamps, tools, and equipment supplied by the manufacturer necessary for the installation and maintenance of the irrigation heads shall be turned over to the Engineer upon completion and acceptance of the project.

9-15.5 Valve Boxes and Protective Sleeves

This section including title is revised to read:

1 **9-15.5 Valve Boxes**

2 Valve boxes shall conform to the Plans and be extendible to obtain the depth required. All manual
3 drain valves and manual control valves shall be installed in valve box with a vandal resistant lid as
4 shown in the Plans.
5

6 **9-15.7(1) Manual Control Valves**

7 The third and fourth sentences are revised to read:

8
9 The Contractor shall furnish three suitable operating keys. Valves shall have removable bonnet
10 and stem assemblies with adjustable packing glands and shall house long acme threaded stems
11 to ensure full opening and closing.
12

13 **9-15.7(2) Automatic Control Valves**

14 In the second paragraph, the first and second sentences are revised to read:

15
16 Valves shall be of a normally closed design and shall be operated by an electronic solenoid having
17 a maximum rating of 6.5 watts utilizing 24 volt AC power. Electronic solenoids shall have a
18 stainless steel plunger and be directly attached to the valve bonnets or body with all control parts
19 fully encapsulated.
20

21 In the fifth sentence of the second paragraph, "electric" is revised to read "electrical".
22

23 **9-15.7(3) Automatic Control Valves With Pressure Regulator**

24 This section is revised to read:

25
26 Automatic control valves with pressure regulators shall be similar to automatic control valves
27 described in Section 9-15.7(2) and shall reduce the inlet pressure to a constant pressure
28 regardless of supply fluctuations. The regulator must be fully adjustable.
29

30 **9-15.8 Quick Coupling Equipment**

31 In the first paragraph, the first and second sentences are revised to read:

32
33 Quick coupler valves shall have a service rating of not less than 125-psi for non-shock cold water.
34 The body of the valves shall be of cast Copper Alloy No. C84400 Leaded Semi-Red Brass
35 conforming to ASTM B 584.
36

37 In the fifth sentence of the first paragraph, "will" is revised to read "shall".
38

39 **9-15.9 Drain Valves**

40 This section is revised to read:

41
42 Drain valves may be a ½-inch or ¾-inch PVC or metal gate valve manufactured for irrigation
43 systems. Valves shall be designed for underground installation with suitable cross wheel for
44 operation with a standard key, and shall have a service rating of not less than 150-psi non-shock
45 cold water. The Contractor shall furnish three standard operating keys per Contract. Drain valves
46 shall be installed in a valve box with a vandal resistant lid as shown in the Plans.
47

48 Drain valves on potable water systems shall only be allowed on the downstream side of approved
49 cross connection control devices.
50

1 **9-15.10 Hose Bibs**

2 The first sentence is revised to read:

3
4 Hose bibs shall be angle type, constructed of bronze or brass, threaded to accommodate a 3/4-inch
5 hose connection, and shall be key operated.
6

7 **9-15.11 Cross Connection Control Devices**

8 This section is revised to read:

9
10 Atmospheric vacuum breaker assemblies (AVBAs), pressure vacuum breaker assemblies
11 (PVBAs), double check valve assemblies (DCVAs), and reduced pressure backflow devices
12 (RPBDs), shall be of a manufacturer and product model approved for use by the Washington
13 State Department of Health, Olympia, Washington or a Department of Health certified agency.
14

15 **9-15.12 Check Valves**

16 The last sentence is revised to read:

17
18 Valves shall have angled seats, Buna-N seals and threaded connections, and shall be installed in
19 8-inch round plastic valve boxes with vandal resistant lids.
20

21 **9-15.14 Three-Way Valves**

22 The last sentence is revised to read:

23
24 When handles are included as an integral part of the valves, the Contractor shall remove the
25 handles and give them to the Engineer for ultimate distribution to the Maintenance Division.
26

27 **9-15.15 Flow Control Valves**

28 The third sentence is revised to read:

29
30 Valves shall be factory set to the flows as shown in the Plans.
31

32 **9-15.17 Electrical Wire and Splices**

33 This section is revised to read:

34
35 Electrical wire used between the automatic controller and automatic control valves shall be solid
36 or stranded copper, minimum size AWG 14. Insulation shall be Type USE Chemically Cross
37 Linked Polyethylene or Type UF, and shall be listed by a National recognized Testing Laboratory.
38 Each conductor shall be color coded and marked at each end and at all splices with zone or
39 station number identification.
40

41 Low voltage splices shall be made with a direct bury splice kit using a twist-on wire connector and
42 inserted in a waterproof polypropylene tube filled with a silicone electrical insulating gel, or heat
43 shrinkable insulating tubing. Heat shrinking insulating tubing shall consist of a mastic lined heavy
44 wall polyolefin cable sleeve.
45

46 **9-15.18 Detectable Marking Tape**

47 The first paragraph is revised to read:

48 Detectable marking tape shall consist of inert polyethylene plastic that is impervious to all known
49 alkalis, acids, chemical reagents, and solvents likely to be encountered in the soil, with a metallic
50 foil core to provide for the most positive detection and pipeline location.

1
2 In the second paragraph, the first and second sentences are revised to read:

3
4 The tape shall be color coded and shall be imprinted continuously over its entire length in
5 permanent black ink indicating the type of line buried below and shall also have the word
6 "Caution" prominently shown.

7
8 The last paragraph is revised to read:

9
10 The width of the tape shall be as recommended by the manufacturer based on depth of
11 installation.
12

13 16.AP9

14 **SECTION 9-16, FENCE AND GUARDRAIL**
15 **January 4, 2010**

16 **9-16.3(2) Posts and Blocks**

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

18
19 Timber posts and blocks shall conform to the grade specified in Section 9-09.2.
20

21 22.AP9

22 **SECTION 9-22, MONUMENT CASES**
23 **January 4, 2010**

24 **9-22.1 Monument Cases, Covers, and Risers**

25 In the first sentence, "Class 30B" is revised to read "Class 35B".
26

27 23.AP9

28 **SECTION 9-23, CONCRETE CURING MATERIALS AND ADMIXTURES**
29 **April 5, 2010**

30 **9-23.1 Sheet Materials for Curing Concrete**

31 In the first paragraph, "AASHTO M 171" is revised to read "ASTM C 171".
32

33 **9-23.2 Liquid Membrane Forming Concrete Curing Compounds**

34 In the first sentence of the first paragraph, "AASHTO M 148" is deleted and "(ASTM C 309)" is revised
35 to read "ASTM C 309".
36

37 29.AP9

38 **SECTION 9-29, ILLUMINATION, SIGNAL, ELECTRICAL**
39 **April 5, 2010**

40 In this division, all references to "hot-dipped" are revised to read "hot-dip".

1
2 **9-29.1(2)A Expansion Fittings, Deflection Fittings, and Combination**
3 **Expansion/Deflection Fittings**

4 The following new paragraph is inserted after the first paragraph:

5
6 Expansion fittings for use with PVC shall allow for 4-inches of movement minimum (2-inches in
7 each direction). Expansion fittings for PVC conduit shall be PVC and have threaded terminal
8 adaptor or coupling end and shall meet the requirements listed in Section 9-29.1(4)A.

9
10 **9-29.4 Messenger Cable, Fittings**

11 This section is supplemented with the following:

12
13 Messenger cable shall be $\frac{3}{8}$ -inch, 7-wire strand messenger cables conforming to ASTM A 475,
14 extra-high-strength grade, 15,400 pounds minimum breaking strength, Class A galvanized.

15
16 Strain insulators shall be wet process, porcelain, conforming to EEI-NEMA Class 54-2 standards
17 for 12,000 pound ultimate strength.

18
19 Down guy assembly shall consist of an eight-way steel expanding anchor, having a minimum area
20 of 300 square inches, made of pressed steel, coated with asphalt or similar preservative, and
21 fitted with a $\frac{3}{4}$ -inch minimum guy eye anchor rod 8-feet long. As an alternate to expanding
22 anchors, screw type anchors with two 8-inch helix, $3\frac{1}{2}$ -inch-pitch, 1-inch by 7 foot guy anchor rod,
23 and rated for 7,000 pound maximum torque may be installed.

24
25 All pole hardware, bolts, plate rods, hangers, clips, wire guards, and pole bands shall be hot-
26 dipped galvanized in conformance with the requirements of AASHTO M 232.

27
28 **9-29.6(5) Foundation Hardware**

29 The first paragraph is revised to read:

30
31 Anchor bolts for Type PPB, PS, I, FB, and RM signal standards shall conform to the requirements
32 of ASTM F1554, grade 55. Nuts shall meet the requirements of AASHTO M 291, grade A.
33 Washers shall meet the requirements of ASTM F 844 or ASTM F 436.

34
35 **9-29.7 Luminaire Fusing and Electrical Connections at Light Standard Bases,**
36 **Cantilever Bases and Sign Bridge Bases**

37 The content of this section is revised and moved to the following new sub-sections:

38
39 **9-29.7(1) Unfused Quick-Disconnect**

40 Unfused quick-disconnect connector kits shall conform to the following requirements:

- 41
42 1. The copper pin and copper receptacle shall be a crimped type of connection or a
43 stainless steel set screw and lug connection to the cable. The receptacle shall establish
44 contact pressure with the pin through the use of a tinned copper or copper beryllium
45 sleeve spring and shall be equipped with a disposable mounting pin. The receptacle shall
46 be fully annealed. Both the copper pin and receptacle shall have a centrally located
47 recessed locking area adapted to be complementarily filled and retained by the rubber
48 housing.

2. The plug and receptacle housing shall be made of water resistant synthetic rubber which is capable of burial in the ground or installation in sunlight. Each housing shall provide a section to form a water-seal around the cable, have an interior arrangement to suitably and complementarily receive and retain the copper pin or receptacle, and a section to provide a water-seal between the two housings at the point of disconnection.
3. The kit shall provide waterproof in-line connector protection with three cutoff sections on both the line and load side to accommodate various wire sizes. All connections shall be as described in item "1" above. Upon disconnect, the connector shall remain in the load side of the kit.

9-29.7(2) Fused Quick-Disconnect

Fused quick-disconnect kits shall provide waterproof in-line fuse protection. The kit shall provide three cutoff sections on both lines and load side to accommodate various wire sizes. All connections shall be as described in item "1" above. Upon disconnect, the fuse shall remain in the load side of the kit.

Fuses furnished for all lighting circuits shall be capable of handling the operating voltage of the circuit involved and shall have the following characteristics:

1. Fuses shall be capable of indefinitely supporting 110 percent of the rated load.
2. Fuses shall be capable of supporting 135 percent of the rated load for approximately 1 hour.
3. A load of 200 percent of rated load shall effectively cause instantaneous blowing of the fuse.
4. Fuses shall be rated as listed below and shall be sized to fit the fuse containers furnished on this project, according to the manufacturer's recommendations therefore.
5. Fuses shall be listed by a nationally recognized testing laboratory.

Luminaire Size	Service Voltage		
	480V	240V	120V
1,000W	10A	15A	30A
750W	5A	10A	20A
700W	5A	10A	20A
400W	5A	10A	15A
310W	5A	5A	10A
250W	5A	5A	10A
200W	4A	5A	10A
175W	4A	5A	10A
150W	3A	4A	5A
100W	2A	3A	4A
70W	2A	2A	2A
50W	2A	2A	2A

1 **9-29.9 Ballast, Transformers**

2 This sections content is deleted and replaced with:

3
4 Heat-generating components shall be mounted to use the portion of the luminaire upon which they
5 are mounted as a heat sink. Capacitors shall be located as far as practicable from heat-generating
6 components or shall be thermally shielded to limit the fixture temperature to 160°F.

7
8 Transformers and inductors shall be resin-impregnated for protection against moisture.
9 Capacitors, except those in starting aids, shall be metal cased and hermetically sealed.

10
11 No capacitor, transformer, or other device shall employ the class of compounds identified as
12 polychlorinated biphenyls (PCB) as dielectric, coolants, or for any other purpose.

13
14 This section is supplemented with the following new sub-sections:

15
16 **9-29.9(1) Ballast**

17 Each ballast shall have a name plate attached permanently to the case listing all electrical data.

18
19 A Manufacturer's Certificate of Compliance in accordance with Section 1-06.3 meeting the
20 manufacturers and these Specification requirements, shall be submitted by the Contractor with
21 each type of luminaire ballast.

22
23 Ballasts shall be designed for continuous operation at ambient air temperatures from 20°F without
24 reduction in ballast life. Ballasts shall have a design life of not less than 100,000 hours. Ballasts
25 shall be designed to operate for at least 180 cycles of 12 hours on and 12 hours off, with the lamp
26 circuit in an open or short-circuited condition and without measurable reduction in the operating
27 requirements. All ballasts shall be high power factor (90%).

28
29 Ballasts shall be tested in accordance with the requirements of current ANSI C 82.6, Methods of
30 Measurement of High-Intensity-Discharge Lamp Ballasts. Starting aids for ballasts of a given lamp
31 wattage shall be interchangeable between ballasts of the same wattage and manufacturer without
32 adjustment.

33
34 Ballast assemblies shall consist of separate components, each of which shall be capable of being
35 easily replaced. A starting aid will be considered as a single component. Each component shall be
36 provided with screw terminals, NEMA tab connectors or a single multi-circuit connector. All
37 conductor terminals shall be identified as to the component terminal to which they connect.

38
39 Ballasts for high-pressure sodium lamps shall have a ballast characteristic curve which will
40 intersect both of the lamp-voltage limit lines between the wattage limit lines and remain between
41 the wattage limit lines throughout the full range of lamp voltage. This requirement shall be met not
42 only at the rated input voltage of the ballast, but also the lowest and highest input voltage for
43 which the ballast is rated. Throughout the lifetime of the lamp, the ballast curve shall fall within the
44 specified limits of lamp voltage and wattage.

45
46 All luminaires ballasts shall be located within the luminaire housing. The only exception shall be
47 ballasts to be mounted on lowering assemblies and shall be external to, and attached to the fixture
48 assembly.

49
50 Ballast Characteristics for High Pressure Sodium (HPS) and Metal Halide (MH) Sources shall be:

Source	Line Volt.	Lamp Wattage	Ballast Type	Input Voltage Variation	Lamp Wattage Variation
HPS	any	70 400	Mag. Reg. Lag	10%	18%
HPS	any	750 1000	Auto Reg. Lead CWA	10%	30%
MH	any	175 400	Mag. Reg. Lag	10%	18%
MH	any	1000	Auto Reg. Lead CWA	10%	30%

1
2
3 **9-29.9(2) Transformers**

4 The transformers to be furnished shall be indoor/outdoor dry type transformers rated as shown in
5 the Plans. The transformer coils, buss bar, and all connections shall be copper. Transformers, 7.5
6 KVA and larger shall be supplied with two full capacity taps, one at 5% and one at 10% below the
7 normal full capacity.
8

9 **9-29.10 Luminaires**

10 This section is revised to read:

11
12 All luminaires shall have their components secured to the luminaire frame with ANSI, 300 series
13 chrome-nickel grade stainless steel, zinc dichromate coated steel or ceramic coated steel
14 hardware. The luminaire slip-fitter bolts shall be either stainless steel, hot-dip galvanized steel,
15 zinc dichromate coated steel, or ceramic coated steel. All internal luminaire assemblies shall be
16 assembled on or fabricated from either stainless steel or galvanized steel. The housing, complete
17 with integral ballast, shall be weathertight.
18

19 The temperature rating of all wiring internal to the luminaire housing, excluding the pole and
20 bracket cable, shall equal or exceed 200°F .
21

22 All luminaires shall be provided with markers for positive identification of light source type and
23 wattage. Markers shall be 3-inches square with Gothic bold, black 2-inch legend on colored
24 background. Background color shall be gold for high pressure sodium, and red for metal halide
25 light sources. Legends shall be sealed with transparent film resistant to dust, weather, and
26 ultraviolet exposure.
27

28 Legends shall correspond to the following code:
29

Lamp	Wattage Legend
70	7
100	10
150	15
175	17

200	20
250	25
310	31
400	40
700	70
750	75
1,000	XI

1
2
3 **9-29.10(1) Cobra Head Luminaires**

4 This sections content including title is revised to read:

5
6 **9-29.10(1) Conventional Roadway Luminaires**

- 7 A. Conventional highway luminaires shall be IES Type III medium distribution cut off cobra head
8 configuration with horizontal lamp, rated at 24,000 hours minimum.
9
- 10 B. The ballast shall be mounted on a separate exterior door, which shall be hinged to the
11 luminaire and secured in the closed position to the luminaire housing by means of an
12 automatic type of latch (a combination hex/slot stainless steel screw fastener may
13 supplement the automatic type latch).
14
- 15 C. The reflector of all luminaires shall be of a snap-in design or be secured with screws. The
16 reflector shall be manufactured of polished aluminum or molded from prismatically formed
17 borosilicate glass. The refractor or lens shall be mounted in a doorframe assembly which
18 shall be hinged to the luminaire and secured in the closed position to the luminaire by means
19 of automatic latch. The refractor or lens and doorframe assembly, when closed, shall exert
20 pressure against a gasket seat. The refractor lens shall not allow any light output above 90
21 degrees nadir. Gaskets shall be composed of material capable of withstanding temperatures
22 involved and shall be securely held in place.
23
- 24 D. Each housing shall be provided with a four bolt slipfitter capable of mounting on a 2-inch pipe
25 tenon and capable of being adjusted within 5 degrees from the axis of the tenon. The
26 clamping bracket(s) and the cap screws of the slipfitter shall not bottom out on the housing
27 bosses when adjusted within the ± 5 degree range.
28

29 No part of the slipfitter mounting brackets on the luminaires shall develop a permanent set in
30 excess of 0.2-inch when the cap screws used for mounting are tightened to a torque of 32 pounds
31 feet.
32

- 33 E. Refractors shall be formed from heat resistant, high impact, molded borosilicate glass. Flat
34 lens shall be formed from heat resistant, high impact borosilicate or tempered glass.
35
- 36 F. High pressure sodium conventional roadway luminaires shall be capable of accepting a 150,
37 200, 250, 310, or 400 watt lamp complete with ballast.
38

- 1 G. Housings shall be fabricated from aluminum. Painted housings shall be painted flat gray,
2 Federal Standard 595 color chip No. 26280. Housings that are painted shall withstand a
3 1,000-hour salt spray test as specified in ASTM B 117.
4
5 H. All luminaires to be mounted on horizontal mast arms, shall be capable of withstanding cyclic
6 loading in:
7
8 1. A vertical plane at a minimum peak acceleration level of 3.0 g's peak-to-peak sinusoidal
9 loading (same as 1.5 g's peak) with the internal ballast removed, for a minimum of 2
10 million cycles without failure of any luminaire parts, and;
11
12 2. A horizontal plane perpendicular to the direction of the mast arm at a minimum peak
13 acceleration level of 1.5 g's peak to peak sinusoidal loading (same as 0.75 g's peak) with
14 the internal ballast installed, for a minimum of 2 million cycles without failure of any
15 luminaire parts.
16
17 I. All luminaires shall have leveling reference points for both transverse and longitudinal
18 adjustment. Luminaires shall have slip-fitters capable of adjusting through a 5-degree axis for
19 the required leveling procedure.
20

21 **9-29.10(2) Decorative Luminaires**

22 In the first paragraph, "150 - 400" is revised to read "50 - 400".

23
24 In the second paragraph, "box shaped" is deleted.

25
26 In the third paragraph, the first sentence is deleted. The second sentence is revised to read:

27
28 The ballast housing shall be adequately constructed to contain ballasts for 50 - 400 watt alternate
29 high intensity discharge sources.

30
31 The fourth paragraph is revised to read:

32
33 Each housing shall consist of an integral reflector, containing a mogul based high intensity
34 discharge lamp, and a one piece heat and shock resistant, clear tempered lens mounted in a
35 gasketed, hinged frame. The reflector shall be a snap-in design or secured with screws. The
36 reflector assembly shall have a lamp vibration damper. The reflector shall be manufactured of
37 polished aluminum or molded from prismatically formed borosilicate glass. The housing shall
38 have a heat resistant finish. The lens frame shall be secured to the housing with ANSI, 300 series
39 chrome-nickel grade stainless steel, zinc dichromate coated steel or ceramic coated steel
40 hardware.
41

42 The last sentence in the fifth paragraph is deleted.

43
44 The sixth paragraph is deleted.

45
46 The seventh paragraph is revised to read:

47
48 The finish shall meet the requirements of ASTM B 117 with the exception that the finish shall be
49 salt spray resistant after 300 hours exposure .
50

51 The first sentence in the eight paragraph is deleted.

1
2 **9-29.10(3) High Mast Luminaires and Post Top Luminaires**

3 This sections content including title is deleted and replaced with:

4
5 **9-29.10(3) Vacant**

6
7 **9-29.10(5) Sign Lighting Luminaires**

8 This section is revised to read:

9
10 Sign lighting luminaires shall be the Induction Bulb type.

11
12 **9-29.10(5)A Sign Lighting Luminaires - Mercury Vapor**

13 This section including title is revised to read:

14
15 **9-29.10(5)A Sign Lighting Luminaires – Isolation Switch**

16 The isolation switch shall be installed in a terminal cabinet in accordance with Section 9-29.25
17 with the exception that the cabinet shall be NEMA 3R and stainless steel. The terminal cabinet
18 shall be installed in accordance to the Standard Plans. The switch shall be either single pole,
19 single throw, or double pole single throw as necessary to open all conductors to the luminaires
20 other than neutral and ground conductors. The switch shall contain 600 volt alternating current
21 (VAC) terminal strips on the load side with solderless lugs as required for each load carrying
22 conductor plus four spare lugs per strip.

23
24 **9-29.10(5)B Sign Lighting Fixtures - Induction**

25 The first sentence is revised to read:

26
27 Sign lighting luminaires shall have a cast aluminum housing and door assembly with a polyester
28 paint finish.

29
30 In the second sentence of the sixth paragraph, "87" is revised to read "85".

31
32 In the last sentence of the sixth paragraph, "Class a" is revised to read "Class A".

33
34 The first sentence of the last paragraph is revised to read:

35
36 A Manufacturer's Certificate of Compliance, conforming to Section 1-06.3 "Manufacturer's
37 Certificates of Compliance" and a copy of the high frequency generator test methods and results
38 shall be submitted by the manufacturer with each lot of sign lighting fixtures.

39
40 **9-29.12 Electrical Splice Materials**

41 This section is revised to read:

42
43 Circuit splicing materials shall meet the following specifications.

44
45 **9-29.12(1) Illumination Circuit Splices**

46 This section is revised to read:

47
48 Illumination circuit splices shall be split bolt vice type connectors or solderless crimped
49 connections to securely join the wires both mechanically and electrically as defined in Section 8-
50 20.3(8).

1
2 This section is supplemented with the following new sub-sections:
3

4 **9-29.12(1)A Heat Shrink Splice Enclosure**

5 Heat shrink insulating materials shall be the moisture blocking mastic type meeting Mil Spec I
6 230053
7

8 **9-29.12(1)B Molded Splice Enclosure**

9 Epoxy resin cast type insulation shall employ a clear rigid plastic mold or a clear mylar sheet
10 bonded to butyrate webbing forming a flexible mold. The material used shall be compatible with
11 the insulation material of the insulated conductor or cable. The component materials of the resin
12 insulation shall be packaged ready for convenient mixing without removing from the package.
13

14 **9-29.12(2) Traffic Signal Splice Material**

15 This section is revised to read:
16

17 Induction loop splices and magnetometer splices shall include an uninsulated barrel type crimped
18 connector capable of being soldered. The insulating material shall be a heat shrink type meeting
19 requirements of Section 9-29.12(1)A, an epoxy resin cast type with clear rigid plastic mold
20 meeting the requirements of Section 9-29.12(1)B, or a re-enterable type with silicone type filling
21 compound that remains flexible and enclosed in a re-enterable rigid mold that snaps together.
22

23 **9-29.15 Flashing Beacon Control**

24 In the first paragraph, the first word "Flashers" is revised to read "Line voltage flashers".
25

26 **9-29.18 Vehicle Detector**

27 The first paragraph is revised to read:
28

29 Induction loop detectors and magnetometer detectors shall comply with current NEMA
30 Specifications when installed with NEMA control assemblies and shall comply with the current
31 California Department of Transportation document entitled "Transportation Electrical Equipment
32 Specifications," specified in Section 9-29.13(7) when installed with Type 170, Type 2070 or NEMA
33 control assemblies.
34

35 30.AP9

36 **SECTION 9-30, WATER DISTRIBUTION MATERIALS**

37 **January 4, 2010**

38 **9-30.1(1) Ductile Iron Pipe**

39 In the first paragraph, number 1. and 2. are revised to read:
40

- 41 1. Ductile iron pipe shall meet the requirements of AWWA C151. Ductile iron pipe shall have a
42 cement mortar lining, and a 1 mil thick seal coat meeting the requirements of AWWA C104.
43 Ductile iron pipe to be joined using bolted flanged joints shall be Special Thickness Class 53.
44 All other ductile iron pipe shall be Special Thickness Class 50, minimum Pressure Class 350,
45 or the class indicated on the Plans or in the Special Provisions.
46
- 47 2. Nonrestrained joints shall be either rubber gasket type, push on type, or mechanical type
48 meeting the requirements of AWWA C111.

1
2 **9-30.1(2) Polyethylene Encasement**

3 This section is revised to read:

4
5 Polyethylene encasement shall be tube-form, high density cross-laminated polyethylene film, or
6 linear low density polyethylene film, meeting the requirements of ANSI/AWWA C105. Color shall
7 be natural or black.
8
9

10 33.AP9

11 **SECTION 9-33, CONSTRUCTION GEOSYNTHETIC**
12 **April 5, 2010**

13 **9-33.4(3) Acceptance Samples**

14 The third paragraph is revised to read:

15
16 Samples from the geosynthetic roll will be taken to confirm the material meets the property values
17 specified. Samples will be randomly taken at the job site by the Contractor in accordance with
18 WSDOT T 914 in the presence of the Project Engineer.
19

20 The first sentence in the sixth paragraph is revised to read:

21
22 For each geosynthetic roll that is tested and fails the Project Engineer will select two additional
23 rolls from the same lot for sampling and retesting. The Contractor shall sample the rolls in
24 accordance with WSDOT T 914 in the presence of the Project Engineer.
25

26 35.AP9

27 **SECTION 9-35, TEMPORARY TRAFFIC CONTROL MATERIALS**
28 **January 4, 2010**

29 **9-35.0 General Requirements**

30 In the first paragraph, the item "Truck Mounted Attenuator" is revised to read "Transportable
31 Attenuator".
32

33 In the second paragraph, the third sentence is revised to read:

34
35 Unless otherwise noted, Requests for Approval of Material (RAM) and Qualified Products List
36 (QPL) submittals are not required.
37

38 **9-35.12 Truck-Mounted Attenuator**

39 This section including title is revised to read:

40
41 **9-35.12 Transportable Attenuator**

42 Transportable attenuators are Truck-Mounted Attenuators (TMA) or Trailer-Mounted Attenuators
43 (TMA-trailer). The transportable attenuator shall be mounted on, or attached to a host vehicle with
44 a minimum weight of 15,000 pounds and a maximum weight in accordance with the
45 manufacturer's recommendations. Ballast used to obtain the minimum weight requirement, or any
46 other object that is placed on the vehicle shall be securely anchored such that it will be retained on

1 the vehicle during an impact. The Contractor shall provide certification that the transportable
2 attenuator complies with NCHRP 350 Test level 3 requirements. Lighter host vehicles proposed by
3 the Contractor are subject to the approval of the Engineer. The Contractor shall provide the
4 Engineer with roll-ahead distance calculations and crash test reports illustrating that the proposed
5 host vehicle is appropriate for the attenuator and the site conditions.
6

7 The transportable attenuator shall have a chevron pattern on the rear of the unit. The standard
8 chevron pattern shall consist of 4-inch yellow stripes, alternating non-reflective black and retro-
9 reflective yellow sheeting, slanted at 45 degrees in an inverted "V" with the "V" at the center of the
10 unit.
11

12 This section is supplemented with the following new sub-sections:
13

14 **9-35.12(1) Truck-Mounted Attenuator**

15 The TMA may be selected from the approved units listed on the QPL or submitted using a RAM.
16

17 The TMA shall have an adjustable height so that it can be placed at the correct elevation during
18 usage and to a safe height for transporting. If needed, the Contractor shall install additional lights
19 to provide fully visible brake lights at all times.
20

21 **9-35.12(2) Trailer-Mounted Attenuator**

22 The TMA-trailer may be selected from the approved units listed on the QPL or submitted using a
23 RAM.
24

25 If needed, the Contractor shall install additional lights to provide fully visible brake lights at all
26 times.
27

28 **9-35.12(3) Submittal Requirements**

29 For transportable attenuators listed on the QPL, the Contractor shall submit the QPL printed page
30 or a QPL Acceptance Code entered on the RAM (WSDOT Form 350-071EF) for the product
31 proposed for use to the Engineer for approval. The Contractor shall submit a RAM for
32 transportable attenuators not listed on the QPL.
33
34
35