April 6, 2015 Amendment and GSP Official Update Package

The following contains the Amendments & GSPs that consist of the April 6, 2015 Update Package. Only the changed documents are included in this package and any unchanged sections from the last update are not included. To view all Amendments and GSPs, please visit our website: www.wsdot.wa.gov/Business/Construction/SpecificationsAmendmentsGSPs

The package is set up with three parts. The first part is an itemized list of the file names and a brief description of the change. The second part is the Amendments with a memo detailing the changes. The third part is the GSPs with a memo detailing the changes. Please use the PDF bookmarks to navigate around this update package electronically.

If you choose to print this package, we suggest printing double sided to save paper and it is formatted to start new sub-sections on the right hand page.

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Changes that occurred for the last quarterly update package (April 6, 2015)
Posted: April 6, 2015
Update Corresponding Indexes

File	GSP/Amendment	Date of Change	Revision/Deletion/Rename/New
3-04.AP3	Amendment	4/6/2015	Revised
5-04.AP5	Amendment	4/6/2015	Revised
5-05.AP5	Amendment	4/6/2015	Revised
6-02.AP6	Amendment	4/6/2015	Revised
6-03.AP6	Amendment	4/6/2015	Revised
6-19.AP6	Amendment	4/6/2015	Revised
8-20.AP8	Amendment	4/6/2015	Revised
8-21.AP8	Amendment	4/6/2015	New
8-22.AP8	Amendment	4/6/2015	Revised
9-02.AP9	Amendment	4/6/2015	New
9-03.AP9	Amendment	4/6/2015	Revised
9-07.AP9	Amendment	4/6/2015	Revised
9-29.AP9	Amendment	4/6/2015	Revised
5-04.2.INST2.GR5	GSP Instruction	4/6/2015	Deleted
5-04.2.OPT8.GR5	GSP Option	4/6/2015	Deleted
5-04.2(9-02.1).GR5	GSP Instruction	4/6/2015	Deleted
5-04.2(9-02.1).OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.2(9-02.1(4)).GR5	GSP Instruction	4/6/2015	Deleted
5-04.2(9-02.1(4)).OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.2(9-03.8(2)).GR5	GSP Instruction	4/6/2015	Deleted
5-04.2(9-03.8(2)).OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.2(9-03.8(3)B).GR5	GSP Instruction	4/6/2015	Deleted
5-04.2(9-03.8(3)B).OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.2(9-03.21(1)).GR5	GSP Instruction	4/6/2015	Deleted
5-04.2(9-03.21(1)).OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.3(1).INST1.GR5	GSP Instruction	4/6/2015	Deleted
5-04.3(1).OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.3(5)C.OPT1.GR5	GSP Option	4/6/2015	Revised
5-04.3(5)C.OPT7.GR5	GSP Option	4/6/2015	Revised
5-04.3(5)C.OPT8.GR5	GSP Option	4/6/2015	Revised

File	GSP/Amendment	Date of Change	Revision/Deletion/Rename/New
5-04.3(7).INST1.GR5	GSP Instruction	4/6/2015	Deleted
5-04.3(7).OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.3(7)A1.INST1.GR5	GSP Instruction	4/6/2015	Deleted
5-04.3(7)A1.OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.3(7)A2.INST1.GR5	GSP Instruction	4/6/2015	Deleted
5-04.3(7)A2.OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.3(7)A3.INST2.GR5	GSP Instruction	4/6/2015	Deleted
5-04.3(7)A3.OPT2.GR5	GSP Option	4/6/2015	Deleted
5-04.3(8).INST1.GR5	GSP Instruction	4/6/2015	Deleted
5-04.3(8).OPT1.GR5	GSP Option	4/6/2015	Deleted
5-04.3(8)A4.INST1.GR5	GSP Instruction	4/6/2015	Deleted
5-04.3(8)A4.OPT1.FR5	GSP Option	4/6/2015	Deleted
5-04.3(8)A4.OPT2.FR5	GSP Option	4/6/2015	Deleted
5-04.3(8)A7.INST2.GR5	GSP Instruction	4/6/2015	Deleted
5-04.3(8)A7.OPT2.GR5	GSP Option	4/6/2015	Deleted
5-04.3(10)B1.INST2.GR5	GSP Option	4/6/2015	Deleted
5-04.3(10)B1.OPT3.GR5	GSP Option	4/6/2015	Deleted
5-04.3(10)B1.OPT8.GR5	GSP Option	4/6/2015	Deleted
6-07.3(10)D.OPT1.FB6	GSP Option	4/6/2015	Revised
6-13.2.OPT3.GB6	GSP Option	4/6/2015	Revised
6-13.2.OPT3(A).GB6	GSP Option	4/6/2015	Deleted
6-13.3.OPT3.GB6	GSP Option	4/6/2015	Revised
6-13.3.OPT3(A).GB6	GSP Option	4/6/2015	Deleted
6-13.3(2).OPT1(A).GB6	GSP Option	4/6/2015	Deleted
8-01.5.OPT2.GR8	GSP Option	4/6/2015	Revised
8-01.3(1)B.OPT1.GR8	GSP Option	4/6/2015	Deleted
8-11.2.OPT3.GR8	GSP Option	4/6/2015	Revised
8-11.2(9-16.3(1)).OPT1.GR8	GSP Option	4/6/2015	Revised
8-11.2(9-16.3(2)).OPT5.GR8	GSP Option	4/6/2015	Revised
8-11.4.OPT3.GR8	GSP Option	4/6/2015	Revised
8-11.5.OPT9.GR8	GSP Option	4/6/2015	Revised
8-20.2(9-29.6).OPT1.GR8	GSP Option	4/6/2015	Revised
8-20.2(9-29.6).OPT2.GR8	GSP Option	4/6/2015	Revised

File	GSP/Amendment	Date of Change	Revision/Deletion/Rename/New
8-20.2(9-29.6).OPT3.GR8	GSP Option	4/6/2015	Revised
8-20.2(9-29.6).OPT4.GR8	GSP Option	4/6/2015	Revised
8-20.2(9-29.6).OPT5.GR8	GSP Option	4/6/2015	Revised
8-20.2(9-29.6).OPT6.GR8	GSP Option	4/6/2015	Revised
STDPLANS.GR9	GSP Option	4/6/2015	Revised

BSP to GSP Conversion Log
Posted: April 6, 2015

Original BSP	New GSP
2-09.3(3)B.OPT1.BSP.FB2	2-09.3(3)B.OPT1.FB2
6-01.5.OPT1.BSP.FB6	6-01.5.OPT1.FB6
6-01.5.OPT1(A).BSP.FB6	6-01.5.OPT1(A).FB6
6-01.5.OPT1(B).BSP.GB6	6-01.5.OPT1(B).GB6
6-01.5.OPT2.BSP.FB6	6-01.5.OPT2.FB6
6-02.2.OPT26.BSP.GB6	6-02.2.OPT26.GB6
6-02.2.OPT27.BSP.GB6	6-02.2.OPT27.GB6
6-02.2.OPT28.BSP.GB6	6-02.2.OPT28.GB6
6-02.2.OPT55.BSP.GB6	6-02.2.OPT55.GB6
6-02.2.OPT58.BSP.GB6	6-02.2.OPT58.GB6
6-02.2.OPT60.BSP.GB6	6-02.2.OPT60.GB6
6-02.2.OPT60(B).BSP.GB6	6-02.2.OPT60(B).GB6
6-02.2.OPT60(C).BSP.GB6	6-02.2.OPT60(C).GB6
6-02.2.OPT60(D).BSP.GB6	6-02.2.OPT60(D).GB6
6-02.2.OPT60(E).BSP.GB6	6-02.2.OPT60(E).GB6
6-02.2.OPT60(F).BSP.GB6	6-02.2.OPT60(F).GB6
6-02.3(2).OPT1.BSP.GB6	6-02.3(2).OPT1.GB6
6-02.3.OPT8.BSP.GB6	6-02.3.OPT8.GB6
6-02.3.OPT8(A).BSP.GB6	6-02.3.OPT8(A).GB6
6-02.3.OPT8(B).BSP.GB6	6-02.3.OPT8(B).GB6
6-02.3.OPT8(C).BSP.GB6	6-02.3.OPT8(C).GB6
6-02.3.OPT8(D).BSP.GB6	6-02.3.OPT8(D).GB6
6-02.3.OPT8(E).BSP.GB6	6-02.3.OPT8(E).GB6
6-02.3.OPT8(F).BSP.FB6	6-02.3.OPT8(F).FB6
6-02.3.OPT8(G).BSP.FB6	6-02.3.OPT8(G).FB6
6-02.3.OPT8(H).BSP.GB6	6-02.3.OPT8(H).GB6
6-02.3.OPT8(J).BSP.GB6	6-02.3.OPT8(J).GB6
6-02.3.OPT8(K).BSP.GB6	6-02.3.OPT8(K).GB6
6-02.3.OPT8(L).BSP.GB6	6-02.3.OPT8(L).GB6
6-02.3.OPT8(M).BSP.GB6	6-02.3.OPT8(M).GB6
6-02.3.OPT9.BSP.GB6	6-02.3.OPT9.GB6
6-02.3.OPT10.BSP.GB6	6-02.3.OPT10.GB6
6-02.3(10)D.OPT12.BSP.GB6	6-02.3(10)D.OPT12.GB6
6-02.3(13).OPT7.BSP.GB6	6-02.3(13).OPT7.GB6
6-02.3(13).OPT7(A).BSP.GB6	6-02.3(13).OPT7(A).GB6
6-02.3(13).OPT7(B).BSP.GB6	6-02.3(13).OPT7(B).GB6
6-02.3(13).OPT7(C).BSP.GB6	6-02.3(13).OPT7(C).GB6
6-02.3(13).OPT7(D).BSP.FB6	6-02.3(13).OPT7(D).FB6
6-02.3(13).OPT7(E).BSP.FB6	6-02.3(13).OPT7(E).FB6
6-02.3(13).OPT7(F).BSP.GB6	6-02.3(13).OPT7(F).GB6
6-02.3(13).OPT7(G).BSP.GB6	6-02.3(13).OPT7(G).GB6
6-02.3(13).OPT7(H).BSP.GB6	6-02.3(13).OPT7(H).GB6
6-02.3(13).OPT7(I).BSP.GB6	6-02.3(13).OPT7(I).GB6
6-02.3(13).OPT7(J).BSP.GB6	6-02.3(13).OPT7(J).GB6

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6-02.3(14).OPT25.BSP.GB6	6-02.3(14).OPT25.GB6
6-02.3(19)B.OPT6.BSP.GB6	6-02.3(19)B.OPT6.GB6
6-02.3(24)D.OPT1.BSP.GB6	6-02.3(24)D.OPT1.GB6
6-02.3(24)E.OPT2.BSP.GB6	6-02.3(24)E.OPT2.GB6
6-02.4.OPT8.BSP.FB6	6-02.4.OPT8.FB6
6-02.4.OPT18.BSP.GB6	6-02.4.OPT18.GB6
6-02.4.OPT32.BSP.GB6	6-02.4.OPT32.GB6
6-02.4.OPT42.BSP.GB6	6-02.4.OPT42.GB6
6-02.4.OPT43.BSP.GB6	6-02.4.OPT43.GB6
6-02.4.OPT44.BSP.FB6	6-02.4.OPT44.FB6
6-02.4.OPT45.BSP.FB6	6-02.4.OPT45.FB6
6-02.4.OPT47.BSP.GB6	6-02.4.OPT47.GB6
6-02.5.OPT20.BSP.GB6	6-02.5.OPT20.GB6
6-02.5.OPT33.BSP.GB6	6-02.5.OPT33.GB6
6-02.5.OPT43.BSP.GB6	6-02.5.OPT43.GB6
6-02.5.OPT58.BSP.GB6	6-02.5.OPT58.GB6
6-02.5.OPT59.BSP.FB6	6-02.5.OPT59.FB6
6-02.5.OPT70.BSP.GB6	6-02.5.OPT70.GB6
6-02.5.OPT71.BSP.GB6	6-02.5.OPT71.GB6
6-02.5.OPT72.BSP.GB6	6-02.5.OPT72.GB6
6-02.5.OPT73.BSP.GB6	6-02.5.OPT73.GB6
6-02.5.OPT75.BSP.GB6	6-02.5.OPT75.GB6
6-03.3(25).OPT2.BSP.GB6	6-03.3(25).OPT2.GB6
6-03.3(7)A.OPT1.BSP.GB6	6-03.3(7)A.OPT1.GB6
6-03.3(7)A.OPT2.BSP.GB6	6-03.3(7)A.OPT2.GB6
6-03.3(27)B.OPT1.BSP.FB6	6-03.3(27)B.OPT1.FB6
6-03.3(30).OPT6.BSP.FB6	6-03.3(30).OPT6.FB6
6-03.3(37).OPT1.BSP.GB6	6-03.3(37).OPT1.GB6
6-03.4.OPT6.BSP.GB6	6-03.4.OPT6.GB6
6-03.5.OPT12.BSP.GB6	6-03.5.OPT12.GB6
6-05.2.OPT1.BSP.GB6	6-05.2.OPT1.GB6
6-05.3.OPT1.BSP.FB6	6-05.3.OPT1.FB6
6-05.3(5).OPT1.BSP.GB6	6-05.3(5).OPT1.GB6
6-05.3(6).OPT1.BSP.GB6	6-05.3(6).OPT1.GB6
6-05.3(11)D.OPT9.BSP.FB6	6-05.3(11)D.OPT9.FB6
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6-05.5.OPT6.BSP.GB6	6-05.5.OPT6.GB6
6-06.2.OPT7.BSP.GB6	6-06.2.OPT7.GB6
6-06.2.OPT8.BSP.FB6	6-06.2.OPT8.FB6
6-06.3(2).OPT7.BSP.GB6	6-06.3(2).OPT7.GB6
6-09.3(5).OPT7.BSP.GB6	6-09.3(5).OPT7.GB6
6-09.3(6)B.OPT1.BSP.GB6	6-09.3(6)B.OPT1.GB6
6-09.3(14).OPT2.BSP.GB6	6-09.3(14).OPT2.GB6
6-09.5.OPT11.BSP.GB6	6-09.5.OPT11.GB6
8-11.2(9-16.3(2)).OPT1.BSP.GB8	8-11.2(9-16.3(2)).OPT1.GB8
8-11.2(9-16.3(2)).OPT2.BSP.GB8	8-11.2(9-16.3(2)).OPT2.GB8

Original BSP	New GSP
8-11.2(9-16.3(2)).OPT3.BSP.GB8	8-11.2(9-16.3(2)).OPT3.GB8
8-11.2(9-16.3(2)).OPT4.BSP.GB8	8-11.2(9-16.3(2)).OPT4.GB8
8-11.2(9-16.3(4)).OPT1.BSP.GB8	8-11.2(9-16.3(4)).OPT1.GB8
8-11.2(9-16.3(4)).OPT2.BSP.GB8	8-11.2(9-16.3(4)).OPT2.GB8
8-11.3(1)A.OPT1.BSP.GB8	8-11.3(1)A.OPT1.GB8
8-11.3(1)A.OPT2.BSP.GB8	8-11.3(1)A.OPT2.GB8
8-11.3(1)A.OPT3.BSP.GB8	8-11.3(1)A.OPT3.GB8
8-11.3(1)B.OPT6.BSP.GB8	8-11.3(1)B.OPT6.GB8
8-11.3(1)B.OPT7.BSP.GB8	8-11.3(1)B.OPT7.GB8
8-11.3(1)B.OPT8.BSP.GB8	8-11.3(1)B.OPT8.GB8
8-11.3(1)B.OPT9.BSP.GB8	8-11.3(1)B.OPT9.GB8
8-11.3(1)D.OPT1.BSP.GB8	8-11.3(1)D.OPT1.GB8
8-11.3(1)G.OPT1.BSP.GB8	8-11.3(1)H.OPT1.GB8
8-12.2.OPT6.BSP.GB8	8-12.2.OPT6.GB8
8-12.3.OPT1.BSP.GB8	8-12.3.OPT1.GB8
8-12.3.OPT1(A).BSP.GB8	8-12.3.OPT1(A).GB8
8-12.3.OPT1(B).BSP.GB8	8-12.3.OPT1(B).GB8
8-12.3.OPT1(C).BSP.GB8	8-12.3.OPT1(C).GB8
8-12.4.OPT1.BSP.GB8	8-12.4.OPT1.GB8
8-12.5.OPT6.BSP.GB8	8-12.5.OPT6.GB8
8-20.2.OPT1.BSP.GB8	8-20.2.OPT1.GB8
8-20.3(4).OPT1.BSP.FB8	8-20.3(4).OPT1.FB8
8-20.5.OPT1.BSP.GB8	8-20.5.OPT1.GB8
8-21.2(9-28.14).OPT1.BSP.GB8	8-21.2(9-28.14).OPT1.GB8
8-21.2(9-28.14(2)).OPT1.BSP.GB8	8-21.2(9-28.14(2)).OPT1.GB8
8-21.2(9-28.14(2)).OPT2.BSP.GB8	8-21.2(9-28.14(2)).OPT2.GB8
8-21.3(9)E.OPT1.BSP.FB8	8-21.3(9)E.OPT1.FB8
8-21.3(9)F.OPT2.BSP.FB8	8-21.3(9)F.OPT2.FB8
8-21.4.OPT1.BSP.FB8	8-21.4.OPT1.FB8
8-21.5.OPT1.BSP.GB8	8-21.5.OPT1.GB8

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Amendments to the 2014 Standard Specifications
Effective April 6, 2015

Please note: New Amendments to the 2014 Standard Specifications are described below. Amendments to the Standard Specifications take precedence over the Standard Specifications in accordance with Section 1-04.2.

The following is a brief description of the latest amendments, with an explanation of why the change was made. The actual amendment should be reviewed in depth to become completely knowledgeable of the full extent of the amendment.

These amendments are available at the following location:
http://www.wsdot.wa.gov/Business/Construction/SpecificationsAmendmentsGSPs.htm

DIVISION 1 – General Requirements

N/A

DIVISION 2 – Roadway Excavation and Embankment

N/A

DIVISION 3 – Acceptance of Aggregate

3-04.5 Payment
This amendment changes the frequency of the HMA Aggregate sublot size from 1,600 tons to 2,000 tons. This change was necessary to bring this table into alignment with the revisions made in January 2015 to Section 5-04 and the Construction Manual.

DIVISION 4 – Ballast and Crushed Surfacing

N/A

DIVISION 5 – Surface Treatments and Pavements

5-04.2 Materials
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

5-04.3(1) Hot Mix Asphalt Mixing Plant
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

5-04.3(7) Preparation of Aggregates
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

5-04.3(7)A1 General
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

5-04.3(7)A2 Statistical or Nonstatistical Evaluation

This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

5-04.3(7)A3 Commercial Evaluation
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

5-04.3(8) Mixing
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

5-04.3(8)A4 Definition of Sampling and Sublot & 5-04.3(10)B1 General
The amendments to these two sections revise the sublot sizes for HMA testing.

5-04.3(8)A7 Test Section – HMA Mixtures
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

5-05.3(1) Concrete Mix Design for Paving
This amendment raises the allowable Ground Granulated Blast Furnace Slag in PCCP.

5-04.3(20) Anti-Stripping Additive
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

<u>DIVISION 6 – Structures</u>

6-02.3(2)A Contractor Mix Design
The amendments to this section were necessary to align the Standard Specifications with the recent reorganization of ACI 318.

6-02.3(5)B Certification of Compliance
This amendment deletes the requirement for a signature on the Certificate of Compliance for each truckload of concrete, and also modifies the Certificate information on fly ash (if used) to be classified by Class instead of Type.

6-02.3(17)J Face Lumber, Studs, Wales, and Metal Forms
This amendment removes a restriction on using release agents that contain silicone. Previous specification changes have rendered this restriction unnecessary.

6-02.3(17)K Concrete Forms on Steel Spans
This amendment deletes obsolete AASHTO references and replaces them with current ASTM specifications.

6-02.3(24)C Placing and Fastening
These amendments provide additional clarity on the required clearance for reinforcing steel in bridge decks and approach slabs.

6-03.3 Construction Requirements

Amendments to the 2014 Standard Specifications
Effective April 6, 2015

These amendments are required primarily because the American Institute of Steel Construction (AISC) has made changes to their certification program. These specification changes are needed to align with the revised AISC certifications. Additionally, these amendments better clarify which bridge elements require the AISC certification.

6-03.3(33) Bolted Connections
This amendment deletes obsolete AASHTO references and replaces them with current ASTM specifications.

6-19.3(8)C Requirements for Leaving Temporary Casing In Place
This amendment deletes a section reference.

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

N/A

DIVISION 8 – Miscellaneous Construction

8-20.2(1) Equipment List and Drawings
This amendment brings this section up to date with the new Working Drawing requirements as outlined in Section 1-05.3.

8-21.3(9)F Foundations
This amendment updates a section reference.

8-22.3(6) Removal of Pavement Markings
This amendment allows grinding to remove pavement markings when the removed pavement marking will be covered by a BST or other surfacing.

DIVISION 9 – Materials

9-02.1(4) Performance Graded Asphalt Binder (PGAB)
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

9-02(1)6A Polymerized Cationic Emulsified Asphalt CRS-2P
This amendment implements AASHTO T 301, a recognized national standard test procedure.

9-03.8(2) HMA Test Requirements
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

9-03.8(3)B Gradation – Recycled Asphalt Pavement and Mineral Aggregate
This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

9-03.21(1) General Requirements

This amendment is a part of the incorporation of the RAP/RAS GSPs into the Standard Specifications.

9-07.5(1) Epoxy-Coated Dowel Bars (for Cement Concrete Pavement Rehabilitation)

This amendment covers several areas. First, AASHTO M 255 is deleted (as it is outdated) and replaced with ASTM A 615, which is the ASTM equivalent of AASHTO M 31. Second, this amendment allows dowel bars to be coated first then cut to length and the ends patched. The coating requirements of using ASTM A 934 remain via reference to ASTM A 1078 Type 2 coating. Third, these amendments add requirements for patching material to be supplied with shipments. And last, requirements referencing Section 9-07.3 were deleted as this was causing confusion to green rebar coating. The references have become outdated in this application and the required information is now covered in Section 9-04.5(1).

9-29.16 Vehicular Signal Heads, Displays, and Housing

This amendment better aligns this section with the Standard Plans by clarifying that retro-reflective sheeting is not required for back-plates at hawk signals or ramp meter signals.

CODE	TITLE
INTRO.AP1	Introduction (January 6, 2014) Include In All Projects.
1-01.AP1	Section 1-01, Definitions and Terms (August 4, 2014) Include In All Projects.
1-02.AP1	Section 1-02, Bid Procedures and Conditions (April 7, 2014) Include In All Projects.
1-03.AP1	Section 1-03, Award and Execution of Contract (January 5, 2015) Include In All Projects.
1-04.AP1	Section 1-04, Scope of the Work (August 4, 2014) Include In All Projects.
1-05.AP1	Section 1-05, Control of Work (August 4, 2014) Include In All Projects.
1-07.AP1	Section 1-07, Legal Relations and Responsibilities to the Public (January 5, 2015) Include In All Projects.
1-08.AP1	Section 1-08, Prosecution and Progress (May 5, 2014) Include In All Projects.
1-09.AP1	Section 1-09, Measurement and Payment (January 5, 2015) Include In All Projects.
1-10.AP1	Section 1-10, Temporary Traffic Control (August 4, 2014) Include In All Projects.
2-01.AP2	Section 2-01, Clearing, Grubbing, and Roadside Cleanup (August 4, 2014) Include In All Projects.
2-02.AP2	Section 2-02, Removal of Structures and Obstructions (January 5, 2015) Include In All Projects.
2-03.AP2	Section 2-03, Roadway Excavation and Embankment (August 4, 2014) Include In All Projects.
2-09.AP2	Section 2-09, Structure Excavation (January 5, 2015) Include In All Projects.

CODE	TITLE
2-12.AP2	Section 2-12, Construction Geosynthetic (January 5, 2015) Include In All Projects.
3-04.AP3	Section 3-04, Acceptance of Aggregate (~~August 4, 2014~~April 6, 2015) Include In All Projects.
5-01.AP5	Section 5-01, Cement Concrete Pavement Rehabilitation (August 4, 2014) Include In All Projects.
5-02.AP5	Section 5-02, Bituminous Surface Treatment (August 4, 2014) Include In All Projects.
5-04.AP5	Section 5-04, Hot Mix Asphalt (~~January 5~~April 6, 2015) Include In All Projects.
5-05.AP5	Section 5-05, Cement Concrete Pavement (~~August 4, 2014~~April 6, 2015) Include In All Projects.
6-01.AP6	Section 6-01, General Requirements for Structures (January 5, 2015) Include In All Projects.
6-02.AP6	Section 6-02, Concrete Structures (~~January 5~~April 6, 2015) Include In All Projects.
6-03.AP6	Section 6-03, Steel Structures (~~January 5~~April 6, 2015) Include In All Projects.
6-04.AP6	Section 6-04, Timber Structures (January 5, 2015) Include In All Projects.
6-05.AP6	Section 6-05, Piling (January 5, 2015) Include In All Projects.
6-06.AP6	Section 6-06, Bridge Railings (January 5, 2015) Include In All Projects.
6-07.AP6	Section 6-07, Painting (January 5, 2015) Include In All Projects
6-09.AP6	Section 6-09, Modified Concrete Overlays (January 5, 2015) Include In All Projects

CODE	TITLE
6-10.AP6	Section 6-10, Concrete Barrier (January 5, 2015) Include In All Projects
6-11.AP6	Section 6-11, Reinforced Concrete Walls (January 5, 2015) Include In All Projects
6-12.AP6	Section 6-12, Noise Barrier Walls (January 5, 2015) Include In All Projects
6-13.AP6	Section 6-13, Structural Earth Walls (January 5, 2015) Include In All Projects
6-14.AP6	Section 6-14, Geosynthetic Retaining Walls (January 5, 2015) Include In All Projects
6-15.AP6	Section 6-15, Soil Nail Walls (January 5, 2015) Include In All Projects
6-16.AP6	Section 6-16, Soldier Pile and Soldier Pile Tieback Walls (January 5, 2015) Include In All Projects
6-17.AP6	Section 6-17, Permanent Ground Anchors (January 5, 2015) Include In All Projects
6-18.AP6	Section 6-18, Shotcrete Facing (January 5, 2015) Include In All Projects
6-19.AP6	Section 6-19, Shafts (~~January 5~~April 6, 2015) Include In All Projects
8-01.AP8	Section 8-01, Erosion Control and Water Pollution Control (January 5, 2015) Include In All Projects.
8-02.AP8	Section 8-02, Roadside Restoration (January 5, 2015) Include In All Projects.
8-04.AP8	Section 8-04, Curbs, Gutters, and Spillways (January 5, 2015) Include In All Projects.
8-09.AP8	Section 8-09, Raised Pavement Markers (April 7, 2014) Include In All Projects.

CODE	TITLE
8-11.AP8	Section 8-11, Guardrail (April 7, 2014) Include In All Projects.
8-18.AP8	Section 8-18, Mailbox Support (August 4, 2014) Include In All Projects.
8-20.AP8	Section 8-20, Illumination, Traffic Signal Systems, Intelligent Transportation Systems, and Electrical (~~January 5~~April 6, 2015) Include In All Projects.
8-21.AP8	Section 8-21, Permanent Signing (April 6, 2015) Include In All Projects.
8-22.AP8	Section 8-22, Pavement Marking (~~January 5~~April 6, 2015) Include In All Projects.
8-23.AP8	Section 8-23, Temporary Pavement Markings (January 5, 2015) Include In All Projects.
9-01.AP9	Section 9-01, Portland Cement (January 5, 2015) Include In All Projects.
9-02.AP9	Section 9-02, Bituminous Materials (April 6, 2015) Include In All Projects.
9-03.AP9	Section 9-03, Aggregates (~~August 4, 2014~~April 6, 2015) Include In All Projects.
9-04.AP9	Section 9-04, Joint and Crack Sealing Materials (January 5, 2015) Include In All Projects.
9-05.AP9	Section 9-05, Drainage Structures and Culverts (April 7, 2014) Include In All Projects.
9-06.AP9	Section 9-06, Structural Steel and Related Materials (January 5, 2015) Include In All Projects.
9-07.AP9	Section 9-07, Reinforcing Steel (~~January 6, 2014~~April 6, 2015) Include In All Projects.
9-08.AP9	Section 9-08, Paints and Related Materials (January 5, 2015)

CODE	TITLE
	Include In All Projects.
9-09.AP9	Section 9-09, Timber and Lumber (January 6, 2014) Include In All Projects.
9-10.AP9	Section 9-10, Piling (March 3, 2014) Include In All Projects.
9-13.AP9	Section 9-13, Riprap, Quarry Spalls, Slope Protection, and Rock for Erosion and Scour Protection and Rock Walls (January 5, 2015) Include In All Projects.
9-14.AP9	Section 9-14, Erosion Control and Roadside Planting (January 5, 2015) Include In All Projects.
9-15.AP9	Section 9-15, Irrigation System (August 4, 2014) Include In All Projects.
9-16.AP9	Section 9-16, Fence and Guardrail (August 4, 2014) Include In All Projects.
9-29.AP9	Section 9-29, Illumination, Signal, Electrical (~~January 5~~April 6, 2015) Include In All Projects.
9-31.AP9	Section 9-31, Elastomeric Bearing Pads (August 4, 2014) Include In All Projects.
9-32.AP9	Section 9-32, Type 2 Mailbox Support (August 4, 2014) Include In All Projects.
9-34.AP9	Section 9-34, Pavement Marking Material (January 5, 2015) Include In All Projects.
9-35.AP9	Section 9-35, Temporary Traffic Control Materials (August 4, 2014) Include In All Projects.

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Section 3-04, Acceptance of Aggregate

~~August 4, 2014~~April 6, 2015

3-04.5 Payment

In Table 1, the "Maximum Sublot Size (Tons)" value for the item HMA Aggregate is revised to read "2000".

In Table 2, the row containing the item "HMA Aggregate" is revised to read:

9-03.8(2)	HMA Aggregate						15	15	Uncompacted Void Content 15

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Section 5-04, Hot Mix Asphalt
~~January 5~~April 6, 2015

5-04.2 Materials

The third through eighth paragraphs are deleted and replaced with the following:

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

If greater than 20 percent RAP by total weight of HMA or any amount of RAS is utilized in the production of HMA, the Contractor shall sample and test the RAP and RAS during stockpile construction in accordance with WSDOT FOP for AASHTO T 308 for determination of asphalt binder content and WSDOT FOP for WAQTC/AASHTO T 27/T 11 for gradation of the aggregates. The RAP shall be sampled and tested at a frequency of one sample for every 1,000 tons produced and not less than ten samples per project. The RAS shall be sampled and tested at a frequency of one sample for every 100 tons produced and not less than ten samples per project. The asphalt content and gradation test data shall be reported to the Contracting Agency prior to or when submitting the mix design for approval on the QPL. If utilized, the amount of RAS shall not exceed 5-percent of the total weight of the HMA. The Contractor shall include the RAP and RAS as part of the mix design as defined in these Specifications.

The grade of asphalt binder shall be as required by the Contract. Blending of asphalt binder from different sources is not permitted. For HMA with greater than 20 percent RAP by total weight of HMA or any amount of RAS, the final blended asphalt binder (after inclusion of RAP, RAS, new asphalt binder and recycling agent) shall be the grade as required by the Contract and comply with the requirements of Section 9-02.1(4).

The Contractor may only use warm mix asphalt (WMA) processes in the production of HMA with 20 percent or less RAP by total weight of HMA and no RAS. The Contractor shall submit to the Engineer for approval the process that is proposed and how it will be used in the manufacture of HMA.

When the Contracting Agency provides aggregates or provides a source for the production of aggregates, the Contract Provisions will establish the approximate percentage of asphalt binder required in the mixture for each class of HMA.

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

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

5-04.3(1) Hot Mix Asphalt Mixing Plant

The first paragraph is supplemented with the following:

6. **Equipment for Processing RAP and RAS.** When producing HMA for mix designs with greater than 20 percent RAP by total weight of HMA or any amount of RAS the HMA plant shall be equipped with screens or a lump breaker to eliminate oversize RAP/RAS particles from entering the pug mill or drum mixer.

5-04.3(3)A Material Transfer Device/Vehicle

The first paragraph is supplemented with the following new sentence:

> At the Contractor's request the Engineer may approve paving without an MTD/V; the Engineer will determine if an equitable adjustment in cost or time is due.

In the last sentence of the second paragraph, "Project Engineer" is revised to read "Engineer".

5-04.3(5)A Preparation of Existing Surfaces

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

> Unless otherwise approved by the Engineer, the tack coat shall be CSS-1 or CSS-1h emulsified asphalt.

5-04.3(7) Preparation of Aggregates

This section is revised to read:

> The aggregates, RAP and RAS shall be stockpiled according to the requirements of Section 3-02. Sufficient storage space shall be provided for each size of aggregate, RAP and RAS. The Contractor may uniformly blend fine aggregate or RAP with the RAS as a method of preventing the agglomeration of RAS particles. The aggregates, RAP and RAS shall be removed from stockpile(s) in a manner to ensure minimal segregation when being moved to the HMA plant for processing into the final mixture. Different aggregate sizes shall be kept separated until they have been delivered to the HMA plant.

5-04.3(7)A1 General

This section is revised to read:

> An approved mix design, listed on the Qualified Products List (QPL), is required for all HMA paving. The Contractor shall develop a mix design prior to the initial production of HMA and no more than 3 months prior to submitting for QPL evaluation. The mix design shall be developed in accordance with WSDOT Standard Operating Procedure 732 and meet the requirements of Sections 9-03.8(2) and 9-03.8(6).
>
> Mix designs shall be submitted by the Contractor to the WSDOT State Materials Laboratory on WSDOT Form 350-042EF. If the mix design is approved it will be listed on the QPL for up to 24 consecutive months. Mix designs not listed on the QPL or past the 24 month approved period shall not be used. After a mix design has been on the QPL for 12 months the listing will be extended provided the Contractor submits a certification letter to the Qualified Products Engineer verifying that the aggregate and asphalt binder have not changed. The Contractor may submit the certification one month prior to expiration of the mix design approval. Within 7 calendar days of receipt of the Contractor's certification the QPL will be updated. The maximum duration for approval of a mix design and listing on the QPL will be 24 months from the date of initial approval or as approved by the Engineer.
>
> Changes to the job mix formula of a mix design may require the development of a new mix design and resubmittal for QPL approval. Mix designs that require resubmittal for QPL approval must be approved prior to use.

Changes to aggregate that may require a new mix design include the source of material or a change in the percentage of material from a stockpile greater than 5 percent. Changes to the percentage of material from a stockpile will be calculated exclusive of the RAP content. The Contractor may vary the RAP percentage in accordance with Section 5-04.2.

Changes to asphalt binder that may require a new mix design include the source of the crude petroleum supplied to the refinery, the refining process, and additives or modifiers in the asphalt binder.

The Contractor shall include the brand and type of anti-stripping additive in the mix design submittal and provide certification from the asphalt binder manufacture that the anti-stripping additive is compatible with the crude source and formulation of asphalt binder proposed in the mix design. All changes to anti-strip require the submittal of a new mix design for approval.

Mix designs with 20 percent RAP or less by total weight of HMA and no RAS will be completed without the inclusion of the RAP. For HMA mix designs with greater than 20 percent RAP by total weight of HMA or any amount of RAS the Contractor shall develop a mix design including RAP, RAS, recycling agent and new asphalt binder. Asphalt binder contributed from RAS shall be determined in accordance with AASHTO PP 78. The total quantity of asphalt binder from the RAP and RAS shall not exceed 40 percent of the total asphalt binder content of the HMA.

Once the RAP and RAS stockpiles have been constructed the Contractor shall extract, recover and test the asphalt residue from the RAP and RAS stockpiles to determine the percent of recycling agent and/or grade of new asphalt binder needed to meet the grade of asphalt binder required by the contract. The asphalt extraction testing shall be performed in accordance with AASHTO T 164 or ASTM D 2172 using reagent grade trichloroethylene. The asphalt recovery shall be performed in accordance with AASHTO R 59 orASTM D 1856. The recovered asphalt residue shall be tested in accordance with AASHTO R 29 to determine the asphalt binder grade in accordance with Section 9-02.1(4). Once the recovered asphalt binder grade is determined the percent of recycling agent and/or grade of new asphalt binder shall be determined in accordance with ASTM D 4887. The final blend of recycling agent, recovered and new asphalt shall be tested in accordance with AASHTO R 29 to confirm that it meets the grade of asphalt binder required by the contract in accordance with Section 9-02.1(4). All recovered and blended asphalt binder test data shall be reported to the Contracting Agency prior to submitting the mix design for approval on the QPL.

5-04.3(7)A2 Statistical or Nonstatistical Evaluation

This section is revised to read:

The Contractor shall submit WSDOT Form 350-041EF to the Engineer for approval to use a mix design from the QPL. The Contractor may include changes to the job mix formula that have been approved on other contracts. The request to use a mix design from the QPL may be rejected if production of the HMA from another contract is not in compliance with Section 5-04.3(11)D.

The Contractor shall submit representative samples of the materials that are to be used in the HMA production to the State Materials Laboratory in Tumwater. For HMA mix designs with 20 percent RAP or less by total weight of HMA and no RAS, the Contractor shall submit representative samples of the mineral materials that are to be used in the HMA production; the submittal of RAP samples is not required for these mix designs. For HMA mix designs with greater than 20 percent RAP by total weight of HMA or any amount of RAS the Contractor shall submit representative samples of the mineral materials, RAP, RAS and 100 grams of recovered asphalt residue from the RAP and RAS that are to be used in the HMA production. The Contracting Agency will use these samples to evaluate the mix design for approval on the QPL in accordance with WSDOT Standard Practice QC-8.

5-04.3(7)A3 Commercial Evaluation

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

> ~~Mix designs for HMA accepted by commercial evaluation shall be submitted to the Project Engineer on WSDOT Form 350-042.~~Approval of a Commercial Evaluation mix design for listing on the QPL will be based on a review of the Contractor's submittal of WSDOT Form 350-042 for conformance to the requirements of Section 9-03.8(2). Testing of the HMA by the Contracting Agency for mix design approval is not required. Mix designs for HMA with greater than 20 percent RAP by total weight of HMA or any amount of RAS may be evaluated in accordance with Section 5-04.3(7)A2.
>
> For the Bid item Commercial HMA, the Contractor shall select a class of HMA and design level of Equivalent Single Axle Loads (ESAL's) appropriate for the required use.

5-04.3(8) Mixing

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

> When discharged, the temperature of the HMA shall not exceed the optimum mixing temperature by more than 25°F as shown on the reference mix design report or as approved by the Engineer.

The last paragraph is supplemented with the following new sentence:

> After the required amount of mineral materials, RAP, RAS, new asphalt binder and asphalt rejuvenator have been introduced into the mixer the HMA shall be mixed until complete and uniform coating of the particles and thorough distribution of the asphalt binder throughout the mineral materials, RAP and RAS is ensured.

5-04.3(8)A4 Definition of Sampling and Sublot

~~In the second sentence of the second paragraph, "800 tons" is revised to read "1,000 tons".~~

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

> The sublots shall be approximately uniform in size with a maximum sublot size based on original Plan quantity tons as specified in the following table.

This section is supplemented with the following new table:

HMA Original Plan Quantity (tons)	Sublot Size (tons)
<20,000	1,000
20,000 to 30,000	1,500
>30,000	2,000

5-04.3(8)A7 Test Section – HMA Mixtures

This section is revised to read:

> For each class of HMA accepted by statistical evaluation with 20 percent RAP or less by total weight of HMA and no RAS, the Contractor may request a single test section to determine whether the mixture meets the requirements of Section 9-03.8(2) and 9-03.8(6). For each HMA mix design accepted by statistical evaluation with greater than 20 percent RAP by weight of HMA or any amount of RAS, the Contractor shall construct a test section to determine whether the mixture meets the requirements of Sections 9-03.8(2) and 9-03.8(6). Test sections shall be constructed at the beginning of paving and will be at least 600 tons and a maximum of 1,000 tons or as approved by the Engineer. For a test section to be acceptable the pay factor (PF) for gradation, asphalt binder and Va shall be 0.95 or greater for each constituent and the remaining test requirements in Section 9-03.8(2) (dust/asphalt ratio, sand equivalent, uncompacted void and fracture) shall conform to the requirements of that section. No further wearing or leveling HMA will be paved on any of the four calendar days following construction of the test section. The mixture in the test section will be evaluated as a lot with a minimum of three sublots required. If more than one test section is required, each test section shall be a separate lot.

5-04.3(10)A General

In the first paragraph, "checking" and "cracking" are deleted.

In the third paragraph, the following new sentence is inserted after the second sentence:

> Coverage with a steel wheel roller may precede pneumatic tired rolling.

In the third paragraph, the following new sentence is inserted before the last sentence:

> Regardless of mix temperature, a roller shall not be operated in a mode that results in checking or cracking of the mat.

5-04.3(10)B1 General

In this section, "Project Engineer" is revised to read "Engineer".

The first paragraph is revised to read:

> HMA mixture accepted by statistical or nonstatistical evaluation that is used in traffic lanes, including lanes for ramps, truck climbing, weaving, and speed change, and having a specified compacted course thickness greater than 0.10-foot, shall be compacted to a specified level of relative density. The specified level of relative density shall be a Composite Pay Factor (CPF) of not less than 0.75 when evaluated in accordance with Section 1-06.2, using a minimum of 91 percent of the maximum density. The percent of maximum density shall be determined by WSDOT FOP for AASHTO T 729 when using the nuclear density gauge and WSDOT SOP 736 when using cores to determine density. The specified level of density attained will be determined by the statistical evaluation of the density of the pavement.

The following four new paragraphs are inserted after the first paragraph:

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

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

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

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

In the sixth paragraph (after the preceding Amendments are applied), the second sentence is revised to read:

Sublots will be uniform in size with a maximum sublot size based on original Plan quantity tons of HMA as specified in the table below.~~of approximately 100 tons per sublot; the final sublot of the day may be increased to 150 tons.~~

The following new table is inserted before the second to last paragraph:

HMA Original Plan Quantity (tons)	Sublot Size (tons)
<20,000	100
20,000 to 30,000	150
>30,000	200

5-04.3(10)B4 Test Results

The first paragraph is revised to read:

The results of all compaction acceptance testing and the CPF of the lot after three sublots have been tested will be available to the Contractor through WSDOT's website. Determination of the relative density of the HMA with a nuclear density gauge requires a correlation factor and may require resolution after the correlation factor is known. Acceptance of HMA compaction will be based on the statistical evaluation and CPF so determined.

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

For a sublot that has been tested with a nuclear density gauge that did not meet the minimum of 91 percent of the reference maximum density in a compaction lot with a CPF below 1.00 and thus subject to a price reduction or rejection, the Contractor may request that a core be used for determination of the relative density of the sublot.

In the second sentence of the second paragraph, "moisture-density" is revised to read "density".

In the second paragraph, the fourth sentence is deleted.

5-04.3(20) Anti-Stripping Additive

This section is revised to read:

Anti-stripping additive shall be added to the liquid asphalt by the asphalt supplier prior to shipment to the ~~hot mix~~ asphalt mixing plant. Anti-stripping additive shall be added in the amount designated on the QPL for the mix design. ~~in the amount designated in the WSDOT mix design evaluation report provided by the Contracting Agency. Paving shall not begin before the anti-strip requirements have been provided to the Contractor. Anti-strip is not required for temporary work that will be removed prior to Completion.~~

5-04.4 Measurement

The following new paragraph is inserted after the first paragraph:

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

The second to last paragraph is deleted.

5-04.5 Payment

The bid item “Removing Temporary Pavement Marking”, per linear foot and paragraph following bid item are deleted.

The following new bid item is inserted before the second to last paragraph:

“Roadway Core”, per each.

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

Section 5-05, Cement Concrete Pavement

~~August 4, 2014~~April 6, 2015

5-05.3(1) Concrete Mix Design for Paving

In item number 1, the first sentence of the third paragraph is revised to read:

> Ground granulated blast furnace slag, if used, shall not exceed 30 percent by weight of the total cementitious material and shall conform to Section 9-23.10.

The second and third rows of the table in item number 3 are revised to read:

Coarse Aggregate	+ 30 Pounds	- 30 Pounds
Fine Aggregate	+ 30 Pounds	- 30 Pounds

5-05.4 Measurement

The fourth paragraph is supplemented with the following new sentence:

> Tie bars with drill holes in cement concrete pavement placed under the Contract will not be measured.

5-05.5 Payment

The paragraph following the Bid item “Tie Bar with Drill Hole”, per each is supplemented with the following new sentence:

> All costs for tie bars with drill holes in cement concrete pavement placed under the Contract shall be included in the unit Contract price per cubic yard for “Cement Conc. Pavement”.

Section 6-02, Concrete Structures
~~January 5~~April 6, 2015

6-02.3(1) Classification of Structural Concrete
In paragraph two, item number 1 is revised to read:

> Mix design and proportioning specified in Sections 6-02.3(2), 6-02.3(2)A and 6-02.3(2)A1.

Item number 3 is renumbered to 4.

After the preceding Amendments are applied, the following new numbered item is inserted after item number 2:

> 3. Temperature and time for placement requirements specified in Section 6-02.3(4)D.

6-02.3(2) Proportioning Materials
In the third paragraph, the first sentence is revised to read:

> The use of fly ash is required for Class 4000P concrete, except that ground granulated blast furnace slag may be substituted for fly ash at a 1:1 ratio.

In the table titled “Cementitious Requirement for Concrete”, the row beginning with “4000D” is deleted.

The fourth paragraph is revised to read:

> When both ground granulated blast furnace slag and fly ash are included in the concrete mix, the total weight of both these materials is limited to 40 percent by weight of the total cementitious material for concrete class 4000A, and 50 percent by weight of the total cementitious material for all other classes of concrete.

6-02.3(2)A Contractor Mix Design
The first paragraph is revised to read:

> The Contractor shall provide a mix design in writing to the Engineer for all classes of concrete specified in the Plans except for lean concrete and commercial concrete. No concrete shall be placed until the Engineer has reviewed the mix design. The required average 28-day compressive strength shall be selected in accordance with ACI ~~318~~301, Chapter ~~5~~4, Section 4.2.3.3~~5.3.2~~. ACI 211.1 ~~and ACI 318~~ shall be used to determine proportions. All proposed concrete mixes except Class 4000D shall meet the requirements in Cementitious Requirement for Concrete in Section 6-02.3(2).

In the fourth paragraph, the fourth sentence is deleted.

In the sixth paragraph, the first sentence is deleted.

In the seventh paragraph, the last sentence is deleted.

The eighth paragraph is revised to read:

Air content for concrete Class 4000D shall conform to Section 6-02.3(2)A1. For all other concrete, air content shall be a minimum of 4.5 percent and a maximum of 7.5 percent for all concrete placed above the finished ground line.

The following new sub-section is added:

6-02.3(2)A1 Contractor Mix Design for Concrete Class 4000D

All Class 4000D concrete shall be a project specific performance mix design conforming to the following requirements:

1. Aggregate shall use combined gradation in accordance with Section 9-03.1(5) with a nominal maximum aggregate size of 1-1/2 inches.

2. Permeability shall be less than 2,000 coulombs at 56 days in accordance with AASHTO T 277.

3. Freeze-thaw durability shall be provided by one of the following methods:
   a. The concrete shall maintain an air content between 4.5 and 7.5 percent.
   b. The concrete shall maintain a minimum air content that achieves a durability factor of 90 percent, minimum, after 300 cycles in accordance with AASHTO T 161, Procedure A. This air content shall not be less than 3.0 percent. Test samples shall be obtained from concrete batches of a minimum of 3.0 cubic yards.

4. Scaling shall have a visual rating less than or equal to 2 after 50 cycles in accordance with ASTM C 672.

5. Shrinkage at 28 days shall be less than 320 micro strain in accordance with AASHTO T 160.

6. Modulus of elasticity shall be measured in accordance with ASTM C 469.

7. Density shall be measured in accordance with ASTM C 138.

The Contractor shall submit the mix design in accordance with Section 6-02.3(2)A. The submittal shall include test reports for all tests listed above that follow the reporting requirements of the AASHTO/ASTM procedures. Samples for testing may be obtained from either laboratory or concrete plant batches. If concrete plant batches are used, the minimum batch size shall be 3.0 cubic yards. The Contractor shall submit the mix design to the Engineer at least 30 calendar days prior to the placement of concrete in the bridge deck.

6-02.3(4)D Temperature and Time For Placement

The first two sentences are revised to read:

Concrete temperatures shall remain between 55ºF and 90ºF while it is being placed, except that Class 4000D concrete temperatures shall remain between 55°F and 75°F during placement. Precast concrete that is heat cured in accordance with Section 6-02.3(25)D shall remain between 50ºF and 90ºF while being placed.

6-02.3(5)A General

The first paragraph is revised to read:

Concrete for the following applications will be accepted based on a Certificate of Compliance to be provided by the supplier as described in Section 6-02.3(5)B:

1. Lean concrete.

2. Commercial concrete.

3. Class 4000P concrete for Roadside Steel Sign Support Foundations.

4. Class 4000P concrete for Type II, III, and CCTV Signal Standard Foundations that are 12'-0" or less in depth.

5. Class 4000P concrete for Type IV and V Strain Pole Foundations that are 12'-0" or less in depth.

6. Class 4000P concrete for Steel Light Standard Foundations Types A & B.

The following new sentence is inserted at the beginning of the second paragraph:

Slip-form barrier concrete will be accepted based on conformance to the requirements for temperature, air content and compressive strength at 28 days for sublots as tested and determined by the Contracting Agency.

6-02.3(5)B Certification of Compliance

In the list within the first paragraph, "Fly ash (if used) brand and Type" is revised to read "Fly ash (if used) brand and Class".

The first sentence of the second to last paragraph is deleted.

6-02.3(5)G Sampling and Testing Frequency for Temperature, Consistency, and Air Content

In the fifth sentence of the second paragraph, "five truck loads" is revised to read "ten truck loads".

The second paragraph is supplemented with the following:

If the remaining quantity to be placed is less than ten truck loads; then a sample shall be randomly taken from one of the remaining truck loads.

In the last sentence of the third paragraph, "five truck loads" is revised to read "ten truck loads".

6-02.3(5)H Sampling and Testing for Compressive Strength and Initial Curing

The second paragraph is revised to read:

The Contractor shall provide and maintain a sufficient number of cure boxes in accordance with WSDOT FOP for AASHTO T 23 for curing concrete cylinders. The cure boxes shall be readily accessible and no more than 500 feet from the point of acceptance testing, unless otherwise approved by the Engineer. The Contractor shall also provide, maintain and operate all necessary power sources and connections needed to operate the cure boxes. The cure boxes shall be in-place and functioning at the specified temperature for curing cylinders prior to concrete placement. Concrete cylinders shall be cured in the cure boxes in accordance with WSDOT FOP for AASHTO T 23. The cure boxes shall have working locks and the Contractor shall provide the Engineer with one key to each of the locks. Once concrete cylinders are placed in the cure box, the cure box shall not be disturbed until the cylinders have been removed. The Contractor shall retain the cure box Temperature Measuring Device log and provide it to the Engineer upon request.

The following new paragraph is inserted after the last paragraph:

All cure box costs shall be incidental to the associated item of work.

6-02.3(6)A2 Cold Weather Protection

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

This Specification applies when the weather forecast on the day of concrete placement predicts air temperatures below 35°F at any time during the 7 days following placement.

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

The temperature of the concrete shall be maintained above 50°F during the entire curing period or 7 days, whichever is greater.

6-02.3(10)A Preconstruction Meeting

This section including title is revised to read:

6-02.3(10)A Pre-Deck Pour Meeting

A pre-deck pour meeting shall be held 5 to 10 working days before placing deck concrete to discuss construction procedures, personnel, equipment to be used, concrete sampling and testing and deck finishing and curing operations. Those attending shall include, at a minimum, the superintendent, foremen in charge of placing and finishing concrete, and representatives from the concrete supplier and the concrete pump truck supplier.

If the project includes more than one bridge deck, and if the Contractor's key personnel change between concreting operations, or at request of the Engineer, additional conferences shall be held before each deck placement.

6-02.3(10)D Concrete Placement, Finishing, and Texturing

This section's content is deleted and replaced~~supplemented~~ with the following new sub-sections:

6-02.3(10)D1 Test Slab Using Bridge Deck Concrete

After the Contractor receives the Engineer's approval for the Class 4000D concrete mix design, and a minimum of seven calendar days prior to the first placement of bridge deck concrete, the Contractor shall construct a test slab using concrete of the approved mix design.

The test slab may be constructed on grade, shall have a minimum thickness of eight-inches, shall have minimum plan dimensions of 10-feet along all four edges, and shall be square or rectangular.

During construction of the test slab, the Contractor shall demonstrate concrete sampling and testing, use of the concrete temperature monitoring system, the concrete fogging system, concrete placement system, and the concrete finishing operation. The Contractor shall conduct the demonstration using the same type of equipment to be used for the production bridge decks, except that the Contractor may elect to finish the test slab with a hand-operated strike-board.

After the construction of the test slab and the demonstration of bridge deck construction operations is complete, the Contractor shall remove and dispose of the test slab in accordance with Sections 2-02.3 and 2-03.3(7)C.

6-02.3(10)D2 Preparation for Concrete Placement

Before placing bridge approach slab concrete, the subgrade shall be constructed in accordance with Sections 2-06 and 5-05.3(6).

Before any concrete is placed, the finishing machine shall be operated over the entire length of the deck/slab to check screed deflection. Concrete placement may begin only if the Engineer approves after this test.

Immediately before placing concrete, the Contractor shall check (and adjust if necessary) all falsework and wedges to minimize settlement and deflection from the added mass of the concrete deck/slab. The Contractor shall also install devices, such as telltales, by which the Engineer can readily measure settlement and deflection.

6-02.3(10)D3 Concrete Placement

The placement operation shall cover the full width of the bridge deck or the full width between construction joints. The Contractor shall locate any construction joint over a beam or web that can support the deck/slab on either side of the joint. The joint shall not occur over a pier unless the Plans permit. Each joint shall be formed vertically and in true alignment. The Contractor shall not release falsework or wedges supporting bridge deck placement sections on either side of a joint until each side has aged as these Specifications require.

Placement of concrete for bridge decks and bridge approach slabs shall comply with Section 6-02.3(6). In placing the concrete, the Contractor shall:

1. Place it (without segregation) against concrete placed earlier, as near as possible to its final position, approximately to grade, and in shallow, closely spaced piles;

2. Consolidate it around reinforcing steel by using vibrators before strike-off by the finishing machine;

3. Not use vibrators to move concrete;

4. Not revibrate any concrete surface areas where workers have stopped prior to screeding;

5. Remove any concrete splashed onto reinforcing steel in adjacent segments before concreting them;

6. Maintain a slight excess of concrete in front of the screed across the entire width of the placement operation;

7. Operate the finishing machine to create a surface that is true and ready for final finish without overfinishing or bringing excessive amounts of mortar to the surface; and

8. Leave a thin, even film of mortar on the concrete surface after the last pass of the finishing machine pan.

Workers shall complete all post screeding operations without walking on the concrete. This may require work bridges spanning the full width of the deck/slab.

After removing the screed supports, the Contractor shall fill the voids with concrete (not mortar).

If the surface left by the finishing machine is porous, rough, or has minor irregularities, the Contractor shall float the surface of the concrete. Floating shall leave a smooth and even surface. Float finishing shall be kept to the minimum number of passes necessary to seal the surface. The floats shall be at least 4-feet long. Each transverse pass of the float shall overlap the previous pass by at least half the length of the float. The first floating shall be at right angles to the strike-off. The second floating shall be at right angles to the centerline of the span. A smooth riding surface shall be maintained across construction joints.

The edge of completed roadway slabs at expansion joints and compression seals shall have a 3/8-inch radius.

After floating, but while the concrete remains plastic, the Contractor shall test the entire deck/slab for flatness (allowing for crown, camber, and vertical curvature). The testing shall be done with a 10-foot straightedge held on the surface. The straightedge shall be advanced in successive positions parallel to the centerline, moving not more than one half the length of the straightedge each time it advances. This procedure shall be repeated with the straightedge held perpendicular to the centerline. An acceptable surface shall be one free from deviations of more than 1/8-inch under the 10-foot straightedge.

If the test reveals depressions, the Contractor shall fill them with freshly mixed concrete, strike off, consolidate, and refinish them. High areas shall be cut down and refinished. Retesting and refinishing shall continue until a surface conforming to the requirements specified above is produced.

6-02.3(10)D4 Monitoring Bridge Deck Concrete Temperature After Placement

The Contractor shall monitor and record the concrete temperature and ambient temperature hourly for seven calendar days after placement. The Contractor shall monitor and record concrete temperature by placing two maturity meter temperature monitoring devices in the bridge deck at locations specified by the Engineer. The Contractor shall monitor ambient temperature using maturity meters near the locations where concrete temperature is being monitored. When the bridge deck is being enclosed and heated to meet cold weather requirements, ambient temperature readings shall be taken within the enclosure. The Contractor shall submit the concrete temperature and ambient temperature data to the Engineer in spreadsheet format within 14 calendar days from placing the bridge deck concrete.

The Contractor shall submit the type and model of maturity meter temperature monitoring device, and the associated devices responsible for recording and documenting the temperature and curing time, to the Engineer at least 14 calendar days prior to the pre-concreting conference for the first bridge deck to be cast. The placement and operation of the temperature monitoring devices and associated devices will be an agenda item at the pre-concreting conference for the first bridge deck to be cast.

6-02.3(10)D5 Bridge Deck Concrete Finishing and Texturing

Except as otherwise specified for portions of bridge decks receiving an overlay or sidewalk under the same Contract, the Contractor shall texture the surface of the bridge deck as follows:

> The Contractor shall texture the bridge deck using diamond tipped saw blades mounted on a power driven, self-propelled machine that is designed to texture concrete surfaces. The grooving equipment shall provide grooves that are 1/8" ± 1/64" wide, 3/16" ± 1/16" deep, and spaced at 3/4" ± 1/8". The bridge deck shall not be textured with a metal tined comb.
>
> The Contractor shall submit the type of grooving equipment to be used to the Engineer for approval 30 calendar days prior to performing the work. The Contractor shall demonstrate that the method and equipment for texturing the bridge deck will not chip, spall or otherwise damage the deck. The Contractor shall not begin texturing the bridge deck until receiving the Engineer's approval of the Contractor's method and equipment.
>
> Unless otherwise approved by the Engineer, the Contractor shall texture the concrete bridge deck surface either in a longitudinal direction, parallel with centerline or in a transverse direction, perpendicular with centerline. The Contractor shall texture the bridge deck surface to within 3-inches minimum and 15-inches maximum of the edge of concrete at expansion joints, within 1-foot minimum and 2-feet maximum of the curb line, and within 3-inches minimum and 9-inches maximum of the perimeter of bridge drain assemblies.
>
> The Contractor shall contain and collect all concrete dust and debris generated by the bridge deck texturing process, and shall dispose of the collected concrete dust and debris in accordance with Section 2-03.3(7)C.

If the Plans call for placement of a sidewalk or an HMA or concrete overlay on the bridge deck, the Contractor shall produce the final finish of these areas by dragging a strip of damp, seamless burlap lengthwise over the bridge deck or by brooming it lightly. Approximately 3-feet of the drag shall contact the surface, with the least possible bow in its leading edge. It shall be kept wet and free of hardened lumps of concrete. When the burlap drag fails to produce the required finish, the Contractor shall replace it. When not in use, it shall be lifted clear of the bridge deck.

After the bridge deck has cured, the surface shall conform to the surface smoothness requirements specified in Section 6-02.3(10)D3.

The surface texture on any area repaired to address out-of-tolerance surface smoothness shall match closely that of the surrounding bridge deck area at the completion of the repair. Methods used to remove high spots shall cut through the mortar and aggregate without breaking or dislodging the aggregate or causing spalls.

6-02.3(10)D6 Bridge Approach Slab Finishing and Texturing

Bridge approach slabs shall be textured either in accordance with Section 6-02.3(10)D5, or using metal tined combs in the transverse direction, except bridge approach slabs receiving an overlay in the same Contract shall be finished as specified in Section 6-02.3(10)D5 only.

The comb shall be made of a single row of metal tines. It shall leave striations in the fresh concrete approximately 3/16-inch deep by 1/8-inch wide and spaced approximately 1/2-inch apart. The Engineer will decide actual depths at the site. If the comb has not been approved, the Contractor shall obtain the Engineer's approval by demonstrating it on a test section. The Contractor may operate the combs manually or mechanically, either singly or with several placed end to end. The timing and method used shall produce the required texture without displacing larger particles of aggregate.

Texturing shall end 2-feet from curb lines. This 2-foot untextured strip shall be hand finished with a steel trowel.

Surface smoothness, high spots, and low spots shall be addressed as specified in Section 6-02.3(10)D5. The surface texture on any area cut down or built up shall match closely that of the surrounding bridge approach slab area. The entire bridge approach slab shall provide a smooth riding surface.

6-02.3(10)F Bridge Approach Slab Orientation and Anchors

In the first paragraph, the following sentence is inserted after the first sentence:

Unless otherwise shown in the Plans, the pavement end of the bridge approach slab shall be constructed normal to the Roadway centerline.

The following new paragraph is inserted before the last paragraph:

The compression seal shall be a 2-1/2 inch wide gland selected from the current Qualified Products List.

6-02.3(11) Curing Concrete

Items number 1 through 4 are deleted and replaced with the following 5 new numbered items:

1. Bridge sidewalks, roofs of cut and cover tunnels — curing compound covered by white, reflective type sheeting or continuous wet curing. Curing by either method shall be for at least 10 days.

2. Bridge decks — See Section 6-02.3(11)B.

3. Bridge approach slabs (Class 4000A concrete) - 2 coats of curing compound and continuous wet cure for at least 10-days.

4. Concrete barriers and rail bases – See Section 6-02.3(11)A.

5. All other concrete surfaces — continuous wet cure for at least three days.

In the second paragraph, the first sentence is replaced with the following three new sentences:

> During the continuous wet cure, the Contractor shall keep all exposed concrete surfaces saturated with water. Formed concrete surfaces shall be kept in a continuous wet cure by leaving the forms in place. If forms are removed during the continuous wet cure period, the Contractor shall treat the concrete as an exposed concrete surface.

The third paragraph is revised to read:

> When curing Class 4000A, two coats of curing compound that complies with Section 9-23.2 shall be applied immediately (not to exceed 15 min.) after tining any portion of the bridge approach slab. The continuous wet cure shall be established as soon as the concrete has set enough to allow covering without damaging the finish.

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

> If the Plans call for an asphalt overlay on the bridge approach slab, the Contractor shall use the clear curing compound (Type 1, Class B), applying at least 1 gallon per 150 square feet to the concrete surface.

The eighth paragraph is deleted.

6-02.3(11)A2 Slip-Form Barrier

In the fourth paragraph, item number 1, “Type 1D” is revised to read “Type 1”.

6-02.3(11)B Curing Bridge Decks

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

6-02.3(11)B1 Equipment

The Contractor shall maintain a wet sheen, without developing pooling or sheeting water, using a fogging apparatus consisting of pressure washers with a minimum nozzle output of 1,500 psi, or other means approved by the Engineer.

The Contractor shall submit a bridge deck curing plan to the Engineer a minimum 14 calendar days prior to the pre-concreting conference. The Contractor’s plan shall describe the sequence and timing that will be used to fog the bridge deck, apply pre-soaked burlap, install soaker hoses and cover the deck with white reflective sheeting.

6-02.3(11)B2 Curing

The fogging apparatus shall be in place and charged for fogging prior to beginning concrete placement for the bridge deck.

The Contractor shall presoak all burlap to be used to cover the deck during curing.

Immediately after the finishing machine passes over finished concrete, the Contractor shall implement the following tasks:

1. The Contractor shall fog the bridge deck while maintaining a wet sheen without developing pooling or sheeting water.

2. The Contractor shall apply the presoaked burlap to the top surface to fully cover the deck without damaging the finish, other than minor marring of the concrete surface. The Contractor shall not apply curing compound.

3. The Contractor shall continue to keep the burlap wet by fog spraying until the burlap is covered by soaker hoses and white reflective sheeting. The Contractor shall place the soaker hoses and whiter reflective sheeting after the concrete has achieved initial set. The Contractor shall charge the soaker hoses frequently so as to keep the burlap covering the entire deck wet during the course of curing.

As an alternative to tasks 2 and 3 above, the Contractor may propose a curing system using proprietary curing blankets specifically manufactured for bridge deck curing. Details of the proprietary curing blanket system, including product literature and details of how the system is to be installed and maintained, shall be submitted to the Engineer for approval.

The wet curing regime as described shall remain in place for at least 14 consecutive calendar days.

6-02.3(12)A Construction Joints in New Construction

The third paragraph is deleted and replaced with the following three new paragraphs:

If the Plans require a roughened surface on the joint, the Contractor shall strike it off to leave grooves at right angles to the length of the member. Grooves shall be installed using one of the following options:

1. Grooves shall be ½ to 1 inch wide, ¼ to ½ inch deep, and spaced equally at twice the width of the groove. Grooves shall terminate approximately 1 ½-inches from the face of concrete.

2. Grooves shall be 1 to 2 inches wide, a minimum of ½-inch deep, and spaced a maximum of three times the width of the groove. Grooves shall terminate approximately 1 ½-inches from the face of concrete.

If the Engineer approves, the Contractor may use an alternate method to produce a roughened surface on the joint, provided that such an alternate method leaves a roughened surface of at least a ¼-inch amplitude.

If the first strike-off does not produce the required roughness, the Contractor shall repeat the process before the concrete reaches initial set. The final surface shall be clean and without laitance or loose material.

6-02.3(12)B Construction Joints Between Existing and New Construction

The phrase “by method(s) as approved by the Engineer” is deleted from each paragraph in this section.

6-02.3(13) Expansion Joints

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

Joints made of a vulcanized, elastomeric compound (with neoprene as the only polymer) shall be installed with a lubricant adhesive as recommended by the manufacturer.

In the third paragraph, “injuring” is revised to read “damaging”.

The following two new subsections are added:

6-02.3(13)A Strip Seal Expansion Joint System

The Contractor shall submit Working Drawings consisting of the strip seal expansion joint shop drawings in accordance with Section 6-03.3(7). These plans shall include, at a minimum, the following:

1. Plan, elevation, and sections of the joint system and all components, with dimensions and tolerances.

2. All material designations.

3. Manufacturer's written installation procedure.

4. Corrosion protection system used on the metal components.

5. Locations of welded shear studs, lifting mechanisms, temperature setting devices, and construction adjustment devices.

6. Method of sealing the system to prevent leakage of water through the joint.

The strip seal shall be removable and replaceable.

The metal components shall conform to ASTM A 36, ASTM A 992, or ASTM A 572, and shall be protected against corrosion by one of the following methods:

1. Zinc metallized in accordance with Section 6-07.3(14).

2. Hot-dip galvanized in accordance with AASHTO M 111.

3. Paint in accordance with Section 6-07.3(9). The color of the top coat shall be Federal Standard 595 Color No. 26420. The surfaces embedded in concrete shall be painted only with a shop primer coat of paint conforming to Section 9-08.1(2)C.

The strip seal gland shall be continuous for the full length of the joint with no splices permitted, unless otherwise shown in the Plans.

Other than items shown in the Plans, threaded studs used for construction adjustments are the only items that may be welded to the steel shapes provided they are removed by grinding after use, and the area repaired by application of an approved corrosion protection system.

If the opening between the steel shapes is anticipated to be less than 1-1/2 inches at the time of seal installation, the seal may be installed prior to encasement of the steel shapes in concrete.

After the joint system is installed, the joint shall be flooded with water and inspected, from below the joint, for leakage. If leakage is observed, the joint system shall be repaired by the Contractor, as recommended by the manufacturer.

6-02.3(13)B Compression Seal Expansion Joint System

Compression seal glands shall be selected from the current Qualified Products List and sized as shown in the Plans.

The compression seal expansion joint system shall be installed in accordance with the manufacturer's written recommendations. The Contractor shall submit a Type 1 Working Drawing consisting of the manufacturer's written installation procedure and repair procedures if leakage testing fails.

After the joint system is installed, the joint area shall be flooded with water and inspected, from below the joint, for leakage. If leakage is observed, the joint system shall be repaired by the Contractor, as recommended by the manufacturer.

6-02.3(14) Finishing Concrete Surfaces

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

The Contractor shall clean and refinish any stained or discolored surfaces.

The following new subsection is added:

6-02.3(14)D General Requirements for Concrete Surface Finishes Produced by Form Liners

Horizontal and vertical joints shall be spliced in accordance with the manufacturer's printed instructions. The Contractor shall submit a Type 1 Working Drawing consisting of the manufacturer’s joint splice instructions.

Horizontal splicing of ABS and plastic form liners to achieve the required height is not permitted and there shall be no horizontal joints. The concrete formed with ABS and plastic form liners shall be given a light sandblast to remove the glossy finish.

Side forms, traffic barrier forms, and pedestrian barrier forms using these form liners may be removed after 24 hours provided the concrete mix used includes a water-reducing admixture, and the concrete reaches 1,400 psi minimum compressive strength before form removal. Concrete in load supporting forms utilizing these form liners shall be cured in accordance with Section 6-02.3(17)N. Once the forms are removed, the Contractor shall treat the joint areas by patching or light sandblasting as required by the Engineer to ensure that the joints are not visible.

Form liners shall be cleaned, reconditioned, and repaired before each use. Form liners with repairs, patches, or defects which, in the opinion of the Engineer, would result in adverse effects to the concrete finish shall not be used.

Care shall be taken to ensure uniformity of color throughout the textured surface. A change in form release agent will not be allowed.

All surfaces formed by the form liner shall also receive a Class 2 surface finish. Form ties shall be a type that leaves a clean hole when removed. All spalls and form tie holes shall be filled as specified for a Class 2 surface finish.

6-02.3(14)C Pigmented Sealer for Concrete Surfaces

The first sentence (up until the colon) is revised to read:

> The Contractor shall submit a Type 1 Working Drawing consisting of the pigmented sealer manufacturer's written instructions covering, at a minimum, the following:

The second paragraph is deleted.

In the last sentence of the third paragraph, "approval" is revised to read "acceptance".

6-02.3(15) Date Numerals

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

> When an existing Structure is widened or when traffic barrier is placed on an existing Structure, the date shall be for the year in which the original Structure was completed.

6-02.3(16) Plans for Falsework and Formwork

This section is revised to read:

> The Contractor shall submit all plans for falsework and formwork as Type 2E Working Drawings. Submittal is not required for footing or retaining wall formwork if the wall is 4 feet or less in height (excluding pedestal height).
>
> The design of falsework and formwork shall be based on:
>
> 1. Applied loads and conditions which are no less severe than those described in Section 6-02.3(17)A, Design Loads;
>
> 2. Allowable stresses and deflections which are no greater than those described in Section 6-02.3(17)B, Allowable Stresses and Deflections;
>
> 3. Special loads and requirements no less severe than those described in Section 6-02.3(17)C, Falsework and Formwork at Special Locations;
>
> 4. Conditions required by other Sections of 6-02.3(17), Falsework and Formwork.
>
> The falsework and formwork plans shall be scale drawings showing the details of proposed construction, including: sizes and properties of all members and components; spacing of bents, posts, studs, wales, stringers, wedges and bracing; rates of concrete placement, placement sequence, direction of placement, and location of construction joints; identification of falsework devices and safe working loads as well as identification of any bolts or threaded rods used with the devices including their diameter, length, type, grade, and required torque. The falsework plans shall show the proximity of falsework to utilities or any nearby Structures including underground Structures. Formwork accessories shall be identified according to Section 6-02.3(17)H, Formwork Accessories. All assumptions, dimensions, material properties, and other data used in making the structural analysis shall be noted on the drawing.

The Contractor shall furnish associated design calculations to the Engineer as part of the submittal. The design calculations shall show the stresses and deflections in load supporting members. Construction details which may be shown in the form of sketches on the calculation sheets shall be shown in the falsework or formwork drawings as well. Falsework or formwork plans will be rejected in cases where it is necessary to refer to the calculation sheets for information needed for complete understanding of the falsework and formwork plans or how to construct the falsework and formwork.

Each sheet of falsework and formwork plans shall carry the following:

1. The initials and dates of all participating design professionals.

2. Clear notation of all revisions including identification of who authorized the revision, who made the revision, and the date of the revision.

3. The Contract number, Contract title, and sequential sheet number. These shall also be on any related documents.

4. Identify where the falsework and formwork plan will be utilized by referencing Contract Plan sheet number and related item or detail.

6-02.3(16)A Nonpreapproved Falsework and Formwork Plans

This section, including title, is deleted in its entirety and replaced with the following:

6-02.3(16)A Vacant

6-02.3(16)B Preapproved Formwork Plans

This section, including title, is revised to read:

6-02.3(16)B Pre-Contract Review of Falsework and Formwork Plans

The Contractor may request pre-contract review of formwork plans for abutments, wingwalls, diaphragms, retaining walls, columns, girders and beams, box culverts, railings, and bulkheads. Plans for falsework supporting the bridge deck for interior spans between precast prestressed concrete girders may also be submitted for pre-contract review.

To obtain pre-contract review, the Contractor shall electronically submit drawings and design calculations in PDF format directly to:

BridgeConstructionSupport@wsdot.wa.gov

The Bridge and Structures Office, Construction Support Engineer will return the falsework or formwork plan to the Contractor with review notes, an effective date of review, and any revisions needed prior to use. For each contract on which the pre-reviewed falsework or formwork plans will be used, the Contractor shall submit a copy to the Engineer. Construction shall not begin until the Engineer has given concurrence.

If the falsework or formwork being constructed has any deviations to the preapproved falsework or formwork plan, the Contractor shall submit plan revisions for review and approval in accordance with Section 6-02.3(16).

6-02.3(17)A Design Loads

The fifth paragraph is revised to read:

> Live loads shall consist of a minimum uniform load of not less than 25 psf, applied over the entire falsework plan area, plus the greater of:
>
> 1. Actual weights of the deck finishing equipment applied at the rails, or;
>
> 2. A minimum load of 75 pounds per linear foot applied at the edge of the bridge deck.

6-02.3(17)J Face Lumber, Studs, Wales, and Metal Forms

The second and third to last paragraphs ~~is~~are deleted.

6-02.3(17)K Concrete Forms on Steel Spans

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

> The Contractor shall fill the holes with fully torqued ASTM A 325 bolts in accordance with Section 6-03.3(33).

6-02.3(17)O Early Concrete Test Cylinder Breaks

The third paragraph is revised to read:

> The cylinders shall be cured in the field in accordance with WSDOT FOP for AASHTO T 23 Section 10.2 Field Curing.

6-02.3(20) Grout for Anchor Bolts and Bridge Bearings

The first five paragraphs are deleted and replaced with the following two new paragraphs:

> Grout shall conform to Section 9-20.3(2) for anchor bolts and for bearing assemblies with bearing plates. Grout shall conform to Section 9-20.3(3) for elastomeric bearing pads and fabric pad bearings without bearing plates.
>
> Grout shall be a workable mix with a viscosity that is suitable for the intended application. The Contractor shall receive approval from the Engineer before using the grout.

6-02.3(24)C Placing and Fastening

The twelfth paragraph is revised to read:

> In bridge decks, a “mat” is two adjacent and perpendicular layers of reinforcing steel. Top and bottom mats shall be supported adequately to hold both in their proper positions. If No. 4 bars make up the lower layer of steel in a mat, it shall be blocked at not more than 3-foot intervals (or 4-foot intervals for bars No. 5 and larger). Wire ties to girder stirrups shall not be considered as blocking. To provide a rigid mat, the Contractor shall add other supports and tie wires to the top mat as needed.

In the fourteenth paragraph, the description following “2½ inches between” is revised to read:

> Adjacent bars in a layer. Bridge deck and bridge approach slab bars and the top of the slab.

In the fourteenth paragraph, the description following “2 inches between” is supplemented with the following new sentence:

> Bars and the surface of concrete when not specified otherwise in this Section or in the Plans.

In the fourteenth paragraph, the first sentence in the description following “1½ inches between” is deleted.

The fifteenth paragraph is revised to read:

> Except for top cover in bridge decks and bridge approach slabs, cover to ties and stirrups may be ½ inch less than the values specified for main bars but shall not be less than 1 inch.

In the sixteenth paragraph, the first item in the second subparagraph is revised to read:

> The clearance to the top surface of bridge decks and bridge approach slabs +¼ in/-0”.

6-02.3(24)E Welding Reinforced Steel

This section is revised to read:

> Welding of steel reinforcing bars shall conform to the requirements of ANSI/AWS D1.4 Structural Welding Code - Reinforcing Steel, latest edition, except where superseded by the Special Provisions, Plans, and these Specifications.
>
> Before any welding begins, the Contractor shall submit a Type 2 Working Drawing consisting of the welding procedure for each type of welded splice to be used, including the weld procedure specifications and joint details. The weld procedure specifications shall be written on a form taken from AWS D1.4 Annex A, or equivalent. Test results of tensile strength, macroetch, and visual examination shall be included. The form shall be signed and dated.
>
> Welders shall be qualified in accordance with AWS D1.4. The Contractor shall be responsible for the testing and qualification of welders, and shall submit Type 2 Working Drawings consisting of welder qualification and retention records. The weld joint and welding position a welder is qualified in shall be in accordance with AWS D1.4. The welder qualifications shall remain in effect indefinitely unless, (1) the welder is not engaged in a given process of welding for which the welder is qualified for a period exceeding six months, or (2) there is some specific reason to question a welder's ability.
>
> Filler metals used for welding reinforcing bars shall be in accordance with AWS D1.4 Table 5.1. All filler metals shall be low-hydrogen and handled in compliance with low-hydrogen practices specified in the AWS code.
>
> Short circuiting transfer with gas metal arc welding will not be allowed. Slugging of welds will not be allowed.
>
> For the purpose of compatibility with AWS D1.4, welded lap splices for spiral or hoop reinforcing shall be considered Flare-V groove welds, indirect butt joints.

The Contractor is responsible for using a welding sequence that will limit the alignment distortion of the bars due to the effects of welding. The maximum out-of-line permitted will be 1/4 inch from a 3.5-foot straight-edge centered on the weld and in line with the bar.

The ground wire from the welding machine shall be clamped to the bar being welded.

Where epoxy-coated steel reinforcing bars are specified to be spliced by welding, the epoxy coating shall be left off or removed from the surfaces to be heated, but in no cases less than six inches of each bar being welded. After the welding is complete, the Contractor shall apply epoxy patching material to the uncoated portions of the bar in accordance with Section 6-02.3(24)H.

6-02.3(25) Prestressed Concrete Girders

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

WSDOT certification will be granted at, and renewed during, the annual prestressed plant review and approval process in accordance with WSDOT Materials Manual M 46-01.04 Standard Practice QC 6.

6-02.3(25)I Fabrication Tolerances

In the first paragraph, item number 21 is revised to read:

21. Differential Camber Between Girders in a Span (measured in place at the job site):

For deck bulb tee girders and PCPS members with grouted shear keys:	Cambers shall be equalized when the differences in cambers between adjacent girders exceeds ± ¼ inch
For deck bulb tee girders and PCPS members without grouted shear keys:	Cambers shall be equalized when the differences in cambers between adjacent girders exceeds ± ½ inch
For all other prestressed concrete girders:	± ⅛ inch per 10 feet of girder length

6-02.3(25)O Deck Bulb Tee Girder Flange Connection

This section, including title, is revised to read:

Deck Bulb Tee Girder Flange and PCPS Member Connection

The Contractor shall submit a method of equalizing deflections as a Type 1 Working Drawing. Any temporary strands in the top flange shall be cut per Section 6-02.3(25)N prior to equalizing girder deflections.

Deck bulb tee girders and PCPS members with grouted shear keys shall be constructed in the following sequence:

1. Deflections shall be equalized per the Contractor's equalization plan.

2. Intermediate diaphragms shall be placed and weld ties shall be welded. Welding ground shall be attached directly to the steel plates being welded when welding the weld-ties.

3. The keyways shown in the Plans to receive grout shall be filled flush with the surrounding surfaces using a grout conforming to Section 9-20.3(2).

4. Equalization equipment shall not be removed and other construction equipment shall not be placed on the structure until intermediate diaphragms have attained a minimum compressive strength of 2,500 psi and keyway grout has achieved a minimum compressive strength of 4000 psi.

Deck bulb tee girders and PCPS members without grouted shear keys shall be constructed in the following sequence:

1. Deflections shall be equalized per the Contractor's equalization plan.

2. Intermediate diaphragms shall be placed and weld ties shall be welded. Welding ground shall be attached directly to the steel plates being welded when welding the weld-ties.

3. Equalization equipment shall not be removed and other construction equipment shall not be placed on the structure until intermediate diaphragms have attained a minimum compressive strength of 2,500 psi.

6-02.3(26)F Prestressing Reinforcement

The last sentence in the fourth paragraph is revised to read:

If the prestressing reinforcement will not be stressed and grouted for more than 7 calendar days after it is placed in the ducts, the Contractor shall place an approved corrosion inhibitor conforming to Federal Specification MIL-I-22110C in the ducts.

6-02.3(28) Precast Concrete Panels

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

WSDOT Certification will be granted at, and renewed during, the annual precast plant review and approval process in accordance with WSDOT Materials Manual M 46-01.04 Standard Practice QC 7.

6-02.4 Measurement

The following three new paragraphs are inserted before the last paragraph:

Expansion joint system___seal - superstr. will be measured by the linear foot along its completed line and slope.

Expansion joint modification will be measured by the linear foot of expansion joint modified along its completed line and slope.

Prestressed concrete girder will be measured by the linear foot of girder specified in the Proposal.

6-02.5 Payment

In the paragraph following the bid item “Commercial Concrete”, per cubic yard the second sentence is revised to read:

> All costs in connection with concrete curing, producing concrete surface finish with form liners, and furnishing and applying pigmented sealer to concrete surfaces as specified, shall be included in the unit contract price per cubic yard for "Conc. Class ____".

The following new paragraph is inserted after the bid item “Superstructure (name bridge)”, lump sum:

> All costs in connection with constructing, finishing and removing the bridge deck test slab as specified in Section 6-02.3(10)D1 shall be included in the lump sum Contract price for “Superstructure___” or “Bridge Deck___” for one bridge in each project, as applicable.

In the paragraph following the bid item “Epoxy-Coated St. Reinf. Bar ___”, per pound, the first sentence is revised to read:

> Payment for reinforcing steel shall include the cost of drilling holes in concrete for, and setting, steel reinforcing bar dowels with epoxy bonding agent, and furnishing, fabricating, placing, and splicing the reinforcement.

The bid item “Cure Box”, lump sum and paragraph following bid item are deleted.

The following three new bid items are inserted before the bid item “Bridge Approach Slab”, per square yard:

> “Expansion Joint System _____ - Superstr.”, per linear foot.
>
> “Expansion Joint Modification - ___”, per linear foot.
>
> “Prestressed Conc. Girder ___”, per linear foot.

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Section 6-03, Steel Structures
~~January 5~~April 6, 2015

6-03.2 Materials
The first sentence in the fifth paragraph is revised to read:

> The Contractor shall submit Type 1 Working Drawings describing the methods for visibly marking the material so that it can be traced.

6-03.3 Construction Requirements
This section is revised to read:

> Structural steel fabricators of plate and box girders, floorbeams, truss members, stringers, cross frames, diaphragms, and laterals shall be certified under the AISC Certification Program for Steel Bridge Fabricators, Advanced Bridges Category. When fracture critical members are specified in the contract, structural steel fabricators shall also meet the supplemental requirements F, Bridges with Fracture-Critical Members, under the AISC Certification Program for Steel Bridge Fabricators.

6-03.3(7) Shop Plans
This section is revised to read:

> The Contractor shall submit all shop detail plans for fabricating the steel as Type 2 Working Drawings.
>
> If these plans will be submitted directly from the fabricator, the Contractor shall so notify the Engineer in writing.
>
> No material shall be fabricated until: (1) the Working Drawing review is complete, and (2) the Engineer has accepted the materials source.
>
> Before physical completion of the project, the Contractor shall furnish the Engineer one set of reproducible copies of the as-built shop plans. The reproducible copies shall be clear, suitable for microfilming, and on permanent sheets that measure no smaller than 11 by 17-inches. Alternatively, the shop drawings may be provided in an electronic format with the concurrence of the Engineer.

6-03.3(7)A Erection Methods
The first paragraph is revised to read:

> Before beginning to erect any steel Structure, the Contractor shall submit Type 2E Working Drawings consisting of the erection plan and procedure describing the methods the Contractor intends to use.

The second paragraph (up until the colon) is revised to read:

> The erection plan and procedure shall provide complete details of the erection process including, at a minimum, the following:

The third paragraph (up until the colon) is revised to read:

As part of the erection plan Working Drawings, the Contractor may submit details of an engineered and fabricated lifting bracket bolted to the girder top flanges providing the following requirements are satisfied:

In the third paragraph, the second sentence of item number 4 is revised to read:

Certification documentation from a previous project may be submitted;

The last sentence of the fourth paragraph is deleted.

The last paragraph is deleted.

6-03.3(10) Straightening Bent Material

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

A limited amount of localized heat may be applied only if carefully planned and supervised, and only in accordance with the heat-straightening procedure Working Drawing submittal.

The third paragraph is revised to read:

After straightening, the Contractor shall inspect the member for fractures using a method proposed by the Contractor and accepted by the Contracting Agency.

The last paragraph is revised to read:

The procedure for heat straightening of universal mill (UM) plates by the mill or the fabricator shall be submitted as a Type 2 Working Drawing.

6-03.3(14) Edge Finishing

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

Corners along exposed edges shall be broken by light grinding or another method acceptable to the Engineer to achieve an approximate 1/16-inch chamfer or rounding.

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

The fabricator shall prevent excessive hardening of flange edges through preheating, post heating, or control of the burning process as recommended by the steel manufacturer.

The sixth paragraph is revised to read:

Hardness testing shall consist of testing thermal-cut edges with a portable hardness tester. The hardness tester, and its operating test procedures, shall be submitted as a Type 1 Working Drawing. The hardness tester shall be convertible to Rockwell C scale values.

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

If thermal-cutting operations conform to procedures established by the steel manufacturer, and hardness testing results are consistently within acceptable limits, the Engineer may authorize a reduction in the testing frequency.

6-03.3(15) Planing of Bearing Surfaces

This section is supplemented with the following new paragraph:

Where mill to bear is specified in the Plans, the bearing end of the stiffener shall be flush and square with the flange and shall have at least 75 percent of this area in contact with the flange.

6-03.3(25) Welding and Repair Welding

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

Welding and repair welding of all steel bridges shall comply with the AASHTO/AWS D1.5M/D1.5, latest edition, Bridge Welding Code.

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

No welding, including tack and temporary welds shall be done in the shop or field unless the location of the welds is shown on the shop drawings reviewed and accepted by the Engineer.

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

Welding procedures shall accompany the shop drawing Working Drawing submittal.

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

Welding shall not begin until completion of the shop plan Working Drawing review as required in Section 6-03.3(7).

In item number 1 of the ninth paragraph, “approves” is revised to read “concurs”.

6-03.3(25)A3 Ultrasonic Inspection

The following new paragraph is inserted before the last paragraph:

A minimum of 30 percent of complete penetration vertical welds on steel column jackets thicker than 5/16-inch, within 1.50 column jacket diameter of the top and bottom of each column, shall be inspected. If any rejectable flaws are found, 100 percent of the weld within the specified limits shall be inspected. The largest column cross section diameter for tapered column jackets shall constitute one column jacket diameter.

6-03.3(25)A4 Magnetic Particle Inspection

Items number 3 and 4 are revised to read:

3. Complete penetration groove welds on plates $^{5}/_{16}$-inch or thinner (excluding steel column jackets) shall be 100 percent tested by the magnetic particle method. Testing shall apply to both sides of the weld, if backing plate is not used. The ends of each complete penetration groove weld at plate edges shall be tested by the magnetic particle method.

4. A minimum of 30 percent of complete penetration vertical welds on steel column jackets $^{5}\!/_{16}$-inch or thinner, within 1.50 column jacket diameters of the top and bottom of each column, shall be magnetic particle inspected. The largest column cross section diameter for tapered column jackets shall constitute one column jacket diameter.

The last paragraph is supplemented with the following new sentence:

If any rejectable flaws are found in any test length of item 4 above, 100 percent of the weld within the specified limits shall be inspected.

6-03.3(27) High Strength Bolt Holes

The last paragraph is revised to read:

The Contractor shall submit Type 2 Working Drawings consisting of a detailed outline of the procedures proposed to accomplish the work from initial drilling through shop assembly.

6-03.3(27)C Numerically Controlled Drilled Connections

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

The Contractor shall submit Type 1 Working Drawings consisting of a detailed outline of proposed N/C procedures.

6-03.3(29) Welded Shear Connectors

This section's content is deleted and replaced with the following:

Installation, production control, and inspection of welded shear connectors shall conform to Chapter 7 of the AASHTO/AWS D1.5M/D1.5:2010 Bridge Welding Code. If welded shear connectors are installed in the shop, installation shall be completed prior to applying the shop primer coat in accordance with Section 6-07.3(9)G. If welded shear connectors are installed in the field, the steel surface to be welded shall be prepared to SSPC-SP 11, power tool cleaning, just prior to welding.

6-03.3(33) Bolted Connections

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

The Contractor shall submit Type 1 Working Drawings providing documentation of the bolt tension calibrator, including brand, capacity, model, date of last calibration, and manufacturer's instructions for use.

In the second sentence of the second paragraph, the word "approved" is deleted.

In item number 3 of the fifth paragraph, "approved" is revised to read "specified".

In the center column header of table 1, "AASHTO M 164" is revised to read "ASTM A 325".

In the column headings of table 3, "M 164" is revised to read "A 325".

In the tenth paragraph, item number 3, "approved" is revised to read "accepted" in the second and third sentences of the first paragraph.

In the tenth paragraph, item number 3, the third paragraph is revised to read:

> The Contractor shall submit Type 1 Working Drawings of the tension control bolt assembly, including bolt capacities, type of bolt, nut, and washer lubricant, method of packaging and protection of the lubricated bolt, installation equipment, calibration equipment, and installation procedures.

In the first sentence of the last paragraph, “AASHTO M 164” is revised to read “ASTM A 325”.

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

> Black ASTM A 325 bolts may be reused once if accepted by the Engineer.

~~In the second sentence of the last paragraph, “approved” is revised to read “accepted”.~~

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

> Bolts to be reused shall be relubricated in accordance with the manufacturer’s recommendations.

6-03.3(33)A Pre-Erection Testing

In the fifth sentence of the first paragraph, “approved” is revised to read “accepted”.

The third paragraph is revised to read:

> The Contractor shall submit Type 1 Working Drawings consisting of the manufacturer’s detailed procedure for pre-erection (rotational capacity) testing of tension control bolt assemblies.

6-03.3(33)B Bolting Inspection

In the last sentence of the first paragraph, “approved” is revised to read “specified”.

The last paragraph is revised to read:

> The Contractor shall submit Type 1 Working Drawings consisting of the manufacturer’s detailed procedure for routine observation to ensure proper use of the tension control bolt assemblies.

6-03.3(42) Surface Condition

The first subparagraph is revised to read:

> Painted steel surfaces shall be cleaned by methods required for the type of staining. The Contractor shall submit a Type 1 Working Drawing of the cleaning method.

Section 6-19, Shafts
~~January 5~~April 6, 2015

6-19.3(2) Shaft Construction Submittal
The last sentence is revised to read:

> The submittals shall be Type 2 Working Drawings, except the shaft slurry technical assistance submittal shall be Type 1.

6-19.3(3) Shaft Excavation
In the first paragraph, the phrase “as approved by the Engineer” is deleted.

6-19.3(3)B4 Temporary Telescoping Shaft Casing
In the first paragraph, the first sentence of item number 1 is revised to read:

> The Contractor shall submit the request to use temporary telescoping casing as a Type 2 Working Drawing.

6-19.3(3)D Bottom of Shaft Excavation
In the first sentence of the second paragraph, “approved” is revised to read “accepted”.

6-19.3(3)E Shaft Obstruction
In the last sentence, “approved” is revised to read “accepted”.

6-19.3(3)F Voids Between Permanent Casing and Shaft Excavation
In the last sentence, the words “and as approved by the Engineer” are deleted.

6-19.3(3)G Operating Shaft Excavation Equipment From an Existing Bridge
The second sentence is revised to read:

> If necessary and safe to do so, and if the Contractor submits a Type 2 Working Drawing consisting of a written request in accordance with Section 6-01.6, the Engineer may permit operation of drilling equipment on a bridge.

6-19.3(3)H Seals for Shaft Excavation in Water
The first paragraph is revised to read:

> When shafts are constructed in water and the Plans show a seal between the casing shoring and the upper portion of the permanent casing of the shaft, the Contractor shall construct a seal in accordance with the shaft installation narrative specified in Section 6-19.3(2)B Item 7.

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

> If the Contractor uses a casing shoring diameter other than that specified in the Plans, the Contractor shall submit a revised seal design in accordance with Section 6-19.3(2)B Item 7.

6-19.3(4)C Slurry Sampling and Testing
The second to last sentence of the first paragraph is revised to read:

Synthetic slurry shall conform to Section 9-36.2(2), the quality control plan included in the shaft installation narrative in accordance with Section 6-19.3(2)B Item 4.

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

These records shall be submitted as a Type 1 Working Drawing once the slurry system has been established in the first drilled shaft on the project.

6-19.3(4)E Maintenance of a Stable Shaft Excavation

In the last sentence of the first paragraph, “approval” is revised to read “review”.

6-19.3(4)F Disposal of Slurry and Slurry Contacted Spoils

This section is revised to read:

The Contractor shall manage and dispose of the slurry wastewater in accordance with Section 8-01.3(1)C. Slurry-contacted spoils shall be disposed of as specified in the shaft installation narrative in accordance with Section 6-19.3(2)B, item 8, and in accordance with the following requirements:

1. Uncontaminated spoils in contact with water-only slurry may be disposed of as clean fill.

2. Uncontaminated spoils in contact with water slurry mixed with flocculants approved in Section 8-01.3(1)C3 may be disposed of as clean fill away from areas that drain to surface waters of the state.

3. Spoils in contact with synthetic slurry or water slurry with polymer-based additives or flocculants not approved in Section 8-01.3(1)C3 shall be disposed of in accordance with Section 2-03.3(7)C. With permission of the Engineer, the Contractor may re-use these spoils on-site.

4. Spoils in contact with mineral slurry shall be disposed of in accordance with Section 2-03.3(7)C. With permission of the Engineer, the Contractor may re-use these spoils on-site.

6-19.3(5)A Steel Reinforcing Bar Cage Assembly

In the second to last sentence of the first paragraph, the phrase “as approved by the Engineer” is deleted.

6-19.3(5)D Steel Reinforcing Bar Cage Support at Base of Shaft Excavation

The first sentence is revised to read:

For shafts with temporary casing within 15-feet of the bottom of shaft elevation as specified in the Plans, the Contractor may place quarry spalls or other rock backfill acceptable to the Engineer into the shaft below the specified bottom of shaft elevation as a means to support the steel reinforcing bar cage, provided that the materials and means to accomplish this have been addressed by the shaft installation narrative, as specified in Section 6-19.3(2)B Item 9.

6-19.3(6)C Care for CSL Access Tubes From Erection Through CSL Testing

In the last sentence, “as approved by the Engineer” is revised to read “acceptable to the Engineer”.

6-19.3(8)C Requirements for Leaving Temporary Casing in Place

Item number 1 (up until the colon) is revised to read:

1. The Contractor shall submit a Type 2E Working Drawing of the following information:

In item C of item number 1, the phrase “in accordance with Section 6-01.9” is deleted.

Item number 2 is deleted.

6-19.3(9)D Requirements to Continue Shaft Excavation Prior to Acceptance of First Shaft

This section is revised to read:

> Except as otherwise noted, the Contractor shall not commence subsequent shaft excavations until receiving the Engineer's acceptance of the first shaft, based on the results and analysis of the crosshole sonic log testing for the first shaft. The Contractor may commence subsequent shaft excavations prior to receiving the Engineer’s acceptance of the first shaft, provided the following condition is satisfied:
>
> > The Engineer permits continuing with shaft construction based on the Engineer’s observations of the construction of the first shaft, including, but not limited to, conformance to the shaft installation narrative in accordance with Section 6-19.3(2)B, and the Engineer’s review of Contractor’s daily reports and Inspector’s daily logs concerning excavation, steel reinforcing bar placement, and concrete placement.

6-19.3(9)F Contractor’s Investigation and Remedial Action Plan

This section is revised to read:

> For all shafts determined to be unacceptable, the Contractor shall submit a Type 2 Working Drawing consisting of a plan for further investigation or remedial action. All modifications to the dimensions of the shafts, as shown in the Plans, required by the investigation and remedial action plan shall be supported by calculations and working drawings. All investigation and remedial correction procedures and designs shall be submitted.

6-19.3(9)H Cored Holes

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

> Prior to beginning coring, the Contractor shall submit Type 2 Working Drawings consisting of the method and equipment used to drill and remove cores from shaft concrete.

Section 8-20, Illumination, Traffic Signal Systems, Intelligent Transportation Systems, and Electrical

~~January 5~~April 6, 2015

8-20.2(1) Equipment List and Drawings

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

> Supplemental data would include such items as catalog cuts, product Specifications, shop drawings, wiring diagrams, etc.

The third paragraph (up until the colon) is revised to read:

> If the luminaires are not listed in the Qualified Products List, the Contractor shall submit the following information for each different type of luminaire required on the Contract:

The fourth paragraph (up until the colon) is revised to read:

> The Contractor shall submit for approval Type 3E Working Drawings in accordance with Section 1-05.3 for each of the following types of standards called for on this project:

The fifth paragraph is revised to read:

> The Contractor will not be required to submit shop drawings for approval for light standards and traffic signal standards conforming to the preapproved plans listed in the Special Provisions. The Contractor may use preapproved plans posted on the WSDOT website with a more current revision date than published in the Special Provisions.

8-20.3(1) General

The following six new paragraphs are inserted after the second paragraph:

> If a portion of an existing communication conduit system is damaged due to the Contractor's activities, the affected system shall be restored to original condition. Conduit shall be repaired. Communication cables shall be replaced and the communication system shall be made fully operational within 24 hours of being damaged.
>
> Damaged communication cable shall be replaced between existing termination or splice points. No additional termination or splice points will be allowed. An existing termination or splice point is defined as a location where all existing fiber strands or twisted pair wires are terminated or spliced at one point. Communication cable shall be defined as either copper twisted pair or fiber optic cables. The Contractor may use temporary splices to restore Contracting Agency communication systems until the permanent communication cable system is restored.
>
> When damage to an existing communication system has occurred, the Contractor shall perform the following in addition to other restoration requirements:
>
> 1. Inspect the communication raceway system including locate wire or tape to determine the extent of damage.

2. Contact the Engineer for Fiber Optic Cable and Twisted Pair (TWP) Copper Cable acceptance testing requirements and communication system restoration requirements.

3. Initially perform the acceptance tests to determine the extent of damage and also perform the acceptance tests after repairs are completed. Provide written certification that the communication cable system, including the locate wire or tape, is restored to test standard requirements.

Communication cables shall be restored by Contractor personnel that are WSDOT prequalified for communication installation work. Restoration shall be considered electrical work when the path of the communication system interfaces with electrical systems. Electrical work of this nature shall be performed by Contractor personnel that are WSDOT prequalified for work on both electrical and communication systems.

If the Contractor or Subcontractors are unable or unqualified to complete the restoration work, the Engineer may have the communication or electrical systems restored by other means and subtract the cost from the money that will be or is due the Contractor.

When field repair of existing conduit, innerduct or outerduct is required, the repair kits shall be installed per manufacturer's recommendations. Repair kits and each connection point between the repair kit and the existing raceway system shall be sealed to prevent air leakage during future cable installation.

8-20.3(8) Wiring

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

Every conductor at every wire termination, connector, or device shall have an approved wire marking sleeve bearing, as its legend, the circuit number indicated in the Contract.

8-20.3(13)A Light Standards

In the third paragraph, the last sentence of item number 1 is revised to read:

Conduit shall extend a maximum of 1 inch above the top of the foundation, including grounding end bushing or end bell bushing.

In the fourth paragraph, the second sentence of item number 1 is revised to read:

Conduits shall be cut to a maximum height of 2 inches above the foundation including grounding end bushing or end bell bushing.

Section 8-21, Permanent Signing
April 6, 2015

8-21.3(9)F Foundations
The first sentence of the first paragraph is revised to read:

> The excavation and backfill shall conform to the requirements of Section 2-09.3.

Section 8-22, Pavement Marking

~~January 5~~April 6, 2015

8-22.3(6) Removal of Pavement Markings

The second and third sentences of the first paragraph ~~is~~are revised to read:

> Grinding to remove ~~painted~~ pavement markings is ~~only~~ allowed prior to application of a Bituminous Surface Treatment. Grinding to remove pavement marking from hot mix asphalt and cement concrete pavements is allowed to a depth just above the pavement surface, then water blasting or shot blasting shall be required to remove the remaining markings.

Section 9-02, Bituminous Materials
April 6, 2015

9-02.1(4) Performance Graded Asphalt Binder (PGAB)

The first paragraph is supplemented with the following:

> For HMA with greater than 20 percent RAP by total weight of HMA or any amount of RAS the new asphalt binder, recycling agent and recovered asphalt (RAP and/or RAS) when blended in the proportions of the mix design shall meet the PGAB requirements of AASHTO M 320 Table 1 for the grade of asphalt binder specified by the Contract.

This section is supplemented with the following:

> The recycling agent used to rejuvenate the recovered asphalt from recycled asphalt pavement (RAP) and reclaimed asphalt shingles (RAS) shall meet the specifications in Table 1:

Table 1		**RA 1**		**RA 5**		**RA 25**	
Test	**ASTM Test Method**	**Min.**	**Max.**	**Min.**	**Max.**	**Min.**	**Max.**
Viscosity @ 140°F cSt	D2170 or D2171	50	150	200	800	1000	4000
Flashpoint COC, °F	D92	400		400		400	
Saturates, Wt. %	D2007		30		30		30
Specific Gravity	D70 or D2198	Report		Report		Report	
Tests on Residue from RTFC	D2872						
Viscosity Ratio[1]			3		3		3
Mass Change ± %			4		4		4

[1]Viscosity Ratio = $\dfrac{\text{RTFC Viscosity @ 140°F, cSt}}{\text{Original Viscosity @ 140°F, cSt}}$

9-02.1(6)A Polymerized Cationic Emulsified Asphalt CRS-2P

In the ninth row of the table, "Test" is revised to read "Tests".

The eleventh row in the table is revised to read:

Elastic Recovery %	T 301[2]	50	

The last two rows of the table are deleted.

Footnote 2 below the table is revised to read:

2 The residue material for T 301 shall come from the modified distillation per note 1.

Footnote 3 below the table is deleted.

The last paragraph is deleted.

Section 9-03, Aggregates

~~August 4, 2014~~April 6, 2015

9-03.1(2)C Use of Substandard Gradings

This section including title is deleted in its entirety and replaced with the following:

> **Vacant**

9-03.1(4)C Grading

In the second paragraph, the first sentence is deleted.

The third paragraph is deleted.

9-03.1(5)B Grading

The last paragraph is revised to read:

> The Contracting Agency may sample each aggregate component prior to introduction to the weigh batcher or as otherwise determined by the Engineer. Each component will be sieve analyzed separately in accordance with WSDOT FOP for WAQTC/AASHTO Test Method T-27/11. All aggregate components will be mathematically re-combined by the proportions (percent of total aggregate by weight) provided by the Contractor on Concrete Mix Design Form 350-040.

9-03.8(1) General Requirements

The first paragraph up until the colon is revised to read:

> Preliminary testing of aggregates for source approval shall meet the following test requirements:

The list in the first paragraph is supplemented with the following:

> Sand Equivalent 45 min.

The following new paragraph is inserted after the first paragraph:

> Aggregate sources that have 100 percent of the mineral material passing the No. 4 sieve shall be limited to no more than 5 percent of the total weight of aggregate.

9-03.8(2) HMA Test Requirements

The second paragraph (up until the colon) is revised to read:

> The mix design shall produce HMA mixtures when combined with RAP, RAS, coarse and fine aggregate within the limits set forth in Section 9-03.8(6) and mixed in the laboratory with the designated grade of asphalt binder, using the Superpave gyratory compactor in accordance with WSDOT FOP for AASHTO T 312, and at the required gyrations for N initial, N design, and N maximum with the following properties:

The third paragraph is revised to read:

> The mix criteria for Hamburg Wheel-Track Testing and Indirect Tensile Strength do not apply to HMA accepted by commercial evaluation.

9-03.8(3)B Gradation – Recycled Asphalt Pavement and Mineral Aggregate

This section is supplemented with the following:

For HMA with greater than 20 percent RAP by total weight of HMA the RAP shall be processed to ensure that 100 percent of the material passes a sieve twice the size of the maximum aggregate size for the class of mix to be produced.

When any amount of RAS is used in the production of HMA the RAS shall be milled, crushed or processed to ensure that 100 percent of the material passes the ½ inch sieve. Extraneous materials in RAS such as metals, glass, rubber, soil, brick, tars, paper, wood and plastic shall not exceed 2.0 percent by mass as determined on material retained on the No. 4 sieve.

9-03.14(3) Common Borrow

This section is revised to read:

Material for common borrow shall consist of granular or nongranular soil and/or aggregate which is free of deleterious material. Deleterious material includes wood, organic waste, coal, charcoal, or any other extraneous or objectionable material. The material shall not contain more than 3 percent organic material by weight. The plasticity index shall be determined using test method AASHTO T 89 and AASHTO T 90.

The material shall meet one of the options in the soil plasticity table below.

Soil Plasticity Table

Option	Sieve	Percent Passing	Plasticity Index
1	No. 200	0 - 12	N/A
2	No. 200	12.1 - 35	6 or Less
3	No. 200	Above 35	0

All percentages are by weight.

If requested by the Contractor, the plasticity index may be increased with the approval of the Engineer.

9-03.14(4) Gravel Borrow for Structural Earth Wall

In the second table, the row beginning with “pH” is revised to read:

pH	WSDOT Test Method T 417	4.5 - 9	5 – 10

9-03.21(1) General Requirements

The following new paragraph is inserted after the second paragraph:

Reclaimed asphalt shingles samples shall contain less than the maximum percentage of asbestos fibers based on testing procedures and frequencies established in conjunction with the specifying jurisdiction and state or federal environmental regulatory agencies.

9-07.5(1) Epoxy-Coated Dowel Bars (for Cement Concrete Pavement Rehabilitation)

This section is revised to read:

> Epoxy-coated dowel bars shall be round plain steel bars of the dimensions shown in the Standard Plans. They shall conform to AASHTO M 31, Grade 60 or ASTM A 615, Grade 60 and shall be coated in accordance with ASTM A 1078 Type 2 coating, except that the bars may be cut to length after being coated. Cut ends shall be coated in accordance with ASTM A 1078 with a patching material that is compatible with the coating, inert in concrete and recommended by the coating manufacturer. The thickness of the epoxy coating shall be 10 mils plus or minus 2 mils. The Contractor shall furnish a written certification that properly identifies the coating material, the number of each batch of coating material used, quantity represented, date of manufacture, name and address of manufacturer, and a statement that the supplied coating material meets the requirements of ASTM A 1078 Type 2 coating. Patching material, compatible with the coating material and inert in concrete and recommended by the manufacturer shall be supplied with each shipment for field repairs by the Contractor.

9-07.5(2) Corrosion Resistant Dowel Bars (for Cement Concrete Pavement)

This section's title is revised to read:

> **9-07.5(2) Corrosion Resistant Dowel Bars (for Cement Concrete Pavement and Cement Concrete Pavement Rehabilitation)**

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Section 9-29, Illumination, Signal, Electrical

~~January 5~~April 6, 2015

9-29.1 Conduit, Innerduct, and Outerduct

This section is supplemented with the following new subsection:

9-29.1(9) Repair

Manufacturer repair kits shall be used for field repair of existing conduit, innerduct and outerduct. The conduit repair kit shall be manufactured specifically for the repair of existing damaged conduit, inner duct and outer duct. The repair kit shall be prepackaged and include the split conduit and split couplings necessary to restore the damaged conduit to the original inside dimensions including a water and air tight seal.

9-29.2(1)B Heavy Duty Junction Boxes

The second paragraph is revised to read:

> The Heavy-Duty Junction Box steel frame, lid support and lid fabricated from steel plate and shapes shall be painted with a shop applied, inorganic zinc primer in accordance with Section 6-07.3. Ductile iron and gray iron castings shall not be painted.

The following new paragraph is inserted after the second paragraph:

> The concrete used in Heavy-Duty Junction Boxes shall have a minimum compressive strength of 4,000 psi.

In the fourth paragraph (after the preceding Amendment is applied), the table is revised to read:

Materials	**Requirement**
Concrete	Section 6-02
Reinforcing Steel	Section 9-07
Lid	ASTM A 786 diamond plate steel, rolled from plate complying with ASTM A 572, grade 50 or ASTM A 588, and having a min. CVN toughness of 20 ft-lb at 40 degrees F. Or Ductile iron casting meeting Section 9-05.15
Frame and stiffener plates	ASTM A 572 grade 50 or ASTM A 588, both with min. CVN toughness of 20 ft-lb at 40 degrees F Or Gray iron casting meeting Section 9-05.15
Anchors (studs)	Section 9-06.15
Threaded Anchors for Gray Iron Frame	ASTM F1554 grade 55 Headed Anchor Requirements
Bolts, Studs, Nuts, Washers	ASTM F 593 or A 193, Type 304 or 316, or Stainless steel grade 302, 304, or 316 in accordance with approved shop drawings
Hinges and Locking and Latching Mechanism and associated Hardware and Bolts	In accordance with approved shop drawings

Safety Bars	In accordance with approved shop drawings

The last paragraph is revised to read:

The bearing seat and lid perimeter shall be free from burrs, dirt, and other foreign debris that would prevent solid seating. Bolts and nuts shall be liberally coated with anti-seize compound. Bolts shall be installed snug tight. The bearing seat and lid perimeter shall be machined to allow a minimum of 75 percent of the bearing areas to be seated with a tolerance of 0.0 to 0.005 inches measured with a feeler gage. The bearing area percentage will be measured for each side of the lid as it bears on the frame.

9-29.2(2) Standard Duty and Heavy-Duty Cable Vaults and Pull Boxes

This section's title is revised to read:

Small Cable Vaults, Standard Duty Cable Vaults, Heavy-Duty Cable Vaults, Standard Duty Pull Boxes, and Heavy-Duty Pull Boxes

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

Small, Standard Duty and Heavy-Duty Cable Vaults and Standard Duty and Heavy-Duty Pull Boxes shall be constructed as a concrete box and as a concrete lid.

9-29.2(2)A Standard Duty Cable Vaults and Pull Boxes

This section's title is revised to read:

Small Cable Vaults, Standard Duty Cable Vaults, and Standard Duty Pull Boxes

The first paragraph is revised to read:

Small and Standard Duty Cable Vaults and Standard Duty Pull boxes shall be concrete and have a minimum load rating of 22,500 pounds and be tested in accordance with Section 9-29.2(1)C for concrete Standard Duty Junction Boxes.

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

Concrete for Small and Standard Duty Cable Vaults and Standard Duty Pull Boxes shall have a minimum compressive strength of 4,000 psi.

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

All Small and Standard Duty Cable Vaults and Standard Duty Pull Boxes placed in sidewalks, walkways, and shared-use paths shall have slip-resistant surfaces.

The fourth paragraph (up until the colon) is revised to read:

Materials for Small and Standard Duty Cable Vaults and Standard Duty Pull Boxes shall conform to the following:

9-29.3 Fiber Optic Cable, Electrical Conductors, and Cable

This section is supplemented with the following new subsection:

9-29.3(3) Wire Marking Sleeves

Wire marking sleeves shall be full-circle in design, non-adhesive, printable using an indelible ink and shall fit snugly on the wire or cable. Marking sleeves shall be made from a PVC or polyolefin, and provide permanent identification for wires and cables.

9-29.3(2)A4 Location Wire

This section is revised to read:

Location wire shall be steel core copper clad minimum size AWG 14 insulated conductor. The insulation shall be orange High Molecular Weight High Density Polyethylene (HMHDPE).

9-29.16 Vehicular Signal Heads, Displays, and Housing

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

A 1-inch-wide strip of yellow retro-reflective, type IV prismatic sheeting, conforming to the requirements of Section 9-28.12, shall be applied around the perimeter of each backplate with the exception of installations where all sections of the display will be dark as part of normal operation such as ramp meters, hawk signals and tunnels.

Revisions to General Special Provisions
Effective April 6, 2015

Please note: New revisions to WSDOT General Special Provisions are described below. Previous GSP's that are not revised in this package are still in effect. Special Provisions take precedence over the Standard Specifications in accordance with Section 1-04.2.

The following list is a brief description of the latest revisions, with an explanation of why each change was made. The actual provisions should be reviewed in depth to become completely knowledgeable of the full extent of the revisions. These provisions are available at the following location:

http://www.wsdot.wa.gov/Business/Construction/SpecificationsAmendmentsGSPs.htm

INTRODUCTION

N/A

DIVISION 1 – General Requirements

N/A

DIVISION 2 – Roadway Excavation and Embankment

N/A

DIVISION 3 – Acceptance of Aggregate

N/A

DIVISION 4 – Ballast and Crushed Surfacing

N/A

DIVISION 5 - Surface Treatments And Pavements

Deleted: 5-04.2.INST2.GR5, 5-04.2.OPT8.GR5; 5-04.2(9-02.1).GR5, 5-04.2(9-02.1).OPT1.GR5; 5-04.2(9-02.1(4)).GR5, 5-04.2(9-02.1(4)).OPT1.GR5; 5-04.2(9-03.8(2)).GR5, 5-04.2(9-03.8(2)).OPT1.GR5; 5-04.2(9-03.8(3)B).GR5, 5-04.2(9-03.8(3)B).OPT1.GR5; 5-04.2(9-03.21(1)).GR5, 5-04.2(9-03.21(1)).OPT1.GR5; 5-04.3(1).INST1.GR5, 5-04.3(1).OPT1.GR5; 5-04.3(7).INST1.GR5, 5-04.3(7).OPT1.GR5; 5-04.3(7)A1.INST1.GR5, 5-04.3(7)A1.OPT1.GR5; 5-04.3(7)A2.INST1.GR5, 5-04.3(7)A2.OPT1.GR5; 5-04.3(7)A3.INST2.GR5, 5-04.3(7)A3.OPT2.GR5; 5-04.3(8).INST1.GR5, 5-04.3(8).OPT1.GR5; 5-04.3(8)A7.INST2.GR5, 5-04.3(8)A7.OPT2.GR5
These GSPs are deleted as they are being incorporated into the Standard Specifications as a part of this update package.

5-04.3(5)C.OPT1.GR5, 5-04.3(5)C.OPT7.GR5 & 5-04.3(5)C.OPT8.GR5
The revisions replace the reference to "AASHTO M 324" with "ASTM D 6690".

Deleted: 5-04.3(8)A4.INST1.GR5, 5-04.3(8)A4.OPT1.FR5, 5-04.3(8)A4.OPT2.FR5, 5-04.3(10)B1.INST2.GR5, 5-04.3(10)B1.OPT3.GR5, 5-04.3(10)B1.OPT8.GR5

Revisions to General Special Provisions
Effective April 6, 2015

These GSPs are deleted as they are no longer necessary due to the amendments regarding sublot sizes for HMA testing.

<u>DIVISION 6 – Structures</u>

6-07.3(10)D.OPT1.FB6
This revision modifies the requirements for steel surface preparation.

6-13.2.OPT3.GB6
The revisions to this GSP add the product specific wall backfill requirements for the open cells of the blocks and the backfill zone immediately behind the wall face to the list of proprietary materials.

6-13.2.OPT3(A).GB6
This GSP is deleted as it is no longer necessary.

6-13.3.OPT3.GB6
This revision adds the wall system name and wall manufacturer contact information to the generic list of concrete block faced structural earth wall systems.

6-13.3.OPT3(A).GB6
This GSP is deleted as it is no longer necessary.

6-13.3(2).OPT1(A).GB6
This GSP is deleted as it is no longer necessary.

<u>DIVISION 7 – Drainage Structures, Storm Sewers, Sanitary Sewers, Water Mains and Conduits</u>

N/A

<u>DIVISION 8 - Miscellaneous Construction</u>

8-01.5.OPT2.GR8
This GSP revision provides some minor language clarification.

Deleted: 8-01.3(1)B.OPT1.GR8
This GSP is deleted as it is no longer necessary now that the Transfer of Coverage GSPs are in effect.

8-11.2.OPT3.GR8 & 8-11.2(9-16.3(2)).OPT5.GR8
The revisions to these two GSPs update the powder coating color.

8-11.2(9-16.3(1)).OPT1.GR8
The revision to this GSP deletes steel for terminal sections from the conformance requirements listed.

8-11.4.OPT3.GR8 & 8-11.5.OPT9.GR8
These revisions add weathering steel beam guardrail transition sections to the measurement and payment sections.

8-20.2(9-29.6).OPT1.GR8, 8-20.2(9-29.6).OPT2.GR8, 8-20.2(9-29.6).OPT3.GR8, 8-20.2(9-29.6).OPT4.GR8, 8-20.2(9-29.6).OPT5.GR8, 8-20.2(9-29.6).OPT6.GR8
These revisions update the preapproved fabrication drawings for Traffic Signal Standards.

8-20.3(14).OPT1.GR8
The revisions to this GSP update part numbers that were changed by the manufacturer, and also provide clarification on sub-components.

DIVISION 9 – Materials

STDPLANS.GR9
These revisions replace outdated plan references.

BSP to GSP Conversions
As a part of this update, many Bridge Special Provisions (BSPs) were reviewed and approved to be converted into GSPs. To view a full list of the BSPs that were converted into GSPs this quarter, please see the "BSP to GSP Conversion Log" at the beginning of this package.

*****INTERIM UPDATES*****
(Changes between January 2015 and April 2015 Official Update Packages)

1-07.9(1).OPT1.GR1, 1-07.9(1).OPT2.FR1, 1-07.9(1).OPT5.FR1, 1-07.9(1).OPT6.FR1
These revisions became effective on January 12, 2015 and are already in production. Therefore, they do not appear in this package with track changes. These are included in this memo for tracking purposes. These revisions were necessary to update the federal wage rate modification number from WA140001 to WA150001.

April 6, 2015
GDM:rah

DIVISION2.GR2 Earthwork

2-01.GR2 Clearing, Grubbing, and Roadside Cleanup

2-01.1.GR2 Description

2-01.1.INST1.GR2 (Section 2-01.1 is supplemented with the following)
Must use once preceding any of the following:

2-01.1.OPT1.FR2 (Clearing and Grubbing)
(March 13, 1995)
Use when the payment for clearing and grubbing is either lump sum or included in other work.
(1 fill-in) (Fill-in describes the longitudinal and lateral limits of clearing and grubbing)

2-01.3.GR2 Construction Requirements

2-01.3(4).GR2 Roadside Cleanup

2-01.3(4).INST1.GR2 (Section 2-01.3(4) is supplemented with the following)
Must use once preceding any of the following:

2-01.3(4).OPT1.FR2 (Roadside Cleanup)
(January 5, 1998)
Use if additional work is required under the item "Roadside Cleanup".
(fill-ins)

2-01.5.GR2 Payment

2-01.5.INST1.GR2 (The first and second paragraphs of Section 2-01.5 are revised to read)
Must use once preceding any of the following:

2-01.5.OPT1.FR2 (Clearing and Grubbing)
(January 5, 1998)
Must be used with **2-01.1.OPT1.FR2** when the payment for clearing and grubbing is included in other work.
(1 fill-in)

2-02.GR2 Removal of Structures and Obstructions

2-02.1.GR2 Description

2-02.1.INST1.GR2 (Section 2-02.1 is supplemented with the following)
Must use once preceding any of the following:

2-02.1.OPT1.GR2 (Removal of Misc. Traffic Items)
(March 13, 1995)
Must also use **2-02.3.OPT2.FR2** and **2-02.5.OPT8.GR2**
Use in projects requiring the removal of minor quantities of miscellaneous traffic items such as traffic islands, traffic

curb, lane markers, plastic traffic buttons, guide posts, etc. when there is no pay item for Removal of Structures and Obstructions and the cost of removing each type of item is under $5,000.

2-02.1.OPT2.FR2

(Asbestos Handling and Removal)
(March 13, 1995)
Must also use **2-02.3.OPT5.GR2** and **2-02.5.OPT11.GR2**.
Use in projects when asbestos removal is required.
(1 fill-in)

2-02.1.OPT3.GR2

(Removing Portions of Existing Box Culvert)
(March 13, 1995)
Use in projects requiring removal of portions of existing box culverts prior to extending or widening the structure. Include with ***2-02.3(2).OPT12.GR2, 6-02.2.OPT2.GB6, 6-02.3(24)C.OPT1.GB6, 6-02.3(24)C.OPT2.GR6, 6-02.5.OPT5.GB6,*** and ***2-02.5.OPT12.GR2***.

2-02.1.OPT4.GR2

(Asbestos Handling and Removal)
(September 30, 1996)
Must also use **2-02.3.OPT4.GR2** and **2-02.5.OPT14.GR2**.
Use in projects when there is a reason to suspect asbestos may be encountered.

2-02.3.GR2 Construction Requirements

2-02.3.INST1.GR2

(Section 2-02.3 is supplemented with the following)
Must use once preceding any of the following:

2-02.3.OPT1.FR2

(Removal of Obstructions)
(February 17, 1998)
Use *except* when the combined cost of all obstruction removal is $5,000 or less and payment is to be included in other payment items.

Removal of obstructions that are readily measurable and for which the cost of removal is $5,000 or less per obstruction may be included in this pay item.

Removal of obstructions that are not readily measurable, such as foundations, may be included in this item regardless of the removal cost.

List all items and approximate quantities to be removed under "Removal of Structure and Obstruction".
(1 fill-in)

2-02.3.OPT2.FR2

(Removing Miscellaneous Traffic Items)
(March 13, 1995)
Must include with **2-02.1.OPT1.GR2**.

2-02.3.OPT3.FR2

(Removal and Disposal of Hazardous Material)

(August 1, 2005)
Must also use **2-02.4.OPT1.GR2** and **2-02.5.OPT7.GR2**. Use only for subsurface removal of known or suspected hazardous or contaminated material. Fill-in is for type of material, depth of contamination in soil, and depth of contamination in water. Fill-in information is to be provided by the Region Environmental Staff.
(1 fill-in)

2-02.3.OPT4.GR2 — (Asbestos Handling and Disposal)
(September 30, 1996)
Must include with **2-02.1.OPT4.GR2**.

2-02.3.OPT5.GR2 — (Asbestos Handling and Disposal)
(September 30, 1996)
Must include with **2-02.1.OPT2.FR2**.

2-02.3.OPT6.FB2 — (Salvage of Removed Structure Items)
(June 26, 2000)
Use when removal items are to remain the property of the Contracting Agency. The first fill-in specifies the salvaged items. The second fill-in specifies the name and address (street address or highway milepost) of the material storage site. Include with either ***2-02.3(2).OPT1.FB2, 2-02.3(2).OPT2.FB2,*** or ***2-02.3(2).OPT3.FB2, and 2-02.3(2).OPT10(B).FB2***
.
(2 fill-ins)

2-02.3(2).GB2 Removal of Bridges, Box Culverts, and other Drainage Structures

2-02.3(2).INST1.GB2 — (Section 2-02.3(2) is supplemented with the following)
Must use once preceding any of the following:

2-02.3(2).OPT1.FB2 — (Removing Existing Bridge)
(June 26, 2000)
Use in projects requiring the removal of existing bridge(s) in one stage. The first fill-in specifies the bridge(s). The second fill-in specifies where traffic is directed (onto the detour route or bridge, onto the new bridge, etc.). Include with **2-02.3(2).OPT10(B).FB2. Include with 1-07.1.OPT2.FR1** if the bridge being removed has steel members with lead paint.
(2 fill-ins)

2-02.3(2).OPT2.FB2 — (Removing Existing Bridge)
(June 26, 2000)
Use in projects requiring the removal of existing bridge(s) in two or more stages. The fill-in specifies the bridge(s). Include with ***1-07.1.OPT2.FR1*** if the bridge being removed has steel members with lead paint.
(1 fill-in)

2-02.3(2).OPT3.FB2 (Removing Portion of Existing Bridge)
(June 26, 2000)
Use in projects requiring the removal of portions of existing bridge(s). The first fill-in specifies the bridge(s). The second fill-in specifies the portions being removed. Include with ***1-07.1.OPT2.FR1*** if the bridge being partially removed has steel members with lead paint.
(2 fill-ins)

2-02.3(2).OPT4.GB2 (Plans of Existing Bridge)
(June 26, 2000)
Use in projects requiring the removal of existing bridge(s) or of portions of bridge(s) when plans of the existing bridge(s) are available. Include with either ***2-02.3(2).OPT1.FB2, 2-02.3(2).OPT2.FB2,*** or ***2-02.3(2).OPT3.FB2,*** and **2-02.3(2).OPT10(B).FB2*,*** .

2-02.3(2).OPT7.FB2 (Removal in Water)
(June 26, 2000)
Use in projects requiring the removal of existing bridge(s) when removal involves piers within the wetted perimeter of a stream, lake or bay. The first fill-in specifies the bridge(s). The second and fourth fill-ins specify the body of water. The third fill-in specifies the elevation of the removal level. Include with **either 2-02.3(2).OPT1.FB2, 2-02.3(2).OPT2.FB2, or 2-02.3(2).OPT3.FB2*,* and 2-02.3(2).OPT10(B).FB2**.

2-02.3(2).OPT10.GB2 (Use of Explosives)
Must use once preceding any of the following:

2-02.3(2).OPT10(B).FB2 (Structure Removal By Explosives)
(August 1, 2005)
Use in projects requiring removal of existing bridges only if explosives may be used. The fill-in specifies the bridge where the use of explosives is permitted for removal operations. Include with ***2-02.3(2).OPT1.FB2***. Include with ***1-07.1.OPT2.FR1*** if the bridge involved has steel members with lead paint.
(1 fill-in)

2-02.3(2).OPT11.GB2 (Requirements for Closing Bridge Prior to Removal)
(August 6, 2007)
Use in projects requiring removal of existing bridges when it is necessary to close the bridge to traffic in order to complete removal as soon as possible. Include with ***2-02.3(2).OPT1.FB2,*** and ***2-02.3(2).OPT10(B).FB2***. Include with ***1-07.1.OPT2.FR1*** if the bridge involved has steel members with lead paint.

2-02.3(2).OPT12.GR2 (Removing Portions of Existing Box Culvert)
(June 26, 2000)
Use in projects requiring removal of portions of existing box culverts prior to extending or widening the structure. Include with ***2-02.1.OPT3.GR2, 6-02.2.OPT2.GB6, 6-02.3(24)C.OPT1.GB6, 6-02.3(24)C.OPT2.GR6,*** and ***6-02.5.OPT5.GB6,*** and either ***2-02.5.OPT12.GR2*** or ***2-02.5.OPT15.GR2.***

2-02.3(3).GR2 Removal of Pavement, Sidewalks, Curbs, and Gutters

2-02.3(3).INST1.GR2 (Section 2-02.3(3) is supplemented with the following)
Must use once preceding any of the following:

2-02.3(3).OPT1.FR2 (September 8, 1997)
Include in projects when removal of pavement is outside the limits of roadway excavation, and the removal is to be paid by the square yard.
Must also use 2-02.4.OPT2.GR2 and 2-02.5.OPT13.FR2.
(2 fill-ins)

2-02.4.GR2 Vacant

2-02.4.INST1.GR2 (Section 2-02.4 is supplemented with the following)
Must use once preceding any of the following:

2-02.4.OPT1.GR2 (Removal and Disposal of Hazardous Material)
(December 4, 2006)
Must include with **2-02.3.OPT3.FR2** and **2-02.5.OPT7.GR2**.

2-02.4.OPT2.GR2 (Pavement Removal)
(September 8, 1997)
Must include with **2-02.3(3).OPT1.FR2.**.

2-02.4.OPT3.GR2 (Sidewalk Removal)
(October 25, 1999)
Include in projects when removal of sidewalk is outside the limits of roadway excavation, and the removal is to be paid by the square yard.
Must include with **2-02.5.OPT16.FR2**.

2-02.4.OPT4.GR2 (Curb Removal)
(September 8, 1997)
Include in projects when removal of curb is outside the limits of roadway excavation, and the removal is to be paid by the linear foot.
Must include with **2-02.5.OPT17.FR2**.

2-02.5.GR2 Payment

2-02.5.INST1.GR2	(Section 2-02.5 is revised by the following) Must use once preceding any of the following:
2-02.5.OPT1.FR2	(Removal of structures and obstructions included in other work) (June 26, 2000) (1 fill-in)
2-02.5.INST2.GR2	(Section 2-02.5 is supplemented with the following) Must use once preceding any of the following:
2-02.5.OPT7.GR2	(Removal and Disposal of Hazardous Material) (December 4, 2006) *Must include with **2-02.3.OPT3.FR2** and **2-02.4.OPT1.GR2**.*
2-02.5.OPT8.GR2	(Removing Miscellaneous Traffic Items) (September 30, 1996) *Must include with **2-02.1.OPT1.GR2.***
2-02.5.OPT11.GR2	(Removal and Disposal of Asbestos Material) (September 30, 1996) Must include with **2-02.1.OPT2.FR2**.
2-02.5.OPT12.GR2	(Removing Portion of Conc. Box Culvert) (June 26, 2000) Use in projects requiring removal of portions of existing box culverts prior to extending or widening the structure. Include with ***2-02.1.OPT3.GR2, 2-02.3(2).OPT12.GR2, 6-02.2.OPT2.GB6, 6-02.3(24)C.OPT1.GB6, 6-02.3(24)C.OPT2.GR6,*** and ***6-02.5.OPT5.GB6***.
2-02.5.OPT13.FR2	(Pavement Removal) (September 30, 1996) Must include with **2-02.3(3).OPT1.FR2**. (1 fill-in)
2-02.5.OPT14.GR2	(Asbestos removal as changed condition) (September 30, 1996) Must include with **2-02.1.OPT4.GR2**.
2-02.5.OPT15.GR2	(Removal of portions of box culvert) (June 26, 2000) Use in projects requiring removal of portions of existing box culverts prior to extending or widening the structure. Include with ***2-02.1.OPT3.GR2, 2-02.3(2).OPT12.GR2, 6-02.2.OPT2.GB6, 6-02.3(24)C.OPT1.GB6, 6-02.3(24)C.OPT2.GR6,*** and ***6-02.5.OPT5.GB6***.
2-02.5.OPT16.FR2	(Sidewalk Removal) (November 3, 1999) Must include with **2-02.4.OPT3.GR2** (1 fill-in)

2-02.5.OPT17.FR2 (Removal of portions of Curb)
(September 8, 1997)
Must include with **2-02.4.OPT4.GR2.**
(1 fill-in)

2-03.GR2 Roadway Excavation and Embankment

2-03.3.GR2 Construction Requirements

2-03.3(2).GR2 Rock Cuts

2-03.3(2).INST1.GR2 (Section 2-03.3(2) is supplemented with the following)
Must use once preceding any of the following:

2-03.3(2).OPT1.GR2 (Rock Slope Scaling and Removal and Disposal of Rock Slope Scaling Debris)
(April 5, 2010)
Use in projects with rock slope scaling. Include with ***2-03.4.OPT4.GR2 and 2-03.5.OPT3.GR2***.

2-03.3(7).GR2 Disposal of Surplus Material

2-03.3(7).INST1.GR2 (Section 2-03.3(7) is supplemented with the following)
Must use once preceding any of the following:

2-03.3(7).OPT1.FR2 (Contracting Agency furnished waste site)
(March 13, 1995)
Use in projects with Contracting Agency provided waste sites.
(1 fill-in)

2-03.3(7).OPT2.FR2 (Waste material by embankment widening)
(March 13, 1995)
Use in projects where the Contracting Agency specifies embankments to be widened.
(2 fill-ins)

2-03.3(7).OPT3.GR2 (Contracting Agency provided sites are not mandatory)
(March 13, 1995)
Use, when applicable, with **2-03.3(7).OPT1.FR2** or 2-03.3(7).OPT2.FR2.

2-03.3(7).OPT4.GR2 (Contracting Agency provided sites are not of sufficient size)
(March 13, 1995)
Use, when applicable, with **2-03.3(7).OPT1.FR2** or **2-03.3(7).OPT2.FR2**.

2-03.3(14).GR2 Embankment Construction

2-03.3(14)C.GR2 Compacting Earth Embankments

2-03.3(14)C.INST1.GR2 (Section 2-03.3(14)C is supplemented with the following)
Must use once preceding any of the following:

2-03.3(14)C.OPT1.GR2 (March 13, 1995)
Use in projects when no payment for embankment compaction (Method A) is included.

2-03.3(14)I.GB2 Embankments At Bridge And Trestle Ends.

2-03.3(14)I.INST1.GB2 (Section 2-03.3(14)I is supplemented with the following)
Must use once preceding any of the following:

2-03.3(14)I.OPT1.FB2 (March 13, 1995)
Use in projects when the bridge approach embankments must be constructed before the end piers.
(2 fill-ins)

2-03.4.GR2 Measurement

2-03.4.INST1.GR2 (Section 2-03.4 is supplemented with the following)
Must use once preceding any of the following:

2-03.4.OPT1.GR2 (Embankment In Place)
(March 13, 1995)
Must also include **2-03.5.OPT1.GR2**.
Use in projects that require embankment widening for beam guardrail and no other grading pay items are included in the contract to construct the widening.

2-03.4.OPT2.GR2 (Measurement of roadway excavation and embankment)
(March 13, 1995)
Must include with **1-05.4.OPT2.GR1**, Contractor surveying - roadway. May be used without Contractor surveying.

2-03.4.OPT3.GR2 (Measurement of roadway excavation and embankment)
(March 13, 1995)
Use in minor grading projects when the original cross-sections are satisfactory for construction payment.

2-03.4.OPT4.GR2 (Rock Slope Scaling and Rock Slope Scaling Debris Removal Including Haul)
(April 5, 2010)
Use in projects with rock slope scaling. Include with ***2-03.3(2).OPT1.GR2 and 2-03.5.OPT3.GR2***.

2-03.5.GR2 Payment

2-03.5.INST1.GR2 (Section 2-03.5 is supplemented with the following)
Must use once preceding any of the following:

2-03.5.OPT1.GR2 (Embankment In Place)
(September 30, 1996)
Must include with **2-03.4.OPT1.GR2**.

2-03.5.OPT2.FR2 (Preparation of waste sites)
(March 13, 1995)
Use in projects when the preparation of waste sites is included in other work.
(1 fill-in)

2-03.5.OPT3.GR2 (Rock Slope Scaling and Rock Slope Scaling Debris Removal Including Haul)
(April 5, 2010)
Use in projects with rock slope scaling. Include with ***2-03.3(2).OPT1.GR2 and 2-03.4.OPT4.GR2***.

2-06.GR2 Subgrade Preparation

2-06.3.GR2 Construction Requirements

2-06.3(1).GR2 Subgrade For Surfacing

2-06.3(1).INST1.GR2 (Section 2-06.3(1) is supplemented with the following)
Must use once preceding any of the following:

2-06.3(1).OPT1.GR2 (Subgrade trimmer required)
(March 13, 1995)
Use in projects where a treated base or pavement will be placed directly on the subgrade.
The project should include a bid item for "Gravel Borrow Including Haul" or "Borrow Excavation Including Haul" to ensure that sufficient fine material is available for trimming.

2-06.3(1).OPT2.GR2 (Subgrade trimmer not required)
(March 13, 1995)
Use in grading-only projects where a treated base is planned for construction on a future project.
The project should include a bid item for "Gravel Borrow Including Haul" or "Borrow Excavation Including Haul" to ensure that sufficient fine material is available for trimming. The position of the future treated base is to shown on the plans.

2-09.GR2 Structure Excavation

2-09.3.GR2 Construction Requirements

2-09.3(1).GR2 General Requirements

2-09.3(1)C.GR2 Removal Of Unstable Base Material

2-09.3(1)C.INST1.GR2 (Section 2-09.3(1)C is supplemented

with the following)
Must use once preceding any of the following:

2-09.3(1)C.OPT1.FB2 (Soils that tend to liquify)
(March 13, 1995)
Use in bridge projects in where soil in the bottom of footing excavation will tend to liquify.
(1 fill-in)

2-09.3(1)C.OPT2.GB2 (Removal of unsatisfactory foundation material)
(January 3, 2006)
Must also use **2-09.5.OPT1.GB2**.
Use in bridge projects where the removal of unsatisfactory material under spread footings may be required even though the soils report does not require removal.

2-09.3(3).GR2 Construction Requirements, Structure Excavation, Class A

2-09.3(3)B.GR2 Excavation Using Open Pits – Extra Excavation

2-09.3(3)B.INST1.GR2 (Section 2-09.3(3)B is supplemented with the following)
Must use once preceding any of the following:

2-09.3(3)B.OPT1.~~BSP.~~FB2 (Extra Excavation and Open Pit Excavation Not Allowed)
(~~BSP October 13, 2003~~April 6, 2015)
Use in projects where extra excavation and open pit excavation is not allowed at specific locations. The fill-in specifies the location(s) where extra excavation and open pit excavation is not allowed.
(1 fill-in)

2-09.3(3)D.GR2 Shoring And Cofferdams

2-09.3(3)D.INST1.GR2 (Section 2-09.3(3)D is supplemented with the following)
Must use once preceding any of the following:

2-09.3(3)D.OPT1.GB2 (Protecting existing pavement)
(March 13, 1995)
Use in projects when bridges are over or adjacent to existing highways.

2-09.3(3)D.OPT2.GB2 (Protecting RR tracks)
(August 2, 2010)
Use in projects when bridges are over or adjacent to existing railroad tracks.

2-09.3(3)D.OPT3.FB2 (March 13, 1995)
Use with **2-09.3(3)D.OPT2.GB2** when construction is required near railroad tracks, or structures which require extensive shoring.
(3 fill-ins)

2-09.4.GR2 Measurement

2-09.4.INST1.GR2 (The subsection **Lower Limits** of Section 2-09.4 is supplemented with the following)
Must use once preceding any of the following:

2-09.4.OPT1.GB2 (January 4, 2010)
(Additional structure excavation under girders at end piers)
Use in projects where excavation is required outside of normal structure excavation limits for end pier footings.

2-09.5.GR2 Payment

2-09.5.INST1.GR2 (Section 2-09.5 is supplemented with the following)
Must use once preceding any of the following:

2-09.5.OPT1.GB2 (Lean concrete for backfilling)
(March 13, 1995)

2-12.GR2 Construction Geosynthetic

2-12.1.GR2 Description

2-12.1.INST1.GR2 (Section 2-12.1 is supplemented with the following)
Must use once preceding any of the following:

2-12.1.OPT1.GR2 Geosynthetic Reinforced Slope
(November 17, 1997)
Use in projects requiring geosynthetic reinforced slopes. Slope design should be performed by the Olympia Service Center Materials Laboratory or a geotechnical consultant. Use details from DETAILS.CEL Library; D225, D229, D230, and D230A or D230B.

2-12.2.GR2 Materials

2-12.2(9-03.14).GR2 (Borrow)
(Section 9-03.14 is supplemented with the following)
Must use once preceding any of the following:

2-12.2(9-03.14).OPT1.FR2 (Borrow for Geosynthetic Reinforced Slopes)
(November 17, 1997)
Use in projects requiring geosynthetic reinforced slopes.
(1 fill-in)

2-12.2(9-07.9).GR2 (Cold Drawn Wire)
(Section 9-07.9 is supplemented with the following)
Must use once preceding any of the following:

2-12.2(9-07.9).OPT1.GR2 (Cold Drawn Wire)
(November 17, 1997)
Use in projects where welded wire faced geosynthetic reinforced slopes are specified.

2-12.2(9-33.2(2)).GR2 (Geosynthetic Properties for Retaining Walls and Reinforced Slopes)
(Section 9-33.2(2) is supplemented with the following)
Must use once preceding any of the following:

2-12.2(9-33.2(2)).OPT1.FR2 (Geosynthetic Properties for Reinforced Slopes)
(January 2, 2012)
Use in projects requiring geosynthetic reinforced slopes. The slope class must be identified in fill-in 6 based on the following: Class 1 is typically reinforced slopes which support bridge abutments, buildings, critical utilities, or other facilities which the consequences of poor performance or failure would be severe. In general, slopes greater than 30 feet in height. Class 2 is all reinforced slopes not categorized as Class 1.
(6 fill-ins)

2-12.2(9-33.2(2)).OPT2.GR2 (Geosynthetic Properties for Turf Reinforcement Mat)
(April 5, 2004)
Use in projects where geosynthetic reinforced slopes with a turf reinforcement mat facing are specified.

2-12.2(9-33.4(1)).GR2 (Source Approval)
(Section 9-33.4(1) is supplemented with the following)
Must use once preceding any of the following:

2-12.2(9-33.4(1)).OPT1.GR2 (Geosynthetic Reinforced Slope)
Primary Reinforcement
(April 5, 2004)
Use in projects requiring geosynthetic reinforced slopes.

2-12.2(9-33.4(1)).OPT2.GR2 (Geosynthetic Reinforced Slope)
Secondary Reinforcement
(April 5, 2004)
Use in projects where geosynthetic reinforced slopes with secondary reinforcement are specified.

2-12.2(9-33.4(1)).OPT3.GR2 (Geosynthetic Reinforced Slope)
Turf Reinforcement Mat

(November 17, 1997)
Use in projects where geosynthetic reinforced slopes with turf reinforcement mat facing are specified.

2-12.2(9-33.4(3)).GR2 (Acceptance Samples)
(Section 9-33.4(3) is supplemented with the following)
Must use once preceding any of the following:

2-12.2(9-33.4(3)).OPT1.GR2 (Geosynthetic Reinforced) Slope Primary Reinforcement
(November 17, 1997)
Use in projects requiring geosynthetic reinforced slopes.

2-12.2(9-33.4(3)).OPT2.GR2 (Geosynthetic Reinforced Slope) Secondary Reinforcement
(April 5, 2004)
Use in projects where geosynthetic reinforced slopes with secondary reinforcement are specified.

2-12.2(9-33.4(3)).OPT3.GR2 (Geosynthetic Reinforced Slope Turf) Reinforcement Mat
(November 17, 1997)
Use in projects where geosynthetic reinforced slopes with turf reinforcement mat facing are specified.

2-12.2(9-33.4(4)).GR2 (Acceptance by Certificate of Compliance)
(Section 9-33.4(4) is supplemented with the following)
Must use once preceding any of the following:

2-12.2(9-33.4(4)).OPT1.GR2 (Reinforced Slope)
(November 17, 1997)
Use in projects requiring geosynthetic reinforced slopes.

2-12.3.GR2 Construction Requirements

2-12.3.INST1.GR2 (Supplemental Instructions)
(Section 2-12.3 is supplemented with the following)
Must use once preceding any of the following:

2-12.3.OPT1.GR2 (Geosynthetic Reinforced Slope Construction Requirements)
(November 17, 1997)
Use in projects requiring geosynthetic reinforced slopes. Slope facing options which include vegetative cover should only be used at sites where the average annual precipitation is 20 inches or more.

2-12.3.OPT2.FR2 (Turf Reinforced Mat Facing Construction)
(August 2, 2010)

Use in projects requiring geosynthetic reinforced slopes with turf reinforcement mat facing. In general, use for slopes no steeper than 1.2H:1V.
(2 fill-ins)

2-12.3.OPT3.GR2 (Geosynthetic Wrapped Slope Facing Construction)
(November 17, 1997)
Use in projects requiring geosynthetic reinforced slopes with geosynthetic wrapped facing. Because of planting requirements, do not use this option for sites where the elevation is over 1500 feet. In general, use for slopes no steeper than 1H:1V.

2-12.3.OPT4.GR2 (Welded Wire Facing Construction)
(November 17, 1997)
Use in projects requiring geosynthetic reinforced slopes with welded wire facing. In general, use for slopes no steeper than 1H:2V.

2-12.3.OPT5.GR2 (Installing Guardrail Posts in Geosynthetic) Reinforced Slopes
(November 17, 1997)
Use in projects requiring guardrail on geosynthetic reinforced slopes.

2-12.4.GR2 Measurement

2-12.4.INST1.GR2 (Supplemental Instructions)
(Section 2-12.4 is supplemented with the following)
Must use once preceding any of the following:

2-12.4.OPT1.FR2 (Geosynthetic Reinforced Slope)
(January 5, 1998)
Use in projects requiring geosynthetic reinforced slopes.
(1 fill-in)

2-12.5.GR2 Payment

2-12.5.INST1.GR2 (Supplemental Instructions)
(Section 2-12.5 is supplemented with the following)
Must use once preceding any of the following:

2-12.5.OPT1.FR2 (Geosynthetic Reinforced Slope)
(November 17, 1997)
Use in projects requiring geosynthetic reinforced slopes.
(1 fill-in)

2-09.GR2
Structure Excavation

2-09.3.GR2
Construction Requirements

2-09.3(1).GR2
General Requirements

2-09.3(1)C.GR2
Removal of Unstable Base Material

2-09.3(1)C.INST1.GR2
Section 2-09.3(1)C is supplemented with the following:

2-09.3(1)C.OPT1.FB2
(March 13, 1995)
If the soil in the footing excavation *** $$1$$ *** tends to liquify before placement of the concrete footing, the Contractor shall excavate below the plan grade a maximum of 1 foot, as determined by the Engineer, and backfill with gravel backfill for foundations.

2-09.3(1)C.OPT2.GB2
(January 3, 2006)
If unsatisfactory foundation material, as determined by the Engineer, is encountered for placing bridge footings, the foundation material shall be excavated below the footing, and the unsatisfactory material replaced with gravel backfill for foundation Class A, or lean concrete, except, when the maximum design soil pressure is greater than five tons per square foot, lean concrete only shall be used for replacing the unsatisfactory material.

Lean concrete shall meet the requirements of Section 6-02.

The unsatisfactory material shall be removed to a maximum of 3 feet below the bottom of the footing elevation, unless the Engineer directs the Contractor to excavate deeper. Excavations greater than 3 feet below the bottom of the footing may require redesign of the footings and columns, for which the Engineer will furnish revised plans.

2-09.3(3).GR2
Construction Requirements, Structure Excavation, Class A

2-09.3(3)B.GR2
Excavation Using Open Pits – Extra Excavation

2-09.3(3)B.INST1.GR2
Section 2-09.3(3)B is supplemented with the following:

2-09.3(3)B.OPT1.FB2
(April 6, 2015)
Extra excavation and open pit excavation, as defined in this section, will not be allowed at the following location(s):

*** $$1$$ ***

The Contractor shall shore excavations at the locations specified above in accordance with Section 2-09.3(3)D. The Contractor shall submit Type 3E Working Drawings consisting of shoring plans in accordance with Section 2-09.3(3)D.

2-09.3(3)D.GR2
Shoring And Cofferdams

2-09.3(3)D.INST1.GR2
Section 2-09.3(3)D is supplemented with the following:

2-09.3(3)D.OPT1.GB2
(March 13, 1995)
The Contractor shall protect the existing pavement from damage due to the Contractor's operations and shall shore all excavation adjacent to the existing pavement.

2-09.3(3)D.OPT2.GB2
(August 2, 2010)
The Contractor shall protect the existing track and facilities of the Railroad Company from damage due to the Contractor's operations, and shall shore all excavation adjacent to the existing railroad track. Shoring shall be steel sheet piling designed for a Cooper E-80 loading according to the American Railway Engineering and Maintenance Association (AREMA) Manual For Railway Engineering. Damage to the railroad track or railroad facilities, due to the Contractor's operations, will be repaired by the Railroad at the Contractor's expense.

2-09.3(3)D.OPT3.FB2
(March 13, 1995)
Because of the nearness of the work to the existing *** $$1$$, *** the Contractor shall protect the *** $$2$$ *** during the *** $$3$$ ***.

2-09.4.GR2
Measurement

2-09.4.INST1.GR2
The subsection **Lower Limits** of Section 2-09.4 is supplemented with the following:

2-09.4.OPT1.GB2
(January 4, 2010)
Under girders, at end pier embankments, the lower limit will follow a line parallel to the bottom of the girders and three feet below them.

2-09.5.GR2
Payment

2-09.5.INST1.GR2
Section 2-09.5 is supplemented with the following:

2-09.5.OPT1.GB2
(March 13, 1995)
When lean concrete is used to backfill voids left by the removal of unsatisfactory foundation material, as determined by the Engineer, payment for this work shall be by force account as provided in Section 1-09.6.

To provide a common basis for all bidders, the Contracting Agency has estimated the amount of force account for "Force Account Lean Concrete" and has entered the amount in the Proposal to become a part of the total bid by the Contractor.

DIVISION5.GR5 Surface Treatments and Pavements

5-01.GR5 Cement Concrete Pavement Rehabilitation

5-01.3.GR5 Construction Requirements

5-01.3(9).GR5 Portland Cement Concrete Pavement Grinding

5-01.3(9).INST1.GR5 (Section 5-01.3(9) is supplemented with the following) Must use once preceding any of the following:

5-01.3(9).OPT1.GR5 (April 1, 2013) Use in projects that require 10,000 or more square yards of cement concrete pavement grinding.

5-01.5.GR5 Payment

5-01.5.INST1.GR5 (Section 5-01.5 is supplemented with the following) Must use once preceding any of the following:

5-01.5.OPT1.GR5 (April 3, 2006) Must include with **5-01.3(1)A.OPT1.GR5, 5-05.3(1).OPT7.GR5, 5-05.5.OPT1.GR5, 6-02.3.OPT3.GB6, 6-02.5.OPT3.GB6, 8-01.3(1)A.OPT1.GR8, and 8-01.5.OPT1.GR8.**

5-02.GR5 Bituminous Surface Treatment

5-02.3.GR5 Construction Requirements

5-02.3(3).GR5 Application Of Asphalt Emulsion and Aggregate

5-02.3(3).INST1.GR5 (Section 5-02.3(3) is supplemented with the following) Must use once preceding any of the following:

5-02.3(3).OPT1.FR5 (BST New Construction)
(August 5, 2013)
May use with 5**-02.3(3).OPT2.FR5.**
Use in projects requiring a Bituminous Surface Treatment on a newly constructed roadway.)
(2 fill-ins)

5-02.3(3).OPT2.FR5 (BST Seal Coat)
(August 5, 2013)
May use with **5-02.3(3).OPT1.FR5**.
Use in projects requiring a Bituminous Surface Treatment seal coat on an existing roadway.
(1 fill-in)

5-02.4.GR5 Measurement

5-02.4.INST1.GR5 (Section 5-02.4 is supplemented with the following) Must use once preceding any of the following:

5-02.4.OPT2.GR5 (BST existing road approaches)
(March 13, 1995)
Must also use **5-02.5.OPT2.GR5**.
Use in BST projects when there are a substantial number of existing road approaches to be paved and the extra cost of labor for paving approaches becomes a factor in determining the bid price for BST.

5-02.5.GR5 Payment

5-02.5.INST1.GR5 (Section 5-02.5 is supplemented with the following)
Must use once preceding any of the following:

5-02.5.OPT2.GR5 (Bituminous Surface Treatment For Road Approach)
(February 5, 2001)
Must include with **5-02.4.OPT2.GR5**.
Use in BST projects when there are a substantial number of existing road approaches to be paved and the extra cost of labor for paving approaches becomes a factor in determining the bid price for BST.

5-02.5.OPT3.GR5 (CRS-2P Cost Price Adjustment Payment)
(August 5, 2013)
Include in all BST projects.
Must include **standard item #5294**.
To determine the Engineers Estimate for this bid item, refer to the guidance at:
http://www.wsdot.wa.gov/Projects/ProjectMgmt/RiskAssessment/Information.htm

5-04.GR5 Hot Mix Asphalt

5-04.1.GR5 Description

5-04.1.INST1.GR5 (Section 5-04.1 is supplemented with the following)
Must use once preceding any of the following:

5-04.1.OPT1.GR5 (Bridge Transverse Joint Seal)
(August 1, 2011)
Must use with **5-04.2.OPT14.GR5, 5-04.3.OPT8.GR5**, **5-04.4.OPT4.GR5, and 5-04.5.OPT4.GR5.**
Include in all projects requiring a Bridge Transverse Joint Seal where HMA abuts a bridge deck or HMA overlays a bridge deck. Consultation with the Bridge and Structures Office is advised.

5-04.2.GR5 Materials

~~5-04.2.INST2.GR5 (Section 5-04.2 is revised to read)~~
~~Must use once preceding the following:~~

~~5-04.2.OPT8.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA)~~
~~(January 6, 2014)~~
~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~
~~Must use with **5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

5-04.2.INST3.GR5 (Section 5-04.2 is supplemented with the following)
Must use once preceding the following:

5-04.2.OPT13.FR5 (HMA Test Requirements)
(January 3, 2011)
Include in all projects using HMA.
Fill-in (number of ESAL's) is included in the pavement design report.
(1 fill-in)

5-04.2.OPT14.GR5 (Bridge Transverse Joint Seal)
(August 1, 2011)
Must use with **5-04.1.OPT1.GR5, 5-04.3.OPT8.GR5**, **5-04.4.OPT4.GR5, and 5-04.5.OPT4.GR5.**
Include in all projects requiring a Bridge Transverse Joint Seal.

~~**5-04.2(9-02.1).GR5 Asphalt Material, General**~~
~~(Section 9-02.1 is supplemented with the following)~~

~~5-04.2(9-02.1).OPT1.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA)~~
~~(August 4, 2014)~~
~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~
~~Must use with **5-04.2.OPT8. GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

~~**5-04.2(9-02.1(4)).GR5 Performance Graded Asphalt Binder (PGAB)**~~
~~(Section 9-02.1(4) is supplemented with the following)~~

~~5-04.2(9-02.1(4)).OPT1.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA) (January 6, 2014)~~

~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~

~~Must use with **5-04.2.OPT8. GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

~~**5-04.2(9-03.8(2)).GR5 HMA Test Requirements**~~

~~(Section 9-03.8(2) after the first paragraph is revised to read)~~

~~5-04.2(9-03.8(2)).OPT1.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA) (March 3, 2014)~~

~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~

~~Must use with **5-04.2.OPT8. GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

~~**5-04.2(9-03.8(3)B).GR5 Gradation – Recycled Asphalt Pavement and Mineral Aggregate**~~

~~(Section 9-03.8(3)B is supplemented with the following)~~

~~5-04.2(9-03.8(3)B).OPT1.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA) (August 6, 2012)~~

~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~

~~Must use with **5-04.2.OPT8. GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-**~~

~~**04.3(7)A3.OPT2.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

~~**5-04.2(9-03.21(1)).GR5 General Requirements**~~

~~(Section 9-03.21(1) is supplemented with the following)~~

~~5-04.2(9-03.21(1)).OPT1.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA) (August 6, 2012)~~
~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~

~~Must use with **5-04.2.OPT8.GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

5-04.3.GR5 Construction Requirements

5-04.3.INST1.GR5 (Section 5-04.3 is supplemented with the following)
Must use once preceding any of the following:

5-04.3.OPT1.BSP.FB5 (Bridges Classified as Unrestricted for Paving)
(BSP August 23, 2010)
Use in projects with HMA paving on bridge decks when at least one bridge within the paving limits has been classified by the Bridge and Structures Office as unrestricted for paving. The fill-in specifies the bridge(s) classified as unrestricted for paving in accordance with the Bridge Deck Condition Report provided to the PEO by the Bridge and Structures Office. Include with **5-04.3.OPT3.BSP.GB5 and 5-04.3(14).OPT11.BSP.GB5**. Include with **5-04.3(14).OPT9.BSP.GB5** when partial depth removal of existing surfacing from the bridge deck(s) is required.
(One fill-in)

5-04.3.OPT2.BSP.FB5 (Bridges Classified as Restricted for Paving)
(BSP April 4, 2011)
Use in projects with HMA paving on bridge decks when at least one bridge within the paving limits has been classified by the Bridge and Structures Office as restricted for paving, including any bridge with full depth removal of existing surfacing. The fill-in specifies the bridge(s) classified as restricted for paving in accordance with the Bridge Deck Condition Report provided to the PEO by the Bridge and Structures Office. Include with Standard Item

	7037 "Structure Surveying". Include with **5-04.3.OPT3.BSP.GB5, 5-04.3(14).OPT11.BSP.GB5**, and **5-04.5.OPT9.BSP.GB5**. Include with **5-04.3(14).OPT9.BSP.GB5** when partial depth removal of existing surfacing from the bridge deck(s) is required. Include with **5-04.3(14).OPT10.BSP.GB5, 6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6, 6-02.4.OPT42.BSP.GB6, 6-02.5.OPT70.BSP.GB6, and all Section 6-08 GSP's** when full depth removal of existing surfacing from the bridge deck(s) is required. (One fill-in)
5-04.3.OPT3.BSP.GB5	(General Requirements for Planing and HMA Paving on Bridge Decks) (BSP April 4, 2011) Use in all projects with HMA paving on bridge decks. Include with **5-04.3(14).OPT11.BSP.GB5**. Include with either or both **5-04.3.OPT1.BSP.FB5 and 5-04.3.OPT2.BSP.FB5** as applicable to identify the bridges within the paving limits of the project that have been specified as unrestricted for paving and restricted for paving, respectively, in accordance with the Bridge Deck Condition Report provided to the PEO by the Bridge and Structures Office. Include with **5-04.3(14).OPT9.BSP.GB5** when partial depth removal of existing surfacing from the bridge deck(s) is required. Include with **5-04.3(14).OPT10.BSP.GB5, 6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6, 6-02.4.OPT42.BSP.GB6, 6-02.5.OPT70.BSP.GB6, and all Section 6-08 GSP's** when full depth removal of existing surfacing from the bridge deck(s) is required.
5-04.3.OPT8.GR5	(Bridge Transverse Joint Seal) (August 1, 2011) Must use with **5-04.1.OPT1.GR5, 5-04.2.OPT14.GR5, 5-04.4.OPT4.GR5, and 5-04.5.OPT4.GR5.** Include in all projects requiring a Bridge Transverse Joint Seal.

~~**5-04.3(1).GR5 HMA Mixing Plant**~~

~~5-04.3(1).INST1.GR5~~	~~(Section 5-04.3(1) is supplemented with the following)~~ ~~Must use once preceding any of the following:~~
~~5-04.3(1).OPT1.GR5~~	~~(Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA) (November 12, 2012)~~ ~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~

~~Must use with **5-04.2.OPT8. GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, and 5-04.3(8).OPT1.GR5, 5-04.3(8)A7.OPT2.GR5.**~~

5-04.3(3).GR5 Hot Mix Asphalt Pavers

5-04.3(3).INST1.GR5 (Section 5-04.3(3) is supplemented with the following)
Must use once preceding any of the following:

5-04.3(3).OPT1.GR5 (Reference line required for paver)
(March 13, 1995)
Use in projects with a 70 MPH or higher design speed, except when the paving will be done under traffic.

5-04.3(3)A.GR5 (Material Transfer Device/Vehicle)

5-04.3(3)A.OPT1.GR5 (August 3, 2009)
(Section 5-04.3(3)A is deleted in its entirety)
Use in projects containing Hot Mix Asphalt when the Region Materials Lab recommends that a MTD/V not be used. Use requires approval of the Region Construction Office. MTD/V's are not recommended for projects with small quantities of HMA or when the paving is limited to areas where there is insufficient room for the MTD/V in the paving train.

5-04.3(3)A.INST1.GR5 (Section 5-04.3(3)A including title is revised to read)
Must use once preceding any of the following:

5-04.3(3)A.OPT2.GR5 (Material Transfer Vehicle)
(August 1, 2011)
Use in projects containing Hot Mix Asphalt when only an MTV is to be used (no MTD). Use requires approval of the Region Construction Office.

5-04.3(5).GR5 Conditioning of Existing Surface

5-04.3(5)C.GR5 Crack Sealing

5-04.3(5)C.INST2.GR5 (The first paragraph of Section 5-04.3(5)C is revised to read)
Must use once preceding any of the following:

5-04.3(5)C.OPT1.GR5 (Crack Sealing)
(August 5, 2013)
At the discretion of the Region use this specification if rubberized sealant is required for

crack sealing. The Plans need to identify where rubberized joint sealant is to be used and where sand slurry is to be used.

5-04.3(5)C.OPT7.GR5 (January 7, 2013)
At the discretion of the North Central, Eastern and South Central Regions, use on paving projects with pre-level or multiple courses.

5-04.3(5)C.OPT8.GR5 (January 7, 2013)
At the discretion of the Northwest, Olympic and Southwest Regions, use on paving projects with pre-level or multiple courses

5-04.3(7).GR5 Preparation of Aggregates

~~5-04.3(7).INST1.GR5 (Section 5-04.3(7) is revised to read)~~
~~Must use once preceding any of the following:~~

~~5-04.3(7).OPT1.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA)~~
~~(August 6, 2012)~~
~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~
~~Must use with **5-04.2.OPT8.GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

5-04.3(7)A.GR5 Mix Design

5-04.3(7)A.INST1.GR5 (Section 5-04.3(7)A is supplemented with the following)
Must use once preceding any of the following:

5-04.3(7)A.OPT1.GR5 (Mix Design Verification)
(January 7, 2013)
Use at the discretion of the Region. Consider using when paving is a critical activity and contract time does not include working days for HMA mix design/anti-strip evaluation report. Not recommended for use on projects with adequate time for mix design/anti-strip evaluation report prior to HMA placement, or when other mechanisms (such as a flexible start date) allow

verification to be performed without causing a delay to critical paving activities.

5-04.3(7)A1.GR5 General

~~5-04.3(7)A1.INST1.GR5 (Section 5-04.3(7)A1 is supplemented with the following)~~
~~Must use once preceding any of the following:~~

~~5-04.3(7)A1.OPT1.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA)~~
~~(August 4, 2014)~~
~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~
~~Must use with **5-04.2.OPT8.GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

5-04.3(7)A1.INST2.GR5 (The following sentence is inserted after the first sentence in Section 5-04.3(7)A1)
Must use once preceding any of the following:

5-04.3(7)A1.OPT2.GR5 (Allows two mix designs per calendar year for HMA of the same class, asphalt binder grade and number of gyrations)
(March 3, 2014)
Use in all HMA paving projects.

~~**5-04.3(7)A2.GR5 Statistical or Nonstatistical Evaluation**~~

~~5-04.3(7)A2.INST1.GR5 (Section 5-04.3(7)A2 is revised to read)~~
~~Must use once preceding any of the following:~~

~~5-04.3(7)A2.OPT1.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA)~~
~~(March 3, 2014)~~
~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~
~~Must use with **5-04.2.OPT8. GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5,**~~

~~**5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

~~**5-04.3(7)A3.GR5 Commercial Evaluation**~~

~~5-04.3(7)A3.INST2.GR5 (Section 5-04.3(7)A3 is supplemented with the following)~~
~~Must use once preceding any of the following:~~

~~5-04.3(7)A3.OPT2.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA)~~
~~(January 6, 2014)~~
~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~
~~Must use with **5-04.2.OPT8. GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(8).OPT1.GR5, and 5-04.3(8)A7.OPT2.GR5.**~~

~~**5-04.3(8).GR5 Mixing**~~

~~5-04.3(8).INST1.GR5 (Section 5-04.3(8) is supplemented with the following)~~
~~Must use once preceding any of the following:~~

~~5-04.3(8).OPT1.GR5 (Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA)~~
~~(January 6, 2014)~~
~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~
~~Must use with **5-04.2.OPT8. GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, and 5-04.3(7)A3.OPT2.GR5, 5-04.3(8)A7.OPT2.GR5.**~~

5-04.3(8)A.GR5 Acceptance Sampling and Testing - HMA Mixture
Must use with **5-04.3(8)A.OPT1.FR5**.

5-04.3(8)A.INST1.GR5 (Section 5-04.3(8)A is supplemented with the following)
Must use once preceding any of the following:

5-04.3(8)A.OPT1.FR5 Commercial Evaluation
(August 2, 2010)
Use in projects where the area that commercial evaluation of hot mix asphalt is to be used is not identified in the Standard Specifications
(1 fill-in)

~~**5-04.3(8)A4.GR5 Definition of Sampling Lot and Sublot**~~

~~5-04.3(8)A4.INST1.GR5 (The second sentence in the second paragraph in Section 5-04.3(8)A4 is revised to read)~~
~~Must use once preceding any of the following:~~

~~5-04.3(8)A4.OPT1.FR5 (HMA Mixture Sublot Size 1200)~~
~~(August 3, 2009)~~
~~Use in projects containing 20,000+ tons of Hot Mix Asphalt that is all of the same class and PG grade when the paving operation is anticipated to place 2,500 or more tons per day. Use requires approval of the Region Construction Office. The GSP HMA Compaction Sublot Size 120 should typically be used with this GSP.~~
~~(1 fill-in)~~

~~5-04.3(8)A4.OPT2.FR5 (HMA Mixture Sublot Size 1600)~~
~~(August 3, 2009)~~
~~Use in projects containing 30,000+ tons of Hot Mix Asphalt that is all of the same class and PG grade when the paving operation is anticipated to place 2,500 or more tons per day. Use requires approval of the Region Construction Office. The GSP HMA Compaction Sublot Size 160 should typically be used with this GSP.~~
~~(1 fill-in)~~

5-04.3(8)A7.GR5 Test Section – HMA Mixtures

5-04.3(8)A7.INST1.GR5 (The first sentence of Section 5-04.3(8)A7 is revised to read)
Must use once preceding any of the following:

5-04.3(8)A7.OPT1.GR5 (HMA Test Requirements)
(March 3, 2014)
Use in all HMA paving projects. This provision excludes the Hamburg Wheel-Track Testing and Indirect Tensile Strength

of Bituminous Materials from test requirements of each class of HMA accepted by statistical evaluation.

~~5-04.3(8)A7.INST2.GR5~~ ~~(Section 5-04.3(8)A7 is supplemented with the following)~~
~~Must use once preceding any of the following:~~

~~5-04.3(8)A7.OPT2.GR5~~ ~~(Utilizes recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in production HMA)~~
~~(January 6, 2014)~~
~~Use in all HMA paving projects. Headquarters Construction Office approval required to not use. This provision allows the use of recycled asphalt pavement (RAP) or reclaimed asphalt shingles (RAS) in the production of HMA.~~
~~Must use with **5-04.2.OPT8.GR5, 5-04.2(9-02.1).OPT1.GR5, 5-04.2(9-02.1(4)).OPT1.GR5, 5-04.2(9-03.8(2)).OPT1.GR5, 5-04.2(9-03.8(3)B).OPT1.GR5, 5-04.2(9-03.21(1)).OPT1.GR5, 5-04.3(1).OPT1.GR5, 5-04.3(7).OPT1.GR5, 5-04.3(7)A1.OPT1.GR5, 5-04.3(7)A2.OPT1.GR5, 5-04.3(7)A3.OPT2.GR5, and 5-04.3(8).OPT1.GR5.**~~

5-04.3(10).GR5 Compaction

5-04.3(10)B.GR5 Control

5-04.3(10)B1.GR5 General

5-04.3(10)B1.INST1.GR5 (The first sentence in Section 5-04.3(10)B1 is revised to read)
Must use once preceding any of the following:

5-04.3(10)B1.OPT1.GR5 (HMA Shoulder Compaction)
(August 3, 2009)
Use in projects to add compaction control on the shoulders.

~~5-04.3(10)B1.INST2.GR5~~ ~~(The second sentence in the second paragraph of Section 5-04.3(10)B1 is revised to read)~~
~~Must use once preceding any of the following:~~

~~5-04.3(10)B1.OPT8.GR5~~ ~~(HMA Compaction Sublot Size 120)~~
~~(August 3, 2009)~~
~~Use in projects containing 20,000+ tons of Hot Mix Asphalt when the paving operation~~

~~is anticipated to place 2,500 or more tons per day. The GSP HMA Mixture Sublot Size 1200 should be used with this GSP. Use requires approval of the Region Construction Office.~~

~~5-04.3(10)B1.OPT3.GR5~~ ~~(HMA Compaction Sublot Size 160)~~
~~(August 3, 2009)~~
~~Use in projects containing 30,000+ tons of Hot Mix Asphalt when the paving operation is anticipated to place 2,500 or more tons per day. The GSP HMA Mixture Sublot Size 1600 should be used with this GSP. Use requires approval of the Region Construction Office.~~

5-04.3(10)B1.INST3.GR5 (The last sentence in the fourth paragraph in Section 5-04.3(10)B1 is revised to read)
Must use once preceding any of the following:

5-04.3(10)B1.OPT14.GR5 (HMA Prelevel Compaction)
(August 3, 2009)
Use in projects to require a pneumatic tire roller for the compaction of all prelevel.

5-04.3(12).GR5 Joints

5-04.3(12).INST1.GR5 (Section 5-04.3(12) is supplemented with the following)
Must use once preceding any of the following:

5-04.3(12).OPT1.GR5 (Feathering Hot Mix Asphalt)
(January 5, 2004)
Use in projects requiring the feathering of hot mix asphalt. May be used with the recommendation of the Region Construction Engineer.

5-04.3(13).GR5 Surface Smoothness

5-04.3(13).INST1.GR5 (The first four paragraphs of Section 5-04.3(13) are revised to read)
Must use once preceding any of the following:

5-04.3(13).OPT1.FR5 (Surface Smoothness)
(January 5, 2015)
Use in all projects that contain HMA paving at the discretion of the Region Construction Manager. Paving must be a minimum of one mile in length. For accurate measurements, the HQ Materials Lab profiler must be able to move through the sections to be measured unimpeded at a minimum speed of 35 MPH. Notification must be made to HQ Materials Lab Pavements section in order to schedule the post paving IRI determination. Fill-ins #1-6 are to be

provided by the HQ Materials lab Pavements section. Use with **5-04.5.OPT1.FR5**. Do not use with **5-04.3(13).OPT7.FR5** or **5-04.3(13).OPT13.GR5**.

(6 fill-ins) Contact Tim Rydholm, Pavements Special Projects Manager at 360/709-5473 to schedule the IRI determination and to complete the fill-ins.

5-04.3(13).INST2.GR5 (The second sentence of Section 5-04.3(13) is deleted and replaced with the following)
Must use once preceding any of the following:

5-04.3(13).OPT7.FR5 (Smoothness requirements)
(March 13, 1995)
Use in projects with roadways to be paved that have a combination of posted speeds both greater than and less than 45 MPH. Do not use with **5-04.3(13).OPT1.FR5**.
(1 fill-in is for sections of roadway with a posted speed limit less than 45 mph)

5-04.3(13).INST3.GR5 (The second sentence of Section 5-04.3(13) is revised to read)
Must use once preceding any of the following:

5-04.3(13).OPT13.GR5 (Smoothness requirements)
(January 5, 2004)
Use in projects with all roadways to be paved are posted less than 45 MPH. Do not use with **5-04.3(13).OPT1.FR5.**

5-04.3(14).GR5 Planing Bituminous Pavement

5-04.3(14).INST1.GR5 (Section 5-04.3(14) is supplemented with the following)
Must use once preceding any of the following:

5-04.3(14).OPT1.FR5 (January 5, 2004)
Use in projects when it is necessary to control the time the planed area will be open and exposed to traffic prior to paving.
(1 fill-in)

5-04.3(14).OPT2.GR5 (Requires test section and smoothness requirements)
(January 5, 2004)
Use in projects with large quantities of planing. When using this GSP consider the need to control the amount of time the planed area is open to traffic by adding **5-04.3(14).OPT1.FR5** where appropriate.

5-04.3(14).OPT3.GR5 (Vertical Edge Planing)
(March 13, 1995)

Use in projects when planed lanes shall be paved prior to being open to traffic.

5-04.3(14).OPT4.GR5 (Beveled Edge Planing)
(August 3, 2009)
Use in projects when a beveled edge is required on a planed lane that will be opened to traffic prior to paving. The GSP is required for depths greater than 0.20 feet and may be used with the recommendation of the Region Construction Engineer for depths up to 0.20 feet. When using this GSP consider the need to control the amount of time the planed area is open to traffic by adding **5-04.3(14).OPT1.FR5** where appropriate.

5-04.3(14).OPT9.BSP.GB5 (Partial Depth Removal of Existing Surfacing From Bridge Deck)
(BSP August 23, 2010)
Use in projects with HMA paving on bridge decks requiring partial depth removal of existing surfacing from bridge deck(s). Include with **5-04.3.OPT3.BSP.GB5 and 5-04.3(14).OPT11.BSP.GB5**. Include with either or both **5-04.3.OPT1.BSP.FB5 and 5-04.3.OPT2.BSP.FB5** as applicable to identify the bridges within the paving limits of the project that have been specified as unrestricted for paving and restricted for paving, respectively, in accordance with the Bridge Deck Condition Report provided to the PEO by the Bridge and Structures Office.

5-04.3(14).OPT10.BSP.GB5 (Full Depth Removal of Existing Surfacing From Bridge Deck)
(BSP August 23, 2010)
Use in projects with HMA paving on bridge decks requiring full depth removal of existing surfacing from bridge deck(s). Include with **5-04.3.OPT3.BSP.GB5, 5-04.3(14).OPT11.BSP.GB5, 5-04.5.OPT9.BSP.GB6. 6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6, 6-02.4.OPT42.BSP.GB6, 6-02.5.OPT70.BSP.GB6, and all Section 6-08 GSP's**. Include with **5-04.3.OPT2.BSP.FB5** to identify the bridge(s) within the paving limits of the project that have been specified as restricted for paving, in accordance with the Bridge Deck Condition Report provided to the PEO by the Bridge and Structures Office.

5-04.3(14).OPT11.BSP.GB5 (Repair of Damage to Bridge Decks due to Surfacing Removal Operations)
(BSP April 16, 2012)
Use in all projects with HMA paving on bridge decks. Include with **5-04.3.OPT3.BSP.GB5**. Include with either or both **5-04.3.OPT1.BSP.FB5 and 5-**

04.3.OPT2.BSP.FB5 as applicable to identify the bridges within the paving limits of the project that have been specified as unrestricted for paving and restricted for paving, respectively, in accordance with the Bridge Deck Condition Report provided to the PEO by the Bridge and Structures Office. Include with **5-04.3(14).OPT9.BSP.GB5** when partial depth removal of existing surfacing from the bridge deck(s) is required. Include with **5-04.3(14).OPT10.BSP.GB5, 6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6, 6-02.4.OPT42.BSP.GB6, 6-02.5.OPT70.BSP.GB6, and all Section 6-08 GSP's** when full depth removal of existing surfacing from the bridge deck(s) is required.

5-04.3(16).GR5 Weather Limitations

5-04.3(16).INST1.GR5 (The first sentence of Section 5-04.3(16) is revised to read)
Must use once preceding any of the following:

5-04.3(16).OPT1.FR5 (August 3, 2009)
Use in projects when it is anticipated that paving will be conducted in the Fall.
(1 fill-in) (Fill-in to be provided by Region Materials Engineer)

5-04.3(21).GR5 Vacant

5-04.3(21).INST1.GR5 (Section 5-04.3(21) is revised to read)
Must use once preceding any of the following:

5-04.3(21).OPT1.FR5 Asphalt Binder Revision
(January 7, 2013)
Use in projects when the Contracting Agency provides a source of aggregate for HMA. Must include **5-04.4.OPT3.GR5** and **5-04.5.OPT3.GR5.**
(1 fill-in) (Fill-in to be provided by Region Materials Engineer)

5-04.4.GR5 Measurement

5-04.4.INST1.GR5 (Section 5-04.4 is supplemented with the following)
Must use once preceding any of the following:

5-04.4.OPT4.GR5 (Bridge Transverse Joint Seal)
(August 1, 2011)
Must use with **5-04.1.OPT1.GR5, 5-04.2.OPT14.GR5, 5-04.3.OPT8.GR5, and 5-04.5.OPT4.GR5.**
Include in all projects requiring a Bridge Transverse Joint Seal.

5-04.4.OPT8.BSP.GB5 (Removing Existing Overlay From Bridge Deck)
(BSP October 13, 2003)

Use in projects with full depth removal of existing surfacing from bridge deck(s) when the quantity is to be bid and administered separate from Standard Item 5711. Include with **5-04.3(14).OPT10.BSP.GB5, 5-04.3(14).OPT11.BSP.GB5, 5-04.4.OPT8.BSP.GB5, 5-04.5.OPT9.BSP.GB5. 6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6, 6-02.4.OPT42.BSP.GB6, and 6-02.5.OPT70.BSP.GB6.**

5-04.5.GR5 Payment

5-04.5.INST2.GR5 (Section 5-04.5 is supplemented with the following)
Must use once preceding any of the following:

5-04.5.OPT1.FR5 (Surface Smoothness)
(January 5, 2015)
Must include with **5-04.3(13).OPT1.FR5**.

Fill-in is the appropriate Pay Adjustment Schedule as determined using the criteria below.

<u>Pay Adjustment Schedule 1</u> = Interstate highways, new pavement construction or multiple lift pavement overlays (at least one (1) leveling course + wearing course).

Note: Pre-leveling allowances are not to be counted as a leveling course paving lift with respect to this definition.

<u>Pay Adjustment Schedule 2</u> = Single lift pavement overlays with allowance for surface variance corrections with smoothness averaging devices (paving skis) or full width pavement milling (including shoulder) with single lift replacement overlay.

Note: Sufficient preleveling and/or pavement thickness variance allowances should be included to repair obvious existing deficiencies (humps, valleys, ruts etc.).

<u>Pay Adjustment Schedule 3</u> = Smoothness will be difficult to attain or when risk associated with meeting a smoothness criteria is unknown. Examples include matching to existing concrete gutter lines; sections with multiple surface utility structures; intersections; multiple skip sections resulting in short paving lengths; and milling/replacement paving where both the shoulder and adjacent lane is not also milled. Bonus incentives are applied to encourage maximum effort to obtain smooth pavements in difficult applications.
(1 fill-in)

5-04.5.OPT2.GR5 (Asphalt Cost Price Adjustment)
(August 5, 2013)
Include in all projects **containing Hot Mix Asphalt.**

Must include standard item 5837.
To determine the Engineers Estimate for this bid item, refer to the guidance at: http://www.wsdot.wa.gov/Projects/ProjectMgmt/RiskAssessment/Information.htm

5-04.5.OPT3.GR5 (Asphalt Binder Revision)
(August 3, 2009)
Must include with **5-04.3(21).OPT1.FR5** and **5-04.4.OPT3.GR5.**

5-04.5.OPT4.GR5 (Bridge Transverse Joint Seal)
(August 1, 2011)
Must use with **5-04.1.OPT1.GR5, 5-04.2.OPT14.GR5, 5-04.3.OPT8.GR5, and 5-04.4.OPT4.GR5.**
Include in all projects requiring a Bridge Transverse Joint Seal.

5-04.5.OPT8.BSP.GB5 (Removing Existing Overlay From Bridge Deck)
(BSP October 13, 2003)
Use in projects with full depth removal of existing surfacing from bridge deck(s) when the quantity is to be bid and administered separate from Standard Item 5711. Include with **5-04.3(14).OPT10.BSP.GB5, 5-04.3(14).OPT11.BSP.GB5, 5-04.5.OPT8.BSP.GB5, 5-04.5.OPT9.BSP.GB5. 6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6, 6-02.4.OPT42.BSP.GB6, and 6-02.5.OPT70.BSP.GB6**

5-04.5.OPT9.BSP.GB5 (Structure Surveying)
(BSP September 20, 2010)
Use in all projects with bridges classified as restricted for paving. Include with ***5-04.3.OPT2.BSP.FB5, 5-04.3.OPT3.BSP.GB5, 5-04.3(14).OPT10.BSP.GB5, and 5-04.3(14).OPT11.BSP.GB5.***

5-05.GR5 Cement Concrete Pavement

5-05.1.GR5 Description

5-05.1.INST1.GR5 (Section 5-05.1 is supplemented with the following)
Must use once preceding any of the following:

5-05.1.OPT1.GR5 (Use when cement concrete pavement has pigmented or textured cement concrete in roundabout locations)
(August 6, 2012)
Use in projects requiring color treatment, textured treatment or both for roundabout truck aprons, splitter islands, and mainline crossings.
Requires approval by the Region Landscape Architect or the HQ Roadside and Site Development Manager for regions without a landscape architect.

Use with 5-05.2.OPT1.FR5, 5-05.3.OPT1.GR5 or 5-05.3.OPT2.FR5 or both.

5-05.2.GR5 Materials

5-05.2.INST1.GR5 (Section 5-05.2 is supplemented with the following)
Must use once preceding the following:

5-05.2.OPT1.FR5 (Pigmented cement concrete pavement in roundabouts locations)
(August 6, 2012)
Use in projects requiring color treatment in roundabout truck aprons, splitter islands, and mainline crossings. Concrete color must contrast with pavement color.

Requires approval by the Region Landscape Architect or the HQ Roadside and Site Development Manager for regions without a landscape architect.
(1 fill-ins)

Get Primary Pigment from Region Landscape Architect or the HQ Roadside and Site Development Manager and then list all the Manufactures and Pigment Color for that Primary Pigment as fill-in information from list shown below:

Primary Pigment - Brick:

Manufacturer	Pigment Color
BASF	"Red River Clay", RC5006
Bomanite	"Brick Red"
Davis Colors	"Brick Red", 160
Increte Systems	"Brick Red"
Solomon Colors	Brick", 417

Primary Pigment - Brown:

Manufacturer	Pigment Color
Davis Colors	"River Bank"
Scofield	"Sand Buff"
Solomon Colors	"306 Canvas"

Primary Pigment - Dark Gray:

Manufacturer	Pigment Color
Davis Colors	"Dark Gray (iron oxide) 860"
Increte Systems	"Dark Gray"
Solomon Colors	"Onyx", 920

Use with **5-05.1.OPT1.GR5, 5-05.3.OPT1.GR5, 5-05.3.OPT2.FR5** (if textured pattern also needed) and **5-05.4.OPT1.GR5.**

5-05.3.GR5 Construction Requirements

5-05.3.INST1.GR5 (Section 5-05.3 is supplemented with the following)
Must use once preceding any of the following:

5-05.3.OPT1.GR5 (Use when cement concrete pavement has pigmented color in roundabout locations)
(August 6, 2012)
Use in projects requiring pigmented colored cement concrete pavement in roundabout truck aprons, splitter islands and mainline crossings.
Requires approval by the Region Landscape Architect or the HQ Roadside and Site Development Manager for regions without a landscape architect.

Use with **5-05.1.OPT1.GR5, 5-05.2.OPT1.FR5, 5-05.3.OPT2.FR5** (if textured pattern also needed) and **5-05.4.OPT1.GR5**.

5-05.3.OPT2.FR5 (Use when cement concrete pavement has textured pattern in roundabout locations)
(August 6, 2012)
Use in projects requiring textured cement concrete pavement patterns on roundabouts, truck aprons, splitter islands and mainline crossings.

Requires approval by the Region Landscape Architect or the HQ Roadside and Site Development Manager for regions without a landscape architect.
(1 fill-in)

Get the Primary Pattern from Region Landscape Architect or the HQ Roadside and Site Development Manager and then list all the Manufactures and Patterns for that Primary Pattern as fill-in information from list below:

Primary Pattern - Ashlar Stone :

Manufacturer	**Pattern**
Increte Systems, Inc.	"Ashlar Slate"
Renew Crete Systems	"Royal Ashlar"
Bomanite	"Flagstone"

Primary Pattern - Brick

Manufacturer	Pattern
Bomanite	“Running Bond Cobblestone”
Brickform	“Pennsylvania Cobble-Sanded Joint”, TM820
Increte Systems, Inc	“Euro Cobble Running Bond”, SECR S001
Matcrete	“Large Cobblestone”, P-16
Renew-Crete Systems	“London Cobblestone”
Scofield	“Old Belgium Stone: Running Bond” (4530)

Primary Pattern - River Rock

Manufacturer	Pattern
Bomanite.	River Rock
Increte Systems	Savanah Stone
Matcrete	Large River Rock

Use with **5-05.1.OPT1.GR5, 5-05.2.OPT1.FR5** (if pigmented color also needed), **5-05.3(1).OPT8.GR5** and **5-05.4.OPT1.GR5**.

5-05.3(1).GR5 Concrete Mix Design for Paving

5-05.3(1).INST2.GR5 (Section 5-05.3(1) is supplemented with the following) Must use once preceding any of the following:

5-05.3(1).OPT7.GR5 Submittals
(April 3, 2006)
Include in all projects when pH monitoring is a condition of a 401 Water Quality Certification, or other permit. **Do not use** in projects covered by an NPDES General Construction Permit. Must also use **5-05.5.OPT1.GR5, 5-01.3(1)A.OPT1.GR5, 5-01.5.OPT1.GR5, 6-02.3.OPT3.GB6, 6-02.5.OPT3.GB6, 8-01.3(1)A.OPT1.GR8,** and **8-01.5.OPT1.GR8**.

5-05.3(1).OPT8.GR5 (Aggregate size for textured cement concrete pavement)
(August 6, 2012)
Use when textured cement concrete pavement patterns are needed in roundabouts, truck aprons, splitter islands and mainlinecrossings. Provides aggregate requirements for textured cement concrete pavement patterns.

Requires approval by the Region Landscape Architect or the HQ Roadside and Site Development Manager for regions without a landscape architect
Use with **5-05.1.OPT1.GR5, GSP 5-05.3.OPT2.FR5,** and **GSP 5-05.4.OPT1.GR5.**.

5-05.3(17).GR5 **Opening to Traffic**

5-05.3(17).INST2.GR5 (Section 5-05.3(17) is revised to read)
Must use once preceding any of the following:

5-05.3(17).OPT1.GR5 (Maturity Testing for Concrete Pavement)
(August 5, 2013)
Use in all projects where the Portland Cement Concrete Pavement (PCCP) or the Replacement of Portland Cement Concrete Panels are required to be opened to traffic within 24 hours of placement.
Requires the approval of State Pavement Engineer or Headquarters Construction Office.
Use with **5-05.5.OPT5.GR5.**

5-05.4.GR5 **Measurement**

5-05.4.INST1.GR5 (Section 5-05.4 is supplemented with the following)
Must use once preceding any of the following:

5-05.4.OPT1.GR5 (August 6, 2012)
(Textured and pigmented cement concrete pavement per square yard.)
Use with **5-05.5.OPT2.GR5, GSP 5-05.5.OPT3.GR5 or 5-05.5.OPT4.GR5.**

5-05.5.GR5 **Payment**

5-05.5.INST1.GR5 (Section 5-05.5 is supplemented with the following)
Must use once preceding any of the following:

5-05.5.OPT1.GR5 (April 3, 2006)
Must include with **5-05.3(1).OPT7.GR5, 5-01.3(1)A.OPT1.GR5, 5-01.5.OPT1.GR5, 6-02.3.OPT3.GB6, 6-02.5.OPT3.GB6, 8-01.3(1)A.OPT1.GR8, and 8-01.5.OPT1.GR8.**

5-05.5.OPT2.GR5 (August 6, 2012)
Pigmented cement concrete pavement per square yard.
Use with **5-05.1.OPT1.GR5** and **5-05.4.OPT1.GR5.**

5-05.5.OPT3.GR5 (August 6, 2012)
Textured cement concrete pavement per square yard. Use with
Use with **5-05.1.OPT1.GR5** and **5-05.4.OPT1.GR5.**

5-05.5.OPT4.GR5 (August 6, 2012)

Textured and pigmented cement concrete pavement per square yard.
Use with **5-05.1.OPT1.GR5** and **5-05.4.OPT1.GR5.**

5-05.5.OPT5.GR5 (August 5, 2013)
Maturity Testing for Concrete Pavement incidental to bid items Cement Conc. Pavement or Replacement Cement Concrete Panel.
Use with **5-05.3(17).OPT1.GR5.**

5-SA1.GR5 **Just in Time Training**
(August 5, 2013)
Use in all projects with cement concrete pavement unless approved by the ASCE or State Pavement Engineer.

5-04.GR5
Hot Mix Asphalt

5-04.1.GR5
Description

5-04.1.INST1.GR5
Section 5-04.1 is supplemented with the following:

5-04.1.OPT1.GR5
(August 1, 2011)
This Work consists of constructing bridge transverse joint seals in accordance with these Special Provisions and the Plans.

5-04.2.GR5
Materials

~~**5-04.2.INST2.GR5**~~
~~Section 5-04.2 is revised to read:~~

~~**5-04.2.OPT8.GR5**~~
~~(January 6, 2014)~~
~~Materials shall meet the requirements of the following sections:~~

~~Asphalt Binder~~	~~9-02.1(4)~~
~~Cationic Emulsified Asphalt~~	~~9-02.1(6)~~
~~Anti-Stripping Additive~~	~~9-02.4~~
~~Warm Mix Asphalt Additive~~	~~9-02.5~~
~~Aggregates~~	~~9-03.8~~
~~Recycled Asphalt Pavement~~	~~9-03.8(3)B~~
~~Mineral Filler~~	~~9-03.8(5)~~
~~Recycled Material~~	~~9-03.21~~

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

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

~~If greater than 20 percent of the total weight of HMA is RAP or any amount of RAS is utilized in the production of HMA, the Contractor shall sample and test the RAP and RAS during stockpile construction in accordance with WSDOT FOP for AASHTO T 308 for the determination of the asphalt binder content and WSDOT FOP for WAQTC/AASHTO T 27/T 11 for the gradation of the aggregates. The RAP shall be sampled and tested at a frequency of one sample for every 1,000 tons produced and not less than ten samples per project. The RAS shall be sampled and tested at a~~

~~frequency of one sample for every 100 tons produced and not less than ten samples per project. The asphalt content and gradation test data shall be reported to the Contracting Agency prior to or when submitting the mix design. If utilized, the amount of RAS shall not exceed 5-percent of the total weight of the HMA. The Contractor shall include the RAP and RAS as part of the mix design as defined in these Specifications.~~

~~The grade of asphalt binder shall be as required by the Contract. Blending of asphalt binder from different sources is not permitted. For HMA with either a RAP percentage greater than 20 percent of the total weight or any amount of RAS the actual grade of the final blended asphalt binder (after inclusion of RAP, RAS, new asphalt binder and recycling agent) shall not exceed the grade of asphalt binder required by the Contract and comply with the requirements of Section 9-02.1(4). The actual grade of the new binder and the final blended asphalt binder shall be verified in accordance with AASHTO R 29 and reported to the Contracting Agency when submitting the mix design for evaluation.~~

~~The Contractor may use warm mix asphalt (WMA) processes in the production of HMA with a RAP percentage of 20 percent of the total weight or less. WMA processes shall not be used in the production of HMA with a RAP percentage greater than 20 percent of the total weight or any amount of RAS. The Contractor shall submit to the Engineer for approval the process that is proposed and how it will be used in the manufacture of HMA.~~

~~When the Contracting Agency provides aggregates or provides a source for the production of aggregates, the Contract Provisions will establish the approximate percentage of asphalt binder required in the mixture for each class of HMA.~~

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

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

5-04.2.INST3.GR5
Section 5-04.2 is supplemented with the following:

5-04.2.OPT13.FR5
(January 3, 2011)
ESAL's
The number of ESAL's for the design and acceptance of the HMA shall be *** $$1$$ *** million.

5-04.2.OPT14.GR5
(August 1, 2011)
Bridge transverse joint seals shall be filled with hot poured joint sealant meeting the requirements of Standard Specifications Section 9-04.2(1).

~~5-04.2(9-02.1).GR5~~
~~Asphalt Material, General~~
~~Section 9-02.1 is supplemented with the following:~~

~~**5-04.2(9-02.1).OPT1.GR5**~~

~~(August 4, 2014)~~

~~The recycling agent used to rejuvenate the recovered asphalt binder from recycled asphalt pavement (RAP) and reclaimed asphalt shingles (RAS) shall meet the specifications in Table 1:~~

~~**Table 1**~~		~~**RA 1**~~		~~**RA 5**~~		~~**RA 25**~~	
~~**Test**~~	~~**Test Methods**~~	~~**Min.**~~	~~**Max.**~~	~~**Min.**~~	~~**Max.**~~	~~**Min.**~~	~~**Max.**~~
~~Viscosity @ 140˚F cSt~~	~~ASTM D 2170 or D 2171, AASHTO T 201 or T 202~~	~~50~~	~~150~~	~~200~~	~~800~~	~~1000~~	~~4000~~
~~Flashpoint COC, ˚F~~	~~ASTM D 92, AASHTO T 48~~	~~400~~		~~400~~		~~400~~	
~~Saturates, Wt. %~~	~~ASTM D 2007~~		~~30~~		~~30~~		~~30~~
~~Specific Gravity~~	~~ASTM D 70 or 1298 AASHTO T 228~~	~~Report~~		~~Report~~		~~Report~~	
~~Tests on Residue from RTFO~~	~~ASTM D 2872 AASHTO T 240~~						
~~Viscosity Ratio[1]~~			~~3~~		~~3~~		~~3~~
~~Mass Change ± %~~			~~4~~		~~4~~		~~4~~
~~[1]Viscosity Ratio = RTFO Viscosity @ 140˚F, cSt / Original Viscosity @ 140˚F, cSt~~							

~~***5-04.2(9-02.1(4)).GR5***~~

~~***Performance Graded Asphalt Binder (PGAB)***~~

~~Section 9-02.1(4) is supplemented with the following:~~

~~**5-04.2(9-02.1(4)).OPT1.GR5**~~

~~(January 6, 2014)~~

~~For HMA with either a RAP percentage greater than 20 percent of the total weight or any amount of RAS the following shall apply: the new asphalt binder, recycling agent and recovered asphalt (RAP and/or RAS) when blended in the proportions of the mix design shall meet the PGAB requirements of AASHTO M 320 Table 1 for the grade of asphalt binder specified by the Contract.~~

~~***5-04.2(9-03.8(2)).GR5***~~

~~***HMA Test Requirements***~~

~~Section 9-03.8(2) after the first paragraph is revised to read:~~

~~**5-04.2(9-03.8(2)).OPT1.GR5**~~

~~(March 3, 2014)~~

~~The mix design shall produce HMA mixtures when combined with RAP, RAS, coarse and fine aggregate within the limits set forth in Section 9-03.8(6) and mixed in the laboratory with the designated grade of asphalt binder, using the Superpave gyratory compactor in accordance with WSDOT FOP for AASHTO T 312, and at the required gyrations for N initial, N design, and N maximum with the following properties:~~

	~~**HMA Class**~~							
	~~**⅜ inch**~~		~~**½ inch**~~		~~**¾ inch**~~		~~**1 inch**~~	
~~**Mix Criteria**~~	~~**Min.**~~	~~**Max.**~~	~~**Min.**~~	~~**Max.**~~	~~**Min.**~~	~~**Max.**~~	~~**Min.**~~	~~**Max.**~~
~~Voids in Mineral Aggregate (VMA), %~~	~~15.0~~		~~14.0~~		~~13.0~~		~~12.0~~	
~~**Voids Filled With Asphalt (VFA), %**~~								
~~ESAL's (millions)~~	~~VFA~~							
~~< 0.3~~	~~70~~	~~80~~	~~70~~	~~80~~	~~70~~	~~80~~	~~67~~	~~80~~
~~0.3 to < 3~~	~~65~~	~~78~~	~~65~~	~~78~~	~~65~~	~~78~~	~~65~~	~~78~~
~~3 to < 10~~	~~73~~	~~76~~	~~65~~	~~75~~	~~65~~	~~75~~	~~65~~	~~75~~
~~10 to < 30~~	~~73~~	~~76~~	~~65~~	~~75~~	~~65~~	~~75~~	~~65~~	~~75~~
~~≥ 30~~	~~73~~	~~76~~	~~65~~	~~75~~	~~65~~	~~75~~	~~65~~	~~75~~
~~Dust/Asphalt Ratio~~	~~0.6~~	~~1.6~~	~~0.6~~	~~1.6~~	~~0.6~~	~~1.6~~	~~0.6~~	~~1.6~~
~~Hamburg Wheel-Track Testing, WSDOT FOP for AASHTO T 324 Rut Depth (mm) @15,000 Passes~~		~~10~~		~~10~~		~~10~~		~~10~~
~~Hamburg Wheel-Track Testing, WSDOT FOP for AASHTO T324 Number of Passes with no Stripping Inflection Point~~	~~15,000~~		~~15,000~~		~~15,000~~		~~15,000~~	
~~Indirect Tensile(IDT) Strength (psi) of Bituminous Materials WSDOT FOP for ASTM D 6931~~		~~175~~		~~175~~		~~175~~		~~175~~

	~~**ESAL's (millions)**~~	~~**N initial**~~	~~**N design**~~	~~**N Max.**~~
~~% Gmm~~	~~< 0.3~~	~~≤ 91.5~~	~~96.0~~	~~≤ 98.0~~
	~~0.3 to < 3~~	~~≤ 90.5~~	~~96.0~~	~~≤ 98.0~~
	~~≥ 3~~	~~≤ 89.0~~	~~96.0~~	~~≤ 98.0~~
~~Gyratory~~	~~< 0.3~~	~~6~~	~~50~~	~~75~~

~~Compaction (number of gyrations)~~	~~0.3 to < 3~~	~~7~~	~~75~~	~~115~~
	~~3 to < 30~~	~~8~~	~~100~~	~~160~~
	~~≥ 30~~	~~9~~	~~125~~	~~205~~

~~The mix criteria VMA and VFA only apply to HMA accepted by statistical evaluation.~~

~~The mix criteria for Hamburg Wheel-Track Testing and Indirect Tensile Strength of Bituminous Materials do not apply to HMA accepted by commercial evaluation.~~

~~When material is being produced and stockpiled for use on a specific contract or for a future contract, the uncompacted void content, fracture, and sand equivalent requirements shall apply at the time of stockpiling. When material is used from a stockpile that has not been tested as provided above, the Specifications for uncompacted void content, fracture, and sand equivalent shall apply at the time of its introduction to the cold feed of the mixing plant.~~

~~5-04.2(9-03.8(3)B).GR5~~
~~Gradation – Recycled Asphalt Pavement and Mineral Aggregate~~
~~Section 9-03.8(3)B is supplemented with the following:~~

~~5-04.2(9-03.8(3)B).OPT1.GR5~~
~~(August 6, 2012)~~
~~For HMA with a RAP percentage greater than 20 percent of the total weight the RAP shall be processed to ensure that 100 percent of the material passes a sieve twice the size of the maximum aggregate size for the class of mix to be produced.~~

~~When RAS is used in the production of HMA the RAS shall be milled, crushed or processed to ensure that 100 percent of the material passes the ½ inch sieve. Extraneous materials in RAS such as metals, glass, rubber, soil, brick, tars, paper, wood and plastic shall not exceed 2.0 percent by mass as determined on material retained on the No. 4 sieve.~~

~~5-04.2(9-03.21(1)).GR5~~
~~General Requirements~~
~~Section 9-03.21(1) is supplemented with the following:~~

~~5-04.2(9-03.21(1)).OPT1.GR5~~
~~(August 2, 2012)~~
~~Reclaimed asphalt shingles samples shall contain less than the maximum percentage of asbestos fibers based on testing procedures and frequencies established in conjunction with the specifying jurisdiction and state or federal environmental regulatory agencies.~~

5-04.3.GR5
Construction Requirements

5-04.3.INST1.GR5
Section 5-04.3 is supplemented with the following:

5-04.3.OPT1.BSP.FB5
(BSP August 23, 2010)
Bridges Classified as Unrestricted for Paving

The following bridge(s), located within the paving limits and specified to be paved in this Project, are classified as unrestricted for paving:

*** $$1$$ ***

The above bridge(s) shall conform to all requirements for planing and HMA paving on bridge decks as specified in these Special Provisions, except for the additional requirements specified for bridges classified as restricted for paving.

5-04.3.OPT2.BSP.FB5
(BSP April 4, 2011)
Bridges Classified as Restricted for Paving

The following bridge(s), located within the paving limits and specified to be paved in this Project, are classified as restricted for paving:

*** $$1$$ ***

The above bridge(s) shall conform to all requirements for planing and HMA paving on bridge decks as specified in these Special Provisions, including the following requirements for survey of the existing bridge deck surface, establishing a final grade paving profile, and planing and paving depth tolerances:

Survey of Existing Bridge Deck Surface

Prior to beginning any planing of BST or HMA surfacing on existing bridge decks, or beginning the placement of HMA overlay on existing bridge decks, of bridges classified above as restricted for paving, the Contractor shall complete a survey of the existing bridge deck surface for use in establishing the existing cross section and grade profile elevations, and the depths of existing BST or HMA surfacing when present.

The Contracting Agency will provide the Contractor with primary survey control information consisting of descriptions of two primary control points used for the horizontal and vertical control. Primary control points will be described by reference to the bridge or project specific stationing and elevation datum. The Contracting Agency will also provide horizontal coordinates for the beginning and ending points and for each Point of Intersection (PI) on each centerline alignment included in the project. The Contractor shall provide the Engineer 21 calendar days notice in advance of scheduled bridge deck planing and paving work to allow the Contracting Agency time to provide the primary survey control information.

The Contractor shall verify the primary survey control information furnished by the Contracting Agency, and shall expand the survey control information to include secondary horizontal and vertical control points as needed for the project. The Contractor's survey records shall include descriptions of all survey control points, including coordinates and elevations of all secondary control points.

The Contractor shall maintain detailed survey records, including a description of the work performed on each shift, the methods utilized to conduct the survey, and the control points used. The record shall be of sufficient detail to allow the survey to be reproduced. A copy of each day's survey record shall be provided to the Engineer within three working days after the end of the shift. The Contractor shall compile the survey information in an electronic file format acceptable to the Contracting Agency (Excel spreadsheet format is preferred). Survey information collected shall include station, offset, and elevation for each lane line and curb line.

Survey information shall be collected at even 20 foot station intervals, and also at the centerline of each bridge expansion joint. For bridge decks with existing BST or HMA surfacing, the survey information shall include the top of surfacing elevation and the depth of surfacing to the concrete bridge deck. The Contractor shall ensure a surveying accuracy to within ± 0.01 feet for vertical control and ± 0.2 feet for horizontal control. The survey shall extend 100'-0" beyond the bridge back of pavement seat.

Voids created by the Contractor's paving surfacing depth measurements shall be filled by material conforming to Section 9-20 or another surfacing material approved by the Engineer.

Except for the primary survey control information furnished by the Contracting Agency, the Contractor shall be responsible for all calculations, surveying, and measuring required for setting, maintaining and resetting equipment and materials necessary for the construction of the overlay to the final grade profile. The Engineer may post-check the Contractor's surveying, but these spot-checks shall not relieve the Contractor of responsibility for internal survey quality control.

The Engineer will establish the final grade profile, and the maximum planing depths as applicable, based on the Contractor's survey. The maximum planing depth for all planing on a bridge deck shall be the lesser of the following:

1. The planing depth shown in the Plans.

2. The planing depth calculated by the Engineer.

3. For bridge decks specified to receive partial depth removal of existing surfacing, a planing depth at least 0.03 feet above the existing concrete bridge deck

The Engineer will provide the final grade profile and maximum planing depths to the Contractor within three working days after receiving the Contractor's survey information.

The Contractor shall not begin bridge deck surfacing planing and bridge deck paving Work until receiving the final grade paving profile, and maximum planing depths as applicable, from the Engineer.

Planing and HMA Paving Tolerances

The planing depth at a bridge deck, as measured from the final grade profile, shall not exceed the maximum planing depth specified by the Engineer for that bridge deck in accordance with the criteria specified above.

The finish surface of the HMA overlay on bridge decks shall be ± 0.02 feet of the Engineer's final grade paving profile. Final grade paving profile deviations in excess of the specified tolerance and areas of non-conforming surface smoothness shall be corrected in accordance with Section 5-04.3(13).

5-04.3.OPT3.BSP.GB5
(BSP April 4, 2011)
General Requirements for Planing and HMA Paving on Bridge Decks

Partial or Full Depth Removal of Existing Surfacing on Bridge Decks
Bridges specified to receive either partial or full depth removal of existing surfacing from their decks prior to receiving HMA overlay shall be planed in accordance with Section 5-04.3(14) as supplemented in these Special Provisions.

Bridge Deck Repair of Exposed Concrete Bridge Deck
Bridge decks of exposed concrete, either by existing condition or by full depth surfacing removal as shown in the Plans, shall receive bridge deck repair in accordance with Section 6-02.3(10)D as supplemented in these Special Provisions.

Placing Membrane Waterproofing on Exposed Concrete Bridge Deck
Bridge decks of exposed concrete, either by existing condition or by full depth surfacing removal as shown in the Plans, shall, after completion of bridge deck repair as specified above, receive a waterproofing membrane in accordance with Section 6-08 as supplemented in these Special Provisions.

Paving Bridge Decks with HMA
Prior to placing HMA on a bridge deck, the Contractor shall clearly establish sawcut alignment points at both ends of the bridge transverse joint seals to be placed at the bridge ends, and at interior contraction joints, as specified. The sawcut alignment points shall be established in such a manner that they remain functional for use in aligning the sawcut after HMA placement.

5-04.3.OPT8.GR5
(August 1, 2011)
Bridge transverse joint seals shall be constructed at the locations specified in the Plans and in accordance with the Standard Plans.

Hot poured joint sealant shall be installed in accordance with the manufacturer's written recommendations. The Contractor shall submit the manufacturer's written installation procedure to the Engineer prior to installation.

~~5-04.3(1).GR5~~
~~HMA Mixing Plant~~

~~5-04.3(1).INST1.GR5~~
~~Section 5-04.3(1) is supplemented with the following:~~

~~5-04.3(1).OPT1.GR5~~
~~(November 12, 2012)~~

6. **~~Equipment for Processing RAP and RAS.~~** ~~When producing HMA for mix designs with greater than 20 percent of the total weight RAP or any amount of RAS the HMA plant shall be equipped with screens or a lump breaker to eliminate oversize RAP/RAS particles from entering the pug mill or drum mixer.~~

5-04.3(3).GR5
Hot Mix Asphalt Pavers

5-04.3(3).INST1.GR5
Section 5-04.3(3) is supplemented with the following:

5-04.3(3).OPT1.GR5
(March 13, 1995)
Reference lines will be required for both outer edges of the traveled way for each mainline roadway for vertical control in accordance with Section 5-04.3(3).

5-04.3(3)A.GR5
Material Transfer Device/Vehicle

5-04.3(3)A.OPT1.GR5
(August 3, 2009)
Section 5-04.3(3)A is deleted in its entirety.

5-04.3(3)A.INST1.GR5
Section 5-04.3(3)A including title is revised to read:

5-04.3(3)A.OPT2.GR5
(August 1, 2011)
Material Transfer Vehicle
Direct transfer of HMA from the hauling equipment to the paving machine will not be allowed in the top 0.30-feet of the pavement section of hot mix asphalt (HMA) used in traffic lanes with a depth of 0.08-feet or greater. A material transfer vehicle (MTV) shall be used to deliver the HMA from the hauling equipment to the paving machine. HMA placed in irregularly shaped and minor areas such as road approaches, tapers, and turn lanes are excluded from this requirement.

The MTV shall mix the HMA after delivery by the hauling equipment and prior to lay down by the paving machine. Mixing of the HMA shall be sufficient to obtain a uniform temperature throughout the mixture

5-04.3(5).GR5
Conditioning of Existing Surface

5-04.3(5)C.GR5
Crack Sealing

5-04.3(5)C.INST2.GR5
The first paragraph of Section 5-04.3(5)C is revised to read:

5-04.3(5)C.OPT1.GR5
(~~August 5, 2013~~April 6, 2015)
Where shown in the Plans, either rubberized joint sealant or sand slurry shall be used for cracks and joints 1/4-inch and greater in width. All cracks and joints shall be cleaned with a stiff-bristled broom and compressed air before applying joint sealant or sand slurry.

Joint Sealant

Rubberized joint sealant material conforming to ASTM D 6690~~AASHTO M 324~~ Type II shall be applied in accordance with the manufacturer's recommendations. These recommendations shall be furnished to the Project Engineer by the Contractor prior to the start of work and shall include recommended heating time and temperature, allowable storage time and temperatures after initial heating, allowable reheating criteria, and application temperature range.

Filling shall be controlled to confine the material within the crack or joint. If, in the opinion of the Engineer, the Contractor's method of filling results in an excessive amount of sealant on the pavement surface, filling shall be stopped and the method changed. Any overflow shall be cleaned from the pavement surface.

Sand Slurry

5-04.3(5)C.OPT7.GR5

(~~January 7, 2013~~April 6, 2015)

Where shown in the Plans, all cracks and joints 1/4-inch and greater in width shall be cleaned with a stiff-bristled broom and compressed air. Cracks and joints greater than 1/4 inch and less than 3/4 inch in width shall be filled with rubberized asphalt joint sealant.

Joint sealant material conforming to ASTM D 6690~~AASHTO M 324~~ Type II shall be applied in accordance with the manufacturer's recommendations. These recommendations shall be furnished to the Project Engineer by the Contractor prior to the start of work and shall include recommended heating time and temperatures, allowable storage time and temperatures after initial heating, allowable reheating criteria, and application temperature range.

5-04.3(5)C.OPT8.GR5

(~~January 7, 2013~~April 6, 2015)

Where shown in the Plans, all cracks and joints 1/4-inch and greater in width shall be cleaned with a stiff-bristled broom and compressed air. Cracks and joints greater than 1/4 inch and less than 3/4 inch in width shall be filled with rubberized asphalt joint sealant.

Joint sealant material conforming to ASTM D 6690~~AASHTO M 324~~ Type I shall be applied in accordance with the manufacturer's recommendations. These recommendations shall be furnished to the Project Engineer by the Contractor prior to the start of work and shall include recommended heating time and temperature, allowable storage time and temperatures after initial heating, allowable reheating criteria, and application temperature range.

5-04.3(7).GR5

Preparation of Aggregates

~~**5-04.3(7).INST1.GR5**~~

~~Section 5-04.3(7) is revised to read:~~

~~**5-04.3(7).OPT1.GR5**~~
~~(August 6, 2012)~~
~~The aggregates, RAP and RAS shall be stockpiled according to the requirements of Section 3-02. Sufficient storage space shall be provided for each size of aggregate, RAP and RAS. The Contractor may uniformly blend fine aggregate or RAP with the RAS as a method of preventing the agglomeration of RAS particles. The aggregates, RAP and RAS shall be removed from stockpile(s) in a manner to ensure a minimum of segregation when being moved to the HMA plant for processing into the final mixture. Different aggregate sizes shall be kept separated until they have been delivered to the HMA plant.~~

5-04.3(7)A.GR5
Mix Design

5-04.3(7)A.INST1.GR5
Section 5-04.3(7)A is supplemented with the following:

5-04.3(7)A.OPT1.GR5
(January 7, 2013)
If the mix design/anti-strip evaluation report delays work on a critical activity, then the day(s) from the receipt of the completed mix design from the Contractor until the mix design/anti-strip evaluation report is completed will be unworkable.

5-04.3(7)A1.GR5
General

~~**5-04.3(7)A1.INST1.GR5**~~
~~Section 5-04.3(7)A1 is supplemented with the following:~~

~~**5-04.3(7)A1.OPT1.GR5**~~

~~(August 4, 2014)~~

~~For mix designs with greater than 20 percent of the total weight RAP or any amount of RAS the Contractor shall develop a mix design including RAP, RAS, recycling agent and new asphalt binder. The mix design aggregate structure, RAP, RAS, recycling agent and new asphalt binder content shall be determined in accordance with Materials Manual WSDOT Standard Operating Procedure No. 732 and meet the requirements of Sections 9-03.8(2) and 9-03.8(6). The total quantity of asphalt binder contributed from the RAP and RAS shall not exceed 40 percent of the total asphalt binder content of the HMA. Once the RAP and RAS stockpiles have been constructed the Contractor shall extract, recover and test the asphalt residue from the RAP and RAS stockpiles to determine the percent of recycling agent and/or grade of new asphalt binder needed to meet the grade of asphalt binder required by the contract. The asphalt extraction testing shall be performed in accordance with AASHTO T 164 or ASTM D 2172 using reagent grade trichloroethylene. The asphalt recovery shall be performed in accordance with AASHTO R 59, or ASTM D 1856. The recovered asphalt residue shall be tested in accordance with AASHTO R 29 to determine the asphalt binder grade in accordance with Section 9-02.1(4). Once the recovered asphalt binder grade is determined the percent of recycling agent and/or grade of new asphalt binder shall be determined in accordance with ASTM D 4887. The final blend of recycling agent, recovered and new asphalt shall be tested in accordance with AASHTO R 29 to confirm that it meets the grade of asphalt binder required by the contract in accordance with Section 9-02.1(4). All recovered and blended asphalt binder test data shall be reported to the Contracting Agency prior to or when submitting the mix design for evaluation.~~

5-04.3(7)A1.INST2.GR5

The following two sentences are inserted after the first sentence in Section 5-04.3(7)A1:

5-04.3(7)A1.OPT2.GR5

(March 3, 2014)

For HMA of the same class, asphalt binder grade and number of gyrations the Contractor may submit a maximum of two mix designs in a calendar year. If the Contracting Agency's evaluation of a mix design does not meet contract requirements, such mix design will not count toward the maximum of two per calendar year.

~~**5-04.3(7)A2.GR5**~~

~~**Statistical or Nonstatistical Evaluation**~~

~~**5-04.3(7)A2.INST1.GR5**~~

~~Section 5-04.3(7)A2 is revised to read:~~

~~**5-04.3(7)A2.OPT1.GR5**~~

~~(March 3, 2014)~~

~~Mix designs shall be submitted to the Project Engineer on WSDOT Form 350-042. For a mix design that was originally developed for another WSDOT contract, the Contractor shall also submit WSDOT Form 350-041 and include all changes to the job mix formula that have been approved on other contracts.~~

~~The Contractor shall have the option to submit a mix design either with or without test data for Hamburg Wheel-Track Testing and Indirect Tensile Strength of Bituminous Materials as follows:~~

1. ~~For a mix design that the Contractor provides Hamburg Wheel-Track Testing and Indirect Tensile Strength of Bituminous Materials test results the Contractor shall include the test data file generated by the wheel-tracking device with the mix design submittal.~~
2. ~~For each mix design, including mix designs that are resubmitted, that does not include the test data for Hamburg Wheel-Track Testing and Indirect Tensile Strength of Bituminous Materials the Contracting Agency will deduct $2,500 from any monies due or that may come due the Contractor under the Contract.~~

~~For mix designs with 20 percent or less total weight RAP and no RAS, the Contractor shall submit representative samples of the mineral materials that are to be used in the HMA production. The Contracting Agency will use these samples to evaluate the mix design and determine the anti-strip requirements, if any, in accordance with Section 9-03.8(2). Evaluation of HMA mix designs proposed by the Contractor that include 20 percent or less total weight RAP and no RAS will be completed without the inclusion of the RAP; therefore, submittal of RAP samples is not required. If the Contracting Agency's evaluation of a mix does not meet the requirements of Section 9-03.8(2) for Hamburg Wheel-Track Testing and Indirect Tensile Strength of Bituminous Materials the Contractor shall develop and submit a new mix design.~~

~~Mix designs with greater than 20 percent of the total weight RAP or any amount of RAS shall be submitted to the Project Engineer for evaluation. The Contractor shall submit representative samples of the mineral materials, RAP, RAS and 100 grams of recovered asphalt residue from the RAP and RAS that are to be used in the HMA production. The Contracting Agency will use the recovered asphalt residue samples to conduct testing of the final blended asphalt binder in accordance with Section 9-02.1(4). The Contracting Agency will use the mineral aggregate, RAP and RAS to evaluate the mix design and determine the anti-strip requirements, if any, in accordance with Section 9-03(8)2. The mix design will be rejected if the results of testing by the Contracting Agency of the final blended asphalt binder fails to meet the requirements of Section 9-02.1(4) or the mix design including RAP and/or RAS fails to meet the AASHTO T 324 (Hamburg Wheel-Track Testing) or ASTM D 6931 (Indirect Tensile Strength) requirements of Section 9-03.8(2) or is not within the tolerances in Section 9-03.8(7).~~

~~A mix design evaluation report will be provided within 25 calendar days after a mix design submittal has been received in the State Materials Laboratory in Tumwater. No paving shall begin prior to issuance of the mix design evaluation report or reference mix design evaluation report for that year.~~

~~**5-04.3(7)A3.GR5**~~
~~**Commercial Evaluation**~~

~~**5-04.3(7)A3.INST2.GR5**~~
~~Section 5-04.3(7)A3 is supplemented with the following:~~

~~**5-04.3(7)A3.OPT2.GR5**~~
~~(January 6, 2014)~~
~~Mix designs for HMA with greater than 20 percent of the total weight RAP or any amount of RAS may be evaluated for acceptance in accordance with Section 5-04.3(7)A2.~~

5-04.3(8).GR5
Mixing

~~**5-04.3(8).INST1.GR5**~~
~~Section 5-04.3(8) is supplemented with the following:~~

~~**5-04.3(8).OPT1.GR5**~~
~~(January 6, 2014)~~
~~The following requirements shall apply to mix designs with greater than 20 percent of the total weight RAP or any amount of RAS:~~

~~After the required amounts of mineral materials, RAP, RAS, new asphalt binder and asphalt rejuvenator have been introduced into the mixer the HMA shall be mixed until a complete and uniform coating of the particles and a thorough distribution of the asphalt binder throughout the mineral materials, RAP and RAS is ensured.~~

~~When discharged, the temperature of the HMA shall not exceed the optimum mixing temperature by more than 25°F as shown on the mix design evaluation report or as approved by the Engineer. Storing or holding of the HMA in approved storage facilities will be permitted during the daily operation but in no event shall the HMA be held for more than 24 hours. HMA held for more than 24 hours after mixing shall be rejected. Rejected HMA shall be disposed of by the Contractor at no expense to the Contracting Agency. The storage facility shall have an accessible device located at the top of the cone or about the third point. The device shall indicate the amount of material in storage. No HMA shall be accepted from the storage facility when the HMA in storage is below the top of the cone of the storage facility, except as the storage facility is being emptied at the end of the working shift.~~

~~Recycled asphalt pavement (RAP) and reclaimed asphalt shingles (RAS) utilized in the production of HMA shall be sized prior to entering the mixer so that a uniform and thoroughly mixed HMA is produced. If there is evidence of the RAP or RAS not breaking down during the heating and mixing of the HMA, the Contractor shall~~

~~immediately suspend production of HMA until changes have been approved by the Project Engineer.~~

5-04.3(8)A.GR5
Acceptance Sampling and Testing - HMA Mixture

5-04.3(8)A.INST1.GR5
Section 5-04.3(8)A is supplemented with the following:

5-04.3(8)A.OPT1.FR5
(August 2, 2010)
Commercial Evaluation
The following HMA will be accepted by commercial evaluation:

*** $$1$$ ***

~~**5-04.3(8)A4.GR5**~~
~~**Definition of Sampling Lot and Sublot**~~

~~**5-04.3(8)A4.INST1.GR5**~~
~~The second sentence in the second paragraph in Section 5-04.3(8)A4 is revised to read:~~

~~**5-04.3(8)A4.OPT1.FR5**~~
~~(August 3, 2009)~~
~~The sublot size for *** $$1$$ *** shall be 1200-tons. The sublots for other HMA accepted by statistical evaluation shall be determined to provide not less than three uniform-sized sublots with a maximum sublot size of 800-tons.~~

~~**5-04.3(8)A4.OPT2.FR5**~~
~~(August 3, 2009)~~
~~The sublot size for *** $$1$$ *** shall be 1600-tons. The sublots for other HMA accepted by statistical evaluation shall be determined to provide not less than three uniform-sized sublots with a maximum sublot size of 800-tons.~~

5-04.3(8)A7.GR5
Test Section – HMA Mixtures

5-04.3(8)A7.INST1.GR5
The first sentence of Section 5-04.3(8)A7 is revised to read:

5-04.3(8)A7.OPT1.GR5
(March 3, 2014)
For each class of HMA accepted by statistical evaluation, the Contractor may request a test section to determine whether the mixture meets the requirements of Section 9-03.8(2) excluding Hamburg Wheel-Track Testing and Indirect Tensile Strength of Bituminous Materials and Section 9-03.8(6).

~~**5-04.3(8)A7.INST2.GR5**~~
~~Section 5-04.3(8)A7 is supplemented with the following:~~

~~**5-04.3(8)A7.OPT2.GR5**~~
~~(January 6, 2014)~~
~~The following requirements shall apply to mix designs with greater than 20 percent RAP by weight or RAS:~~

~~For each class of HMA accepted by statistical evaluation, the Contractor shall construct a test section to determine whether the mixture meets the requirements of Sections 9-03.8(2) and 9-03.8(6). The test section shall be constructed at the beginning of paving and will be at least 600 tons and a maximum of 1,000 tons or as approved by the Project Engineer. No further wearing or leveling HMA will be paved on any of the four calendar days following the construction of the test section. The mixture in the test section will be evaluated as a lot with a minimum of three sublots required. If more than one test section is required, each test section shall be a separate lot.~~

~~For a test section to be acceptable the pay factor (PF) for gradation, asphalt binder and Va shall be 0.95 or greater for each constituent and the remaining test requirements in Section 9-03.8(2) (dust/asphalt ratio, sand equivalent, uncompacted void and fracture) shall conform to the requirements of that section. When the pay factor for any item is less than 0.95 the Contractor shall make adjustments to the mixture in accordance with Section 9-03.8(7) and construct a new test section. The Project Engineer may waive the requirement for the construction of a new test section.~~

5-04.3(10).GR5
Compaction

5-04.3(10)B.GR5
Control

5-04.3(10)B1.GR5
General

5-04.3(10)B1.INST1.GR5
The first sentence in Section 5-04.3(10)B1 is revised to read:

5-04.3(10)B1.OPT1.GR5
(August 3, 2009)
HMA mixture accepted by statistical or nonstatistical evaluation that is used in traffic lanes including lanes for ramps, truck climbing, weaving, speed change and shoulders having a specified compacted course thickness greater than 0.10-foot, shall be compacted to a specified level of relative density.

~~**5-04.3(10)B1.INST2.GR5**~~
~~The second sentence in the second paragraph of Section 5-04.3(10)B1 is revised to read:~~

~~**5-04.3(10)B1.OPT8.GR5**~~
~~(August 3, 2009)~~
~~Sublots will be uniform in size with a maximum of approximately 120-tons of HMA per sublot; the final sublot of the day may be increased to 180-tons.~~

~~**5-04.3(10)B1.OPT3.GR5**~~
~~(August 3, 2009)~~
~~Sublots will be uniform in size with a maximum of approximately 160-tons of HMA per sublot; the final sublot of the day may be increased to 240-tons.~~

5-04.3(10)B1.INST3.GR5
The last sentence in the fourth paragraph in Section 5-04.3(10)B1 is revised to read:

5-04.3(10)B1.OPT14.GR5
(August 3, 2009)
HMA that is used for preleveling shall be compacted with a pneumatic tire roller unless otherwise approved by the Engineer.

5-04.3(12).GR5
Joints

5-04.3(12).INST1.GR5
Section 5-04.3(12) is supplemented with the following:

5-04.3(12).OPT1.GR5
(January 5, 2004)
The HMA overlay shall be feathered to produce a smooth riding connection to the existing pavement.

HMA utilized in the construction of the feathered connections shall be modified by eliminating the coarse aggregate from the mix at the Contractor's plant or the commercial source or by raking the joint on the roadway, to the satisfaction of the Engineer.

5-04.3(13).GR5
Surface Smoothness

5-04.3(13).INST1.GR5
The first four paragraphs of Section 5-04.3(13) are revised to read:

5-04.3(13).OPT1.FR5

(January 5, 2015)

Pavement surface smoothness for this project will include International Roughness Index (IRI) testing that will be completed by the Contracting Agency. The Contracting Agency will perform the IRI testing on each through lane, climbing lane, and passing lane, greater than one mile in length and these lanes will be subject to incentive/disincentive adjustments. IRI testing for a lane will be reported every 0.01 mile by averaging the IRI data for the left and right wheelpath within the section.

Bridge approaches and bridge decks that are located within the lanes specified to be tested and are paved with HMA will be included in the IRI testing. Bridge structures, approach slabs and 0.02 miles on either side of the bridge structures and approach slabs will be eligible for price adjustment incentives and excluded from disincentive adjustments.

Ramps, shoulders and tapers will not be included in IRI testing for pavement smoothness and will not be subject to incentive adjustments. They will be subject to parallel and transverse 10-foot surface requirements, corrective work and disincentive adjustments.

Upon completion of the paving operation the Contractor shall notify the Engineer that the roadway is ready for IRI testing. Notification shall not take place until the following conditions are met for all lanes to be tested on the project:

1. All lanes are open to traffic, unrestricted and in their final configuration.

2. All permanent pavement markings are in place or temporary pavement markings to the satisfaction of the Engineer.

If requested by the Engineer the Contractor shall sweep the roadway immediately prior to testing. If the sweeping is needed as a result of the Contractor’s operation it shall be the responsibility and expense of the Contractor. Should the Contracting Agency not be able to complete the testing as a result of the Contractor’s Work the testing will be rescheduled and any additional costs to the Contracting Agency will be deducted from monies due or that may become due the Contractor.

It is the intent that the testing will be completed and the results provided to the Contractor within 30 calendar days of the Contractor’s notification that the roadway is ready for testing. If weather or other conditions exist which are determined by the Engineer to be unsuitable for IRI testing of the pavement then the testing will be deferred until favorable conditions are available and the 30 calendar days extended.

Provided that all other Work required for Substantial Completion has been completed; the day following the Contractor’s notification that the roadway is ready for IRI testing through the day the IRI data is provided to the Contractor will be nonworking days in accordance with Section 1-08.5.

Corrective work for pavement smoothness may be taken by the Contractor prior to IRI testing. After completion of the IRI testing the Contractor shall measure the smoothness of each 0.01 mile section with an IRI greater than 125 with a 10-foot straightedge within 14 calendar days or as approved by the Engineer. The

Contractor shall identify all locations that require corrective work and provide the straight edge measurements at each location that exceeds the allowable limit to the Engineer. If all measurements in a 0.01 section comply with the smoothness requirements the Contractor shall provide the maximum measurement to the Engineer and a statement that corrective work is not required. Unless approved by the Engineer, corrective work shall be taken by the Contractor for pavement identified by the Contractor or Engineer that does not meet the following requirements:

1. The completed surface of all courses shall be of uniform texture, smooth, uniform as to crown and grade, and free from defects of all kinds.

2. The completed surface of the wearing course shall not vary more than ⅛ inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline.

3. The completed surface of the wearing course shall vary not more than ¼ inch in 10 feet from the rate of transverse slope shown in the Plans.

All corrective work shall be completed at no additional expense, including traffic control, to the Contracting Agency. Pavement shall be repaired by one or more of the following methods:

1. Diamond grinding; repairs shall not reduce pavement thickness by more than ¼ inch.

2. Removal and replacement of the HMA wearing course.

3. By other method approved by the Engineer.

For repairs following IRI testing the repaired area shall be checked by the Contractor with a 10-foot straightedge to ensure it no longer requires corrective work. With approval of the Engineer a lightweight profiler, California profilograph or other device may be used in place of the 10-foot straight edge.

If correction of the roadway as listed above either will not or does not produce satisfactory results as to smoothness or serviceability the Engineer may accept the completed pavement and a credit will be calculated in accordance with Section 5-04.5(1). Under these circumstances the decision whether to accept the completed pavement or to require corrective work as described above shall be vested entirely in the Engineer.

During the last review of this roadway, which was conducted on *** $$1$$ ***, by the Contracting Agency the following IRI (inches/mile) values were obtained. The IRI values are informational only and are average IRI values for 0.10 mile sections. Additional information may be available for review at the Engineer’s Office.

***

SR	Begin Milepost	End Milepost	IRI Running Avg NB/EB (Inch/mile)	IRI Running Avg SB/WB (Inch/mile)

$$2$$ $$3$$ $$4$$ $$5$$ $$6$$

***

5-04.3(13).INST2.GR5
The second sentence of Section 5-04.3(13) is deleted and replaced with the following:

5-04.3(13).OPT7.FR5
(March 13, 1995)
The completed surface of the wearing course of the following sections of Roadway shall not vary more than 1/4 inch from the lower edge of a 10-foot straightedge placed on the surface parallel to centerline:

1. *** $$1$$ ***

The completed surface of the wearing course of all other sections of Roadway shall not vary more then 1/8 inch from the lower edge of a 10-foot straightedge placed on the surface parallel to centerline.

5-04.3(13).INST3.GR5
The second sentence of Section 5-04.3(13) is revised to read:

5-04.3(13).OPT13.GR5
(January 5, 2004)
The completed surface of the wearing course shall not vary more than 1/4 inch from the lower edge of a 10-foot straightedge placed on the surface parallel to centerline.

5-04.3(14).GR5
Planing Bituminous Pavement

5-04.3(14).INST1.GR5
Section 5-04.3(14) is supplemented with the following:

5-04.3(14).OPT1.FR5
(January 5, 2004)
The Contractor shall perform the planing operations no more than *** $$1$$ *** calendar days ahead of the time the planed area is to be paved with HMA, unless otherwise allowed by the Engineer in writing.

5-04.3(14).OPT2.GR5

(January 5, 2004)

At the start of the planing operation the Contractor shall plane a 500 foot test section to be evaluated by the Engineer for compliance with the surface tolerance requirements. The test section shall have a minimum width of 10 feet. If the planing is in accordance with the surface tolerance requirements, the Contractor may begin production planing. If the planing is not in conformance with the surface tolerance requirements, the Contractor shall make adjustments to the planing operation and then plane another test section.

If at any time during the planing operation the Engineer determines the required surface tolerance is not being achieved, the Contractor shall stop planing. Planing shall not resume until the Engineer is satisfied that specification planing can be produced or until successful completion of another test section. The forward speed during production planing shall not exceed the speed used for the test section.

The completed surface after planing and prior to paving shall not vary more than 1/4 inch from the lower edge of a 10-foot straightedge placed on the surface parallel or transverse to the centerline. The planed surface shall have a matted texture and the difference between the high and low of the matted surface shall not exceed 1/8 inch.

Pavement repair operations, when required, shall be accomplished prior to planing.

5-04.3(14).OPT3.GR5

(March 13, 1995)

Vertical Edge Planing

During planing of bituminous pavement in the travelled lanes, the Contractor shall coordinate the planing and paving operations such that the planed roadway surface shall not remain unpaved at the end of the work day. The Contractor shall have a contingency plan to ensure that no planed areas remain unpaved due to equipment breakdown or other emergency.

5-04.3(14).OPT4.GR5

(August 3, 2009)

Beveled Edge Planing

A beveled edge shall be constructed in areas that will not be paved during the same work shift.

The Contractor shall use a beveled cutter on the mandrel of the planing equipment, or other approved method(s), to eliminate the vertical edge(s). The beveled edge(s) shall be constructed at a 4:1 slope.

5-04.3(14).OPT9.BSP.GB5

(BSP August 23, 2010)

Partial Depth Removal of Existing Surfacing from Bridge Deck

Requirements for All Bridges Receiving Planing of Existing Surfacing

The Contractor shall use a rotary milling machine to remove the specified layer of HMA surfacing to the limits shown in the Plans, except as noted below for surfacing within 12 inches of bridge expansion joints. The rotary milling machine shall conform to Section 1-07.7 with a maximum operating weight of 35 tons.

The top layer of surfacing within 12 inches of the edge of an existing bridge expansion joint header or steel expansion joint assembly without a header, and surfacing inaccessible to the rotary milling machines, shall be removed by hand or by low impact hand tools as approved by the Engineer. Use of rotary milling machines to remove the top layer of surfacing in these areas will not be allowed. All damage to existing expansion joint headers and expansion joint components due to the Contractor's operations shall be repaired in accordance with Section 1-07.13.

If rotary milling operations contact existing bridge deck steel reinforcing bars at any time, the Contractor shall immediately cease planing operations and notify the Engineer. The Contractor shall reduce the planing depth for that bridge deck by 0.02 feet or as otherwise specified by the Engineer, and shall not resume rotary milling operations until completing the appropriate adjustments to the rotary milling machine and receiving the Engineer's approval to proceed.

All bridge deck concrete, bridge deck waterproofing membrane and bridge deck steel reinforcing bar damage due to the Contractor's surfacing removal operations shall be repaired by the Contractor in accordance with the **Repair of Damage to Bridge Decks due to Surfacing Removal Operations** subsection of these Special Provisions.

After planing, the Contractor shall remove all loose and unsound surfacing not firmly bonded to the bridge deck, as specified by the Engineer, using methods and equipment that does not damage the existing concrete bridge deck, as approved by the Engineer.

Additional Requirements for Bridges Classified as Restricted for Paving
After receiving the final grade paving profile and maximum planing depths from the Engineer, the Contractor shall use a rotary milling machine to remove the specified layer of HMA surfacing to the limits shown in the Plans, in accordance with the following:

1. The rotary milling machine shall have independent grade control to a tolerance of ± 0.02 feet of final grade, and transverse slope control conforming to the tolerance specified in this Section.

2. The rotary milling machine shall have cutting teeth that leave a uniform plane surface at all times. All teeth on the mill head shall be even and maintained during milling to a maximum differential tolerance of 3/8 inch between the shortest and longest tooth, as measured by a straight edge placed the full width of the rotary milling head.

3. All rotary milling machine cutting tips shall remain sharp during milling operations. A tip is considered dull if it is worn close to the lower base of the cutting tip material or if less than 30 percent of the total length of the cutting tip material remains.

4. The depth of surfacing removal at each bridge, as measured to the bottom of the lowest milling groove generated by the rotary milling

machine, shall not exceed the maximum planing depth specified for that bridge deck by the Engineer.

Prior to beginning bridge deck surfacing planing operations for each day, and whenever requested by the Engineer, the Contractor shall confirm to the satisfaction of the Engineer that the rotary head cutting teeth are within the specified tolerance for maximum differential tolerance and maximum planing depth.

5-04.3(14).OPT10.BSP.GB5
Full Depth Removal of Existing Surfacing from Bridge Deck
(BSP August 23, 2010)

After completing the survey of the existing bridge deck surface, as specified in Section 5-04.3 as supplemented in these Special Provisions, and receiving the final grade paving profile and maximum planing depths from the Engineer, the Contractor shall remove the existing surfacing from the bridge deck(s) of bridge(s) specified in the Plans to receive complete removal of existing surfacing.

Except as noted below for surfacing within 12 inches of bridge expansion joints, the Contractor shall remove the existing surfacing from the bridge deck by any method (such as road grader, loader bucket, flat edged backhoe bucket, hydromilling, hand tools, etc.) approved by the Engineer that does not damage or remove the existing bridge deck concrete. The Contractor shall submit the proposed methods and equipment to be used to remove the existing surfacing from the bridge deck to the Engineer for approval in accordance with Section 1-05.3

The top layer of surfacing within 12 inches of the edge of an existing bridge expansion joint header or steel expansion joint assembly without a header, and surfacing inaccessible to the rotary milling machines, shall be removed by hand or by low impact hand tools as approved by the Engineer. Use of rotary milling machines to remove the top layer of surfacing in these areas will not be allowed. All damage to existing expansion joint headers and expansion joint components due to the Contractor's operations shall be repaired in accordance with Section 1-07.13.

The Contractor may use hydromilling equipment to remove existing bridge deck surfacing, provided that the equipment is calibrated to remove the surfacing materials without removing more than 1/8 inch of the cement paste or leaving a striated surface on the bridge deck surface. The Contractor shall conduct a successful demonstration of the hydromill calibration for the Engineer, and shall have received the Engineer's approval, before beginning production removal of existing surfacing from the bridge deck. The Contractor shall monitor the operation of the hydromilling equipment to prevent the unnecessary removal of sound concrete in excess of the surface amount specified.

The Contractor may use rotary milling equipment to remove all or a portion of the existing surfacing from the bridge deck, subject to the restrictions in this Special Provision. Rotary milling equipment may be used to remove up to the maximum planing depth specified by the Engineer, subject to the following requirements:

1. The rotary milling machine shall conform to Section 1-07.7 with a maximum operating weight of 35 tons.

2. The rotary milling machine shall have independent grade control to a tolerance of ± 0.02 feet of final grade, and transverse slope control conforming to the tolerance specified in this Section.

3. The cutting tooth spacing on the rotary milling head shall be less than or equal to 1/4 inch.

4. The rotary milling machine shall have cutting teeth that leave a uniform plane surface at all times. All teeth on the mill head shall be even and maintained during milling to a maximum differential tolerance of 3/8 inch between the shortest and longest tooth, as measured by a straight edge placed the full width of the rotary milling head.

5. All rotary milling machine cutting tips shall remain sharp during milling operations. A tip is considered dull if it is worn close to the lower base of the cutting tip material or if less than 30 percent of the total length of the cutting tip material remains.

6. The depth of surfacing removal at each bridge, as measured to the bottom of the lowest milling groove generated by the rotary milling machine, shall not exceed the maximum planing depth specified for that bridge deck by the Engineer.

Prior to beginning bridge deck surfacing planing operations for that day, and whenever requested by the Engineer, the Contractor shall confirm to the satisfaction of the Engineer that the rotary head cutting teeth are within the specified tolerance for maximum differential tolerance and maximum planing depth.

If the rotary milling equipment does not conform to requirements 2 through 5 above, it may still be used to remove an upper layer of the existing surfacing, but only to a depth of 0.04 feet less than the maximum planing depth specified by the Engineer, and the surfacing left behind shall be removed by other methods and equipment approved by the Engineer that do not damage or remove the existing bridge deck concrete.

If rotary milling operations contact existing bridge deck steel reinforcing bars at any time, the Contractor shall immediately cease planing operations and notify the Engineer. The Contractor shall reduce the planing depth for that bridge deck by 0.02 feet or as otherwise specified by the Engineer, and shall not resume rotary milling operations until completing the appropriate adjustments to the rotary milling machine and receiving the Engineer's approval to proceed.

The existing concrete bridge deck may have ruts in the wheel lines. After planing, the Contractor shall remove all loose and unsound surfacing not firmly bonded to the bridge deck – including surfacing remaining in the wheel line ruts, as specified by the Engineer, using methods and equipment that does not damage the existing concrete bridge deck, as approved by the Engineer. Existing surfacing firmly bonded to the bridge deck after planing operations may remain in place as approved by the Engineer.

All bridge deck concrete and bridge deck steel reinforcing bar damage due to the Contractor’s surfacing removal operations shall be repaired by the Contractor in accordance with the **Repair of Damage to Bridge Decks due to Surfacing Removal Operations** subsection of these Special Provisions.

5-04.3(14).OPT11.BSP.GB5
(BSP April 16, 2012)
Repair of Damage to Bridge Decks due to Surfacing Removal Operations
All bridge deck concrete, bridge pavement seat, bridge deck steel reinforcing bar, and bridge deck waterproofing membrane (when specified to remain), damage due to the Contractor’s surfacing removal operations shall be repaired by the Contractor in accordance with Section 1-07.13, except that damaged steel reinforcing bars at depths less than 0.02 feet below the maximum surfacing removal depth as specified by the Engineer shall be considered bridge deck repair in accordance with Section 6-02.3(10)D as supplemented in these Special Provisions.

Damage to existing concrete is defined as an area of concrete removed to depths equal to or greater than 0.02 feet below the maximum depth of surfacing removal specified by the Engineer. A single line of removed concrete, caused by one or more extended teeth on a rotary milling machine milling head shall be measured as one square foot of damage per foot of line removal. The Contractor shall mitigate the damaged concrete by the following method:

> Damaged areas of concrete shall be repaired by removing the concrete to a depth 3/4 inches around the top steel reinforcing bar and placing bridge deck repair material approved by the Engineer to the maximum surfacing removal depth specified by the Engineer and parallel to the final grade paving profile.

Damage to existing steel reinforcing bar is defined as mill head contact with bars at surfacing removal depths equal to or greater than 0.02 feet below the maximum depth of surfacing removal specified by the Engineer. Damaged steel reinforcing bar shall be repaired as follows:

1. Damage to epoxy coating, when present on existing steel reinforcing bars, shall be repaired in accordance with Section 6-02.3(24)H.

2. Damage to steel reinforcing bar resulting in a section loss less than 20 percent of the bar with no damage to the surrounding concrete shall be left in place and shall be repaired by removing the concrete to a depth 3/4 inches around the top steel reinforcing bar and placing bridge deck repair material approved by the Engineer to the maximum surfacing removal depth specified by the Engineer and parallel to the final grade paving profile.

3. Damage to steel reinforcing bar resulting in a section loss of 20 percent or more in one location, bars partially or completely removed from the bridge deck, or where there is a lack of bond to the concrete, shall be repaired by removing the adjacent concrete and splicing a new bar of the same size. Concrete shall be removed to provide a 3/4 inch minimum clearance around the bars. The splice bars shall extend a minimum of 40 bar diameters beyond each end of the damage.

Damaged waterproofing membrane is defined as cut or ruptured membrane at surfacing removal depths equal to or greater than 0.02 feet below the maximum depth of surfacing removal specified by the Engineer. Damaged waterproofing membranes shall be repaired by removing the surfacing by hand methods to provide an area at least six inches wider than the rupture in all directions. The ruptured area shall be sealed with an approved primer and membrane with at least six inches of overlap with the existing membrane.

5-04.3(16).GR5
Weather Limitations

5-04.3(16).INST1.GR5
The first sentence of Section 5-04.3(16) is revised to read:

5-04.3(16).OPT1.FR5
(August 3, 2009)
HMA for wearing course shall not be placed on any travelled way from *** $$1$$ *** and through March 31st of the following year without written approval from the Engineer.

5-04.3(21).GR5
Asphalt Binder Revision

5-04.3(21).INST1.GR5
Section 5-04.3(21) is revised to read:

5-04.3(21).OPT1.FR5
(January 7, 2013)
The expected percentage of new asphalt binder in the HMA is *** $$1$$ ***. Should the actual percentage of new asphalt binder required by the job mix formula for HMA produced with Agency-provided aggregate vary by more than plus or minus 0.3-percent an adjustment in payment will be made. The adjustment in payment (plus or minus) will be based on the invoice cost to the Contractor. When RAP or RAS is used in the production of HMA the adjustment will be reduced by the percentage of RAP or RAS. No adjustment will be made when the Contractor elects not to use a Contracting Agency provided source.

5-04.4.GR5
Measurement

5-04.4.INST1.GR5
Section 5-04.4 is supplemented with the following:

5-04.4.OPT4.GR5
(August 1, 2011)
Bridge transverse joint seal will be measured by the linear foot along its completed line and slope.

5-04.4.OPT8.BSP.GB5

(BSP October 13, 2003)

Removing existing surfacing overlay from bridge decks will be measured by the square yard of bridge deck surface area with removed overlay.

5-04.5.GR5
Payment

5-04.5.INST2.GR5

Section 5-04.5 is supplemented with the following:

5-04.5.OPT1.FR5

(January 5, 2015)

"Smoothness Compliance Adjustment" by calculation.

Smoothness Compliance Adjustments

Section 5-04.5(1) is supplemented with the following:

Smoothness Compliance Adjustments will be based on the requirements in Section 5-04.3(13) and the following calculations:

1. Final IRI acceptance and incentive/disincentive payments for pavement smoothness will be calculated on an IRI value per 0.10 mile in accordance with the price adjustment schedule.

   a. For sections of a lane that are a minimum of 0.01 mile and less than 0.10 mile, the price adjustment will be calculated using the average of the 0.01 mile IRI values and the price adjustment prorated for the length of the section.

   b. For bridges, approach slabs and 0.02 miles on either side the price adjustment will be calculated independently from other measured lanes.

   c. IRI values per 0.01 miles that were measured prior to corrective work will be included in the 0.10 mile price adjustment for sections with corrective work.

2. A smoothness compliance adjustment will be calculated in the sum of minus $250.00 for each and every section of single traffic lane 0.01 miles in length in that does not meet the 10-foot straight edge requirements in Section 5-04.3(13).

The price adjustment schedule for this contract shall be *** $$1$$ ***.

Price Adjustment Schedule

IRI for each 0.10 mi. section	Pay Adjustment Schedule 1	Pay Adjustment Schedule 2	Pay Adjustment Schedule 3
in. / mi.	**$ / 0.10 mi.**	**$ / 0.10 mi.**	**$ / 0.10 mi.**
< 30	600	600	600
30	600	600	600
31	580	580	580
32	560	560	560
33	540	540	540
34	520	520	520
35	500	500	500
36	480	480	480
37	460	460	460
38	440	440	440
39	420	420	420
40	400	400	400
41	380	380	380
42	360	360	360
43	340	340	340
44	320	320	320
45	300	300	300
46	280	280	280
47	260	260	260
48	240	240	240
49	220	220	220
50	200	200	200
51	180	180	180
52	160	160	160
53	140	140	140
54	120	120	120
55	100	100	100
56	80	80	80
57	60	60	60
58	40	40	40
59	20	20	20
60	0	0	0
61	0	0	0
62	0	0	0
63	0	0	0
64	0	0	0
65	0	0	0
66	-20	0	0
67	-40	0	0
68	-60	0	0
69	-80	0	0
70	-100	0	0
71	-120	0	0
72	-140	0	0
73	-160	0	0

74	-180	0	0
75	-200	0	0
76	-220	-20	0
77	-240	-40	0
78	-260	-60	0
79	-280	-80	0
80	-300	-100	0
81	-320	-120	0
82	-340	-140	0
83	-360	-160	0
84	-380	-180	0
85	-400	-200	0
86	-420	-220	0
87	-440	-240	0
88	-460	-260	0
89	-480	-280	0
90	-500	-300	0
91	-520	-320	0
92	-540	-340	0
93	-560	-360	0
94	-580	-380	0
95	-600	-400	0
96	-620	-420	0
97	-640	-440	0
98	-660	-460	0
99	-680	-480	0
100	-700	-500	0
101	-720	-520	0
102	-740	-540	0
103	-760	-560	0
104	-780	-580	0
105	-800	-600	0
106	-820	-620	0
107	-840	-640	0
108	-860	-660	0
109	-880	-680	0
110	-900	-700	0
111	-920	-720	0
112	-940	-740	0
113	-960	-760	0
114	-980	-780	0
115	-1000	-800	0
116	-1020	-820	0
117	-1040	-840	0
118	-1060	-860	0
119	-1080	-880	0
120	-1100	-900	0
121	-1120	-920	0
122	-1140	-940	0
123	-1160	-960	0

124	-1180	-980	0
≥125	-1200	-1000	0

5-04.5.OPT2.GR5
(August 5, 2013)
Asphalt Cost Price Adjustment

The Contracting Agency will make an Asphalt Cost Price Adjustment, either a credit or a payment, for qualifying changes in the reference cost of asphalt binder. The adjustment will be applied to partial payments made according to Section 1-09.9 for the following bid items when they are included in the proposal:

“HMA Cl. ___ PG ___”
“HMA for Approach Cl. ___ PG ___”
“HMA for Preleveling Cl. ___ PG ___”
“HMA for Pavement Repair Cl. ___ PG ___”
“Commercial HMA”

The adjustment is not a guarantee of full compensation for changes in the cost of asphalt binder. The Contracting Agency does not guarantee that asphalt binder will be available at the reference cost.

The Contracting Agency will establish the asphalt binder reference cost twice each month and post the information on the Agency website at:

http://www.wsdot.wa.gov/Business/Construction/EscalationClauses.htm
The reference cost will be determined using posted prices furnished by Poten & Partners, Inc. If the selected price source ceases to be available for any reason, then the Contracting Agency will select a substitute price source to establish the reference cost.

The base cost established for this contract is the reference cost posted on the Agency website for the period immediately preceding the bid opening date.

Adjustments will be based on the most current reference cost for Western Washington or Eastern Washington as posted on the Agency website, depending on where the work is performed. For work completed after all authorized working days are used, the adjustment will be based on the posted reference cost during which contract time was exhausted. The adjustment will be calculated as follows:

No adjustment will be made if the reference cost is within 5% of the base cost.

If the reference cost is greater than or equal to 105% of the base cost, then Adjustment = (Current Reference Cost – (1.05 x Base Cost)) x (Q x 0.056).

If the reference cost is less than or equal to 95% of the base cost, then Adjustment = (Current Reference Cost – (0.95 x Base Cost)) x (Q x 0.056).

Where Q = total tons of all classes of HMA paid in the current month’s progress payment.

"Asphalt Cost Price Adjustment", by calculation.

"Asphalt Cost Price Adjustment" will be calculated and paid for as described in this section. For the purpose of providing a common proposal for all bidders, the Contracting Agency has entered an amount in the proposal to become a part of the total bid by the Contractor.

5-04.5.OPT3.GR5

(August 3, 2009)

"Asphalt Binder Revision" by calculation.

"Asphalt Binder Revision" shall be calculated and paid for as described in Section 5-04.3(21).

5-04.5.OPT4.GR5

(August 1, 2011)

"Bridge Transverse Joint Seal", per linear foot, shall be full payment for all costs to perform the Work including saw cutting, cleaning the saw cut joint, and furnishing and installing joint sealant.

5-04.5.OPT8.BSP.GB5

(BSP October 13, 2003)

"Removing Existing Overlay From Bridge Deck", per square yard.

5-04.5.OPT9.BSP.GB5

(BSP September 20, 2010)

"Structure Surveying", lump sum.

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DIVISION6.GR6 Structures

6-01.GR6 General Requirements For Structures

6-01.5.GR6 Work Access and Temporary Structures

6-01.5.INST1.GR6 (Section 6-01.5 is re-titled and revised to read:)
Must use once preceding any of the following:

6-01.5.OPT1.~~BSP.~~FB6 (Work Access)
(~~BSP February 11, 2013~~April 6, 2015)
Use in projects requiring the Contractor to construct work access to perform structure removal and construction, including work trestle construction for work within or above an environmentally sensitive area as required by resource agency environmental permits and restrictions. The fill-in specifies the name of the environmentally sensitive area or waterway. Include with ***6-01.5.OPT1(B).~~BSP.~~GB6***.
Must use once preceding any of the following:
(1 fill-in)

6-01.5.OPT1(A).~~BSP.~~FB6 (Waterway Clearance Requirements)
(~~BSP July 9, 2007~~April 6, 2015)
Use in projects requiring the Contractor to construct the work access structure to conform to navigation clearance requirements of the USCG. The first fill-in specifies the minimum horizontal clearance required for the channel span. The second fill-in specifies the minimum elevation required for the bottom of the work access structure superstructure. Include with ***6-01.5.OPT1.~~BSP.~~FB6*** *and* ***6-01.5.OPT1(B).~~BSP.~~GB6***.
(2 fill-ins)

6-01.5.OPT1(B).~~BSP.~~GB6 (Payment)
(~~BSP July 9, 2007~~April 6, 2015)
Use in projects requiring the Contractor to construct work access to perform structure removal and construction, including work trestle construction for work within or above an environmentally sensitive area as required by resource agency environmental permits and restrictions. Include with ***6-01.5.OPT1.~~BSP.~~FB6***.

6-01.5.OPT2.~~BSP.~~FB6 (Temporary Bridge)
(~~BSP February 27, 2012~~April 6, 2015)
Use in projects requiring construction of a temporary bridge. The first fill-in specifies the minimum overall length of the temporary bridge, and can also be used to specify requirements for number of spans and lengths of specific spans, if necessary. The second fill-in specifies the minimum roadway width required between barriers or railings. The third fill-in specifies the minimum vertical clearance dimension to the roadway, body of water, or surface, specified in the fourth fill-in. If the length, width or

vertical clearance of the temporary bridge is shown in the plans, the specific geometric requirement item text in the specification can be deleted (or if all are shown in the plans, the entire geometric requirements paragraph can be deleted).
(4 fill-ins)~~Use in projects requiring construction of a temporary bridge. The first fill-in specifies the minimum overall length of the temporary bridge, and can also be used to specify requirements for number of spans and lengths of specific spans, if necessary. The second fill-in specifies the minimum usable roadway width required between barriers or railings. The third fill-in specifies the minimum vertical clearance dimension to the roadway, body of water, or surface, specified in the fourth fill-in. (4 fill-ins)~~

6-01.7.GR6 Navigable Streams

6-01.7.INST1.GR6 (Section 6-01.7 is supplemented with the following)
Must use once preceding any of the following:

6-01.7.OPT1.FB6 (Navigation Lighting System)
(June 26, 2000)
Use in projects requiring installation of a navigation lighting system. The fill-in specifies the Bridge Number. Include with either ***1-07.6.OPT3.FB1*** or ***1-07.6.OPT4.GB1***.
(1 fill-in)

6-01.7.OPT2.FB6 (Temporary Navigation Lights)
(June 26, 2000)
Use in projects requiring installation of temporary navigation lights. The fill-in specifies the bid item name. Include with either ***1-07.6.OPT3(A).FB1*** or ***1-07.6.OPT3(B).GB1***.
(1 fill-in)

6-02.GR6 Concrete Structures

6-02.2.GR6 Materials

6-02.2.INST1.GR6 (Section 6-02.2 is supplemented with the following)
Must use once preceding any of the following:

6-02.2.OPT1.GR6 (Resin Bonded Anchors)
(April 1, 2013)
Include in projects requiring resin bonded anchors for attaching and anchoring items to concrete structures. *Must also include **6-02.3(18).OPT1.GR6**.*

6-02.2.OPT2.GB6 (Epoxy Bonding Agent For Surfaces And For Steel Reinforcing Bar Dowels)
(December 2, 2002)

	Use in projects when epoxy resin is required for setting steel reinforcing bars into holes drilled into concrete. Include with ***6-02.3(24)C.OPT1.GB6*** and ***6-02.5.OPT9.FB6***.
6-02.2.OPT3.GB6	(Epoxy Mortar) (December 2, 2002) Use in projects which require the use of epoxy mortar. Include with ***6-02.3(10)D.OPT2.GB6*** and ***6-02.5.OPT1.GB6*** when coating existing bridge deck surfaces.
6-02.2.OPT4.GB6	(Epoxy Crack Sealing) (June 26, 2000) Use in projects which require sealing cracks in existing concrete with injected epoxy resin. Include with ***6-02.3.OPT1.GB6*** and ***6-02.5.OPT49.GB6***.
6-02.2.OPT5.GB6	(Exposed Aggregate Finish) (January 7, 2008) Use in projects requiring exposed aggregate finish of concrete surfaces. Include with ***6-02.3(5)A.OPT1.GB6, 6-02.3(14).OPT1.GB6, 6-02.2.OPT6.GB6*** and ***6-02.3(14).OPT3.GB6***.
6-02.2.OPT6.GB6	(Clear Sealer for Exposed Aggregate Finish) (April 2, 2007) Use in projects with an exposed aggregate finish. Include with **6-02.2.OPT5.GB6, 6-02.3(5)A.OPT1.GB6, 6-02.3(14).OPT1.GB6, and 6-02.3(14).OPT3.GB6.**
6-02.2.OPT7.GB6	(Fractured Basalt Finish) (April 7, 2008) Use in projects requiring fractured basalt finish of concrete surfaces. Include with ***6-02.3(14).OPT5.GB6.***
6-02.2.OPT8.GB6	(Fractured Fin Finish) (April 7, 2008) Use in projects requiring fractured fin finish of concrete surfaces. Include with ***6-02.3(14).OPT6.GB6***.
6-02.2.OPT9.GB6	(Fractured Granite Finish) (April 7, 2008) Use in projects requiring fractured granite finish of concrete surfaces. Include with ***6-02.3(14).OPT7.GB6***.
6-02.2.OPT10.GB6	(Variable Depth Random Board Finish and ¾ Inch Random Board Finish) (April 7, 2008) Use in projects requiring use of elastomeric, ABS, or plastic form liners to produce random board finish of concrete surfaces. Include with ***6-02.3(14).OPT8.GB6***.

6-02.2.OPT11.GB6 (Ribbed Finish)
(April 7, 2008)
Use in projects requiring ribbed finish of concrete surfaces. Include with ***6-02.3(14).OPT10.GB6***.

6-02.2.OPT12.GB6 (Striated Finish)
(April 7, 2008)
Use in projects requiring striated finish of concrete surfaces. Include with ***6-02.3(14).OPT11.GB6***.

6-02.2.OPT13.GB6 (Ashlar Stone Finish)
(April 7, 2008)
Use in projects requiring ashlar stone finish of concrete surfaces. Include with ***6-02.3(14).OPT12.GB6***.

6-02.2.OPT14.GB6 (Block Finish)
(April 7, 2008)
Use in projects requiring block finish of concrete surfaces. Include with ***6-02.3(14).OPT13.GB6***.

6-02.2.OPT15.GB6 (Split Face Finish)
(April 7, 2008)
Use in projects requiring split face finish of concrete surfaces. Include with ***6-02.3(14).OPT14.GB6***.

6-02.2.OPT16.GB6 (River Rock Finish)
(April 7, 2008)
Use in projects requiring use of river rock finish of concrete surfaces. Include with ***6-02.3(14).OPT15.GB6***.

6-02.2.OPT17.GB6 (Cascadian Stone Finish)
(April 5, 2010)
Use in projects requiring cascadian stone finish of concrete surfaces. Include with ***6-02.3(14).OPT16.GB6***.

6-02.2.OPT22.GB6 (Modular Expansion Joint System)
(April 1, 2013)
Include in projects requiring a modular expansion joint system. Coordination with the Bridge and Structures Office Bearing and Expansion Joint Specialist is required. Include with ***6-03.3(30).OPT1.FB6*.** Must use with **6-02.3(13).OPT3.FB6, 6-02.4.OPT3.FB6, and 6-02.5.OPT28.GB6.**

6-02.2.OPT26.~~BSP.~~GB6 (Rapid Cure Silicone Sealant)
(~~BSP October 27, 2008~~April 6, 2015)
Use in projects where rapid cure silicone sealant is used for expansion joint modification. Include with **6-02.3(13).OPT7(C).~~BSP.~~GB6, either 6-02.3(13).OPT7(I).~~BSP.~~GB6 or 6-02.3(13).OPT7(J).~~BSP.~~GB6, 6-02.4.OPT8.~~BSP.~~FB6 and 6-02.5.OPT33.~~BSP.~~GB6**, and all other applicable

expansion joint modification GSPs~~Bridge Special Provisions~~ supplementing Sections 6-02.2 and 6-02.3(13).

6-02.2.OPT27.~~BSP.~~GB6 (Polyester Concrete)
(~~BSP June 18, 2012~~April 6, 2015)
Use in projects where polyester concrete is required. Include with ***6-02.3.OPT9.~~BSP.~~GB6***.

6-02.2.OPT28.~~BSP.~~GB6 (Elastomeric Concrete)
(~~BSP April 7, 2008~~April 6, 2015)
Use in projects where elastomeric concrete is required. Include with ***6-02.3.OPT10.~~BSP.~~GB6***.

6-02.2.OPT33.GB6 (Fabric Pad Bearing)
(April 7, 2008)
Use in projects requiring fabric pad bearings. Include with **6-02.3(19)B.OPT1.GB6, 6-02.4.OPT13.FB6, 6-02.5.OPT38.GB6, and 6-03.3(30).OPT1.FB6.**

6-02.2.OPT38.BSP.GB6 (High-Load Elastomeric Bearing Pad Assembly)
(BSP April 7, 2008)
Use in projects with high-load elastomeric bearing pads. Include with **6-02.3(19)A.OPT1.BSP.GB6, 6-02.4.OPT19.BSP.GB6, and 6-02.5.OPT44.BSP.GB6.**

6-02.2.OPT39.BSP.GB6 (Cylindrical Bearing)
(BSP January 7, 2013)
Use in projects with cylindrical bearing assemblies. Include with **6-02.3(19)B.OPT7.BSP.GB6, 6-02.4.OPT13.FB6, 6-02.5.OPT38.GB6, and 6-03.3(30).OPT1.FB6. Include with 6-02.2.OPT56.BSP.GB6** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-02.2.OPT40.BSP.GB6 (Disc Bearing)
(BSP January 7, 2013)
Use in projects with disc bearing assemblies. Include with **6-02.3(19)B.OPT8.BSP.GB6, 6-02.4.OPT13.FB6, 6-02.5.OPT38.GB6, and 6-03.3(30).OPT1.FB6. Include with 6-02.2.OPT56.BSP.GB6** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-02.2.OPT41.BSP.GB6 (Spherical Bearing)
(BSP January 7, 2013)
Use in projects with spherical bearing assemblies. Include with **6-02.3(19)B.OPT9.BSP.GB6, 6-02.4.OPT13.FB6, 6-02.5.OPT38.GB6, and 6-03.3(30).OPT1.FB6. Include with 6-02.2.OPT56.BSP.GB6** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-02.2.OPT46.GB6 (Bridge Supported Utilities)
Must use once preceding any of the following:

6-02.2.OPT46(A).GB6 (June 26, 2000)
Use in projects with bridge supported utilities when the supports include concrete inserts. Include with ***6-02.3.OPT2(A).GB6, 6-02.4.OPT1.FB6,*** and either ***6-02.5.OPT9.FB6*** or ***6-02.5.OPT26.FB6***.

6-02.2.OPT46(B).GB6 (Bridge Supported Utilities)
(April 30, 2001)
Use in projects with bridge supported utilities when the supports include steel rods, bars, and plates. Include with ***6-02.2.OPT46(A).GB6, 6-02.3.OPT2(A).GB6,*** and ***6-02.5.OPT92.FB6***, and either ***6-02.3.OPT2(B).GB6,*** or ***6-02.3.OPT2(C).GB6*** and ***6-02.5.OPT93.GB6***.

6-02.2.OPT46(C).GB6 (Bridge Supported Utilities)
(June 26, 2000)
Use in projects with bridge supported utilities when the supports include transverse braces. Include with ***6-02.2.OPT46(A).GB6, 6-02.2.OPT46(B).GB6, 6-02.3.OPT2(A).GB6,*** and ***6-02.5.OPT92.FB6***, and either ***6-02.3.OPT2(B).GB6,*** or ***6-02.3.OPT2(C).GB6*** and ***6-02.5.OPT93.GB6***.

6-02.2.OPT46(D).GB6 (Bridge Supported Utilities)
(June 26, 2000)
Use in projects with bridge supported utilities when the supports include pipe rolls or pipe saddles. Include with ***6-02.5.OPT92.FB6*** and other applicable bridge supported utility material and construction requirement GSP's.

6-02.2.OPT46(E).GB6 (Bridge Supported Utilities)
(April 30, 2001)
Use in projects with bridge supported utilities in concrete box girder bridges when the utilities are supported on anchor blocks on the bottom slab. Include with ***6-02.5.OPT92.FB6*** and other applicable bridge supported utility material and construction requirement GSP's.

6-02.2.OPT47.GB6 (Bridge Grate Inlet)
(April 30, 2001)
Use in projects with bridge grate inlets. Include with ***6-02.4.OPT25.GB6*** and ***6-02.5.OPT50.GB6***.

6-02.2.OPT48.GB6 (Bridge Drain Risers)
(April 30, 2001)
Use in projects requiring the raising of bridge drains prior to asphalt or modified concrete overlay work on bridge decks. Include with ***6-02.3(10)D.OPT3.GB6***. Also include with ***6-02.3(10)D.OPT4.GB6*** if the bridge deck is overlaid with membrane waterproofing and ACP. Include with ***6-02.5.OPT53.FB6*** if the work is included in the cost of the

membrane waterproofing or modified concrete overlay. Include with ***6-02.4.OPT26.GB6*** and ***6-02.5.OPT51.GB6*** if the unit contract bid item "Modify Bridge Drain" is used to pay for the work.

6-02.2.OPT49.GB6 (Bridge Deck Repair Concrete)
(August 1, 2011)
Use in projects where bridge deck repair is required (except not required for bridge deck overlay projects with modified concrete). Include with ***6-02.3(10)D.OPT6.GB6***. Include with ***6-02.4.OPT37.GB6*** and ***6-02.5.OPT64.GB6*** when the volume of work can be determined from bridge deck survey data. Include with ***6-02.5.OPT65.GB6*** when the work will be paid by force account.

6-02.2.OPT55.~~BSP.~~GB6 (Permeon Treatment)
(~~BSP April 29, 2013~~April 6, 2015)
Use in projects where aesthetic surface aging of specific concrete surfaces is required. Include with **6-02.3(14).OPT25.~~BSP.~~GB6, 6-02.4.OPT47.~~BSP.~~GB6, and 6-02.5.OPT75.~~BSP.~~GB6.**

6-02.2.OPT56.BSP.GB6 (Resin Filler)
(BSP June 26, 2000)
Use in projects where resin filler is required.

6-02.2.OPT57.BSP.FB6 (Compression Molded Pad)
(BSP June 26, 2000)
Use in projects with post-tensioned concrete box girders where compression molded pads are placed at the base of the end diaphragm (See Bridge Design Manual Figure 9.3.1-5).

6-02.2.OPT58.~~BSP.~~GB6 (Core Drilled Bridge Deck Drain)
(~~BSP June 11, 2003~~April 6, 2015)
Use in projects with core drilled bridge deck drains. Include with **6-02.3(10)D.OPT12.~~BSP.~~GB6, and either 6-02.4.OPT32.~~BSP.~~GB6 and 6-02.5.OPT58.~~BSP.~~GB6, or 6-02.5.OPT59.~~BSP.~~FB6.**

6-02.2.OPT60.~~BSP.~~GB6 (Seismic Retrofit Materials)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with seismic retrofit construction. Must use once preceding any of the following:

6-02.2.OPT60(B).~~BSP.~~GB6 (Steel and PVC Pipe)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with seismic retrofit work when steel and/or PVC pipe are used as materials. Include with **6-02.4.OPT44.~~BSP.~~FB6** and **6-02.5.OPT72.~~BSP.~~GB6,** and all other applicable seismic retrofit GSPs~~Bridge Special Provisions~~ supplementing Sections 6-02.2 and 6-02.3.

6-02.2.OPT60(C).~~BSP.~~GB6 (Structural Steel and Steel Fastening Hardware)
(~~BSP March 11, 2013~~April 6, 2015)
Use in projects with seismic retrofit work when structural steel and steel fastening hardware are used as materials. Include with **6-02.4.OPT44.~~BSP.~~FB6** and **6-02.5.OPT72.~~BSP.~~GB6,** and all applicable other seismic retrofit GSPs~~Bridge Special Provisions~~ supplementing Sections 6-02.2 and 6-02.3.

6-02.2.OPT60(D).~~BSP.~~GB6 (High-Strength Steel Rods)
(~~BSP January 7, 2013~~April 6, 2015)
Use in projects with seismic retrofit work requiring the installation of longitudinal seismic restrainer assemblies. Include with **6-02.3.OPT8(L).~~BSP.~~GB6, 6-02.4.OPT44.~~BSP.~~FB6** and **6-02.5.OPT72.~~BSP.~~GB6,** and all other applicable seismic retrofit ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3.

6-02.2.OPT60(E).~~BSP.~~GB6 (Pre-formed Fabric Pads)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with seismic retrofit work when pre-formed fabric pads are used as materials. Include with **6-02.4.OPT44.~~BSP.~~FB6 and 6-02.5.OPT72.~~BSP.~~GB6**, and all other applicable seismic retrofit GSPs~~Bridge Special Provisions~~ supplementing *Sections 6-02.2 and 6-02.3*.

6-02.2.OPT60(F).~~BSP.~~GB6 (Column Jacketing Materials)
(~~BSP April 16, 2012~~April 6, 2015)
Use in projects with seismic retrofit work when column jacketing is required. Include with **6-02.3.OPT8(C).~~BSP.~~GB6, 6-02.3.OPT8(D).~~BSP.~~GB6, 6-02.3.OPT8(E).~~BSP.~~GB6, 6-02.3.OPT8(M).~~BSP.~~GB6, 6-02.4.OPT45.~~BSP.~~FB6, 6-02.5.OPT73.~~BSP.~~GB6, and 6-03.3(30).OPT1.FB6. Include with 6-02.3.OPT8(F).~~BSP.~~FB6** when the pre-fabrication field measuring requirements for specific existing bridge columns are waived.

6-02.2.OPT61.BSP.GB6 (PCPS Conc. SIP Panels)
(BSP April 5, 2010)
Use in projects with precast prestressed concrete stay-in-place panels. Include with **6-02.3(28)A.OPT6.BSP.GB6, 6-02.3(28)B.OPT6.BSP.GB6, 6-02.3(28)E.OPT6.BSP.GB6, 6-02.3(28)F.OPT1.BSP.GB6, 6-02.3(28)G.OPT6.BSP.GB6 and 6-02.3(28)I.OPT6.BSP.GB6.**

6-02.3.GR6 Construction Requirements

6-02.3.INST1.GR6 (Section 6-02.3 is supplemented with the following)
Must use once preceding any of the following:

6-02.3.OPT1.GB6 (Epoxy Crack Sealing)
(August 1, 2011)
Use in projects which require sealing cracks in existing concrete with injected epoxy resin. Include with ***6-02.2.OPT4.GB6, 6-02.4.OPT24.GB6,*** and ***6-02.5.OPT49.GB6***.

6-02.3.OPT2.GB6 (Bridge Supported Utilities)
Must use once preceding any of the following:

6-02.3.OPT2(A).GB6 (Bridge Supported Utilities)
(June 26, 2000)
Use in projects with bridge supported utilities when the supports include concrete inserts. Include with ***6-02.2.OPT46.GB6, 6-02.4.OPT1.FB6,*** and either ***6-02.5.OPT9.FB6*** or ***6-02.5.OPT26.FB6***.

6-02.3.OPT2(B).GB6 (Bridge Supported Utilities)
(June 26, 2000)
Use in projects with bridge supported utilities when the Contractor furnishes and installs the supports and the utility pipe or conduit pipe. Include with ***6-02.5.OPT92.FB6*** and other applicable bridge supported utility material GSP's. Include with ***6-02.2.OPT46(A).GB6, 6-02.3.OPT2(A).GB6, 6-02.4.OPT1.FB6,*** and either ***6-02.5.OPT9.FB6*** or ***6-02.5.OPT26.FB6*** when the supports include concrete inserts.

6-02.3.OPT2(C).FB6 (Bridge Supported Utilities)
(June 26, 2000)
Use in projects with bridge supported utilities when the Utility Company furnishes, or furnishes and installs, some of the supports and pipe for the utilities. The first fill-in specifies the items to be furnished and installed by the Utility Company. The second and third fill-ins specify the items to be installed by the Contractor which are furnished by either the Utility Company or the Contractor. Include with ***6-02.5.OPT92.FB6*** and ***6-02.5.OPT93.GB6,*** and other applicable bridge supported utility material GSP's. Include with ***6-02.2.OPT46(A).GB6, 6-02.3.OPT2(A).GB6, 6-02.4.OPT1.FB6,*** and either ***6-02.5.OPT9.FB6*** or ***6-02.5.OPT26.FB6*** when the supports include concrete inserts.
(3 fill-ins)

6-02.3.OPT3.GR6 (Submittals)

(April 3, 2006)
Include in all projects when pH monitoring is a condition of a 401 Water Quality Certification, or other permit. Do not use in projects covered by a NPDES General Construction permit. Requires approval of Regional Environmental Manager and Regional Construction Manager. *Must also use* ***6-02.5.OPT3.GR6, 5-01.3(1)A.OPT1.GR5, 5-01.5.OPT1.GR5, 5-05.3(1).OPT7.GR5, 5-05.5.OPT1.GR5, 8-01.3(1)A.OPT1.GR8,*** *and* ***8-01.5.OPT1.GR8***.

6-02.3.OPT8.~~BSP.~~GB6 (Seismic Retrofit)
Must use once preceding one of the following:

6-02.3.OPT8(A).~~BSP.~~GB6 (Plans of Existing Bridge)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with seismic retrofit work when plans of the existing bridge are available. Include with **6-02.4.OPT44.~~BSP.~~FB6 and 6-02.5.OPT72.~~BSP.~~GB6,** and all other applicable seismic retrofit ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3.

6-02.3.OPT8(B).~~BSP.~~GB6 (Seismic Retrofit Demolition Plan)
(~~BSP June 26, 2000~~April 6, 2015)
Use in seismic retrofit projects where removal of portions of existing concrete and steel reinforcing bars, or cleaning and preparing of existing concrete surfaces is required. Include with ***6-02.4.OPT44.~~BSP.~~FB6, 6-02.3.OPT8(H).~~BSP.~~GB6,*** *and* ***6-02.5.OPT72.~~BSP.~~GB6,*** *and all other applicable seismic retrofit ~~Bridge Special Provisions~~ GSPs supplementing Sections 6-02.2 and 6-02.3*.

6-02.3.OPT8(C).~~BSP.~~GB6 (Column Jacket Installation Plan)
(~~BSP June 11, 2003~~April 6, 2015)
Use in projects with column jacketing of existing bridges. Include with **6-02.2.OPT60(F).~~BSP.~~GB6, 6-02.3.OPT8(D).~~BSP.~~GB6, 6-02.3.OPT8(E).~~BSP.~~GB6, 6-02.3.OPT8(M).~~BSP.~~GB6, 6-02.4.OPT45.~~BSP.~~FB6, 6-02.5.OPT73.~~BSP.~~GB6, and 6-03.3(30).OPT1.FB6. Include with 6-02.3.OPT8(F).~~BSP.~~FB6** when the pre-fabrication field measuring requirements for specific existing bridge columns are waived.

6-02.3.OPT8(D).~~BSP.~~GB6 (Column Jacket Shop Drawings)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with column jacketing of existing bridges. Include with ***6-02.2.OPT60(F).~~BSP.~~GB6, 6-02.3.OPT8(C).~~BSP.~~GB6, 6-02.3.OPT8(E).~~BSP.~~GB6, 6-02.3.OPT8(M).~~BSP.~~GB6, 6-02.4.OPT45.~~BSP.~~FB6, 6-02.5.OPT73.~~BSP.~~GB6,*** *and* ***6-03.3(30).OPT1.FB6***. Include with ***6-***

02.3.OPT8(F).~~BSP.~~FB6 when the pre-fabrication field measuring requirements for specific existing bridge columns are waived.

6-02.3.OPT8(E).~~BSP.~~GB6 (Field Measuring Existing Bridge Columns)
(~~BSP September 26, 2005~~April 6, 2015)
Use in projects where field measuring of existing bridge columns is required. Include with **6-02.2.OPT60(F).~~BSP.~~GB6, 6-02.3.OPT8(C).~~BSP.~~GB6, 6-02.3.OPT8(D).~~BSP.~~GB6, 6-02.3.OPT8(M).~~BSP.~~GB6, 6-02.4.OPT45.~~BSP.~~FB6, 6-02.5.OPT73.~~BSP.~~GB6, and 6-03.3(30).OPT1.FB6. Include with 6-02.3.OPT8(F).~~BSP.~~FB6** when the pre-fabrication field measuring requirements for specific existing bridge columns are waived.

6-02.3.OPT8(F).~~BSP.~~FB6 (Field Measuring Waiver for Specific Existing Bridge Columns)
(~~BSP June 11, 2003~~April 6, 2015)
Use in projects where the requirement of pre-fabrication field measuring of specific existing bridge columns is waived. The fill-in specifies the bridge(s) and pier(s) where the column receiving the waiver is located. Include with ***6-02.2.OPT60(F).~~BSP.~~GB6, 6-02.3.OPT8(C).~~BSP.~~GB6, 6-02.3.OPT8(D).~~BSP.~~GB6, 6-02.3.OPT8(E).~~BSP.~~GB6, 6-02.3.OPT8(M).~~BSP.~~GB6, 6-02.4.OPT45.~~BSP.~~FB6, 6-02.5.OPT73.~~BSP.~~GB6,*** *and* ***6-03.3(30).OPT1.FB6***.
(1 fill-in)

6-02.3.OPT8(G).~~BSP.~~FB6 (Field Measuring for Seismic Retrofit Components)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where field measuring of existing bridge members is required for seismic retrofit components. The first fill-in specifies the bridge(s) where the field measuring work is required. The second fill-in specifies the members or components to be measured. Include with ***6-02.4.OPT44.~~BSP.~~FB6*** *and* ***6-02.5.OPT72.~~BSP.~~GB6,*** *and all other applicable seismic retrofit ~~Bridge Special Provisions~~ GSPs supplementing Sections 6-02.2 and 6-02.3*.
(2-fill-ins)

6-02.3.OPT8(H).~~BSP.~~GB6 (Removing Portions of Existing Concrete)
(~~BSP August 3, 2009~~April 6, 2015)
Use in seismic retrofit projects where removal of portions of existing concrete and steel reinforcing bars, or cleaning and preparing of existing concrete surfaces is required. Include with ***6-02.3.OPT8(B).~~BSP.~~GB6, 6-02.4.OPT44.~~BSP.~~FB6*** *and* ***6-02.5.OPT72.~~BSP.~~GB6,*** and all other applicable seismic retrofit ~~Bridge Special~~

~~Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3.

6-02.3.OPT8(J).~~BSP.~~GB6 (Drilling Holes and Setting Steel Reinf. Bars, and Placing Concrete)
(~~BSP June 26, 2000~~April 6, 2015)
Use in seismic retrofit projects requiring the construction of catcher blocks, girder stops, and other concrete appendages. Include with ***6-02.3.OPT8(B).~~BSP.~~GB6, 6-02.3.OPT8(H).~~BSP.~~GB6, 6-02.3(24)C.OPT1.GB6, 6-02.4.OPT44.~~BSP.~~FB6,*** *and* ***6-02.5.OPT72.~~BSP.~~GB6,*** *and all other applicable seismic retrofit ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3.*

6-02.3.OPT8(K).~~BSP.~~GB6 (Installing and Tensioning High-Strength Steel Bar Reinforcement)
(~~BSP June 11, 2003~~April 6, 2015)
Use in seismic retrofit projects requiring the installation, stressing, and grouting of high-strength steel bar reinforcement. Include with ***6-02.4.OPT44.~~BSP.~~FB6*** *and* ***6-02.5.OPT72.~~BSP.~~GB6,*** *and all other applicable seismic retrofit ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3.*

6-02.3.OPT8(L).~~BSP.~~GB6 (Longitudinal Seismic Restrainers)
(~~BSP June 11, 2003~~April 6, 2015)
Use in seismic retrofit projects requiring the installation of longitudinal seismic restrainer assemblies. Include with **6-02.2.OPT60(B).~~BSP.~~GB6, 6-02.2.OPT60(C).BSP.GB6, 6-02.2.OPT60(D).~~BSP.~~GB6, 6-02.2.OPT60(E).~~BSP.~~GB6, 6-02.3(18).OPT1.GR6, either 6-02.4.OPT43.~~BSP.~~GB6 and 6-02.5.OPT71.~~BSP.~~GB6, or 6-02.4.OPT44.~~BSP.~~FB6 and 6-02.5.OPT72.~~BSP.~~GB6,** and all other applicable seismic retrofit ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3.

6-02.3.OPT8(M).~~BSP.~~GB6 (Column Jacketing)
(~~BSP January 7, 2013~~April 6, 2015)
Use in projects with column jacketing of existing bridges. Include with **6-02.2.OPT60(F).~~BSP.~~GB6, 6-02.3.OPT8(C).~~BSP.~~GB6, 6-02.3.OPT8(D).~~BSP.~~GB6, 6-02.3.OPT8(E).~~BSP.~~GB6, 6-02.4.OPT45.~~BSP.~~FB6, 6-02.5.OPT73.~~BSP.~~GB6, and 6-03.3(30).OPT1.FB6. Include with 6-02.3.OPT8(F).~~BSP.~~FB6** when the pre-fabrication field measuring requirements for specific existing bridge columns are waived.

6-02.3.OPT9.~~BSP.~~GB6 (Polyester Concrete)
(~~BSP January 29, 2007~~April 6, 2015)

Use in projects where polyester concrete is required. Include with ***6-02.2.OPT27.~~BSP.~~GB6***.

6-02.3.OPT10.~~BSP.~~GB6 (Elastomeric Concrete)
(~~BSP January 29, 2007~~April 6, 2015)
Use in projects where elastomeric concrete is required. Include with ***6-02.2.OPT28.~~BSP.~~GB6***.

6-02.3(2).GR6 Proportioning Materials

6-02.3(2).INST1.GR6 (Section 6-02.3(2) is supplemented with the following)
Must use once preceding any of the following:

6-02.3(2).OPT1.~~BSP.~~GB6 (Expansion Joint Header Concrete)
(~~BSP January 7, 2013~~April 6, 2015)
Use in projects with expansion joint modifications where the headers for the modified joints are made of a high early strength concrete mix. Include **with 6-02.2.OPT2.GB6, 6-02.3(24)C.OPT1.GB6, 6-02.3(13).OPT7(H).~~BSP.~~GB6, , or 6-02.4.OPT8.~~BSP.~~FB6 and 6-02.5.OPT33.~~BSP.~~GB6**, and all other applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).

6-02.3(5).GR6 Acceptance of Concrete

6-02.3(5)A.GR6 General

6-02.3(5)A.INST1.GR6 (Section 6-02.3(5)A is supplemented with the following)
Must use once preceding any of the following:

6-02.3(5)A.OPT1.GB6 (Concrete Class EA)
(June 26, 2000)
Use in projects requiring concrete members with exposed aggregate finish. Include with ***6-02.2.OPT5.GB6, 6-02.3(14).OPT1.GB6, 6-02.2.OPT6.GB6*** and ***6-02.3(14).OPT3.GB6.***

6-02.3(6).GR6 Placing Concrete

6-02.3(6)B.GR6 Placing Concrete in Foundation Seals

6-02.3(6)B.INST1.GR6 (Section 6-02.3(6)B is supplemented with the following)
Must use once preceding any of the following:

6-02.3(6)B.OPT1.GB6 (Concrete Seals)
(June 26, 2000)
Use in projects where there is the possibility of seals being omitted during construction, in which

case the footing is to be lowered to bottom of seal.

6-02.3(6)B.OPT2.GB6 (Concrete Seals)
(June 26, 2000)
Use in projects where there is the possibility of seals being omitted during construction, in which case the footing is not to be lowered.

6-02.3(10).GR6 Bridge Decks and Bridge Approach Slabs

6-02.3(10)D.GR6 Concrete Placement, Finishing, and Texturing

6-02.3(10)D.INST1.GR6 (Section 6-02.3(10)D is supplemented with the following)
Must use once preceding any of the following:

6-02.3(10)D.OPT1.GB6 (Repairing Slab Left Exposed After Removing Existing Curb or Sidewalk)
(August 4, 2008)
Use in projects when existing curbs or sidewalks are to be removed and the portion of the slab under the curb or sidewalk that is to remain exposed will be within two feet from the traffic lane.

6-02.3(10)D.OPT2.GB6 (Repairing Slab Left Exposed After Removing
Existing Curb or Railbase)
(August 4, 2008)
Use in projects when existing curbs or railbases are to be removed and the portion of the slab under the curb or railbase that is to remain exposed will be more than two feet from the traffic lane. Include with ***6-02.2.OPT3.GB6*** and ***6-02.5.OPT1.GB6***.

6-02.3(10)D.OPT3.GB6 (Bridge Drain Risers)
(August 3, 2009)
Use in projects requiring the raising of bridge drains prior to asphalt or modified concrete overlay work on bridge decks. Include with ***6-02.2.OPT48.GB6***. Include with ***6-02.3(10)D.OPT4.GB6*** if the bridge deck is overlaid with membrane waterproofing and ACP. Include with ***6-02.5.OPT53.FB6*** if the work is included in the cost of the membrane waterproofing or modified concrete overlay. Include with ***6-02.4.OPT26.GB6*** and ***6-02.5.OPT51.GB6*** if the unit contract bid item “Modify Bridge Drain” is used to pay for the work. Must use once preceding any of the following:

6-02.3(10)D.OPT3(A).GB6 (Bridge Drain Risers)
(August 4, 2008)
Use in projects requiring the raising of bridge drains prior to membrane waterproofing and asphalt overlay work. Include with ***6-02.2.OPT48.GB6*** and ***6-02.3(10)D.OPT3.GB6***. Include with ***6-02.5.OPT53.FB6*** if the work is included in the cost of the membrane waterproofing. Include with ***6-02.4.OPT26.GB6*** and ***6-02.5.OPT51.GB6*** if the unit contract bid item "Modify Bridge Drain" is used to pay for the work.

6-02.3(10)D.OPT5.GB6 (Plugging Existing Bridge Drain)
(January 4, 2010)
Use in projects requiring plugging of bridge drains. Include with ***6-02.5.OPT53.FB6*** if the work is included in the cost of the membrane waterproofing or modified concrete overlay. Include with ***6-02.4.OPT27.GB6*** and ***6-02.5.OPT52.GB6*** if the unit contract bid item "Plugging Existing Bridge Drain" is used to pay for the work.

6-02.3(10)D.OPT6.GB6 (Bridge Deck Repair)
(August 1, 2011)
Use in projects where bridge deck repair is required (except not required for bridge deck overlay projects with modified concrete). Include with ***6-02.2.OPT49.GB6***. Include with ***6-02.4.OPT37.GB6*** and ***6-02.5.OPT64.GB6*** when the volume of work can be determined from bridge deck survey data. Include with ***6-02.5.OPT65.GB6*** when the work will be paid by force account.

6-02.3(10)D.OPT12.~~BSP.~~GB6 (Core Drilled Bridge Deck Drain)
(~~BSP August 4, 2008~~April 6, 2015)
Use in projects with core drilled bridge deck drains. Include with **6-02.2.OPT58.~~BSP.~~GB6, and either 6-02.4.OPT32.~~BSP.~~GB6 and 6-02.5.OPT58.~~BSP.~~GB6, or 6-02.5.OPT59.~~BSP.~~FB6.**

6-02.3(10)F.GR6 Bridge Approach Slab Orientation and Anchors

6-02.3(10)F.INST1.GR6 (Section 6-02.3(10)F is supplemented with the following)
Must use once preceding any of the following:

6-02.3(10)F.OPT2.GB6 (Construct pavement end of approach slabs parallel to pavement seat)

(August 4, 2008)
Use in projects when the pavement ends of all approach slabs are constructed parallel to the pavement seat.

6-02.3(10)F.OPT3.FB6 (Construct pavement end of approach slabs both normal to the roadway centerline and parallel to pavement seat)
(August 4, 2008)
Use in projects when the pavement ends of the approach slabs are constructed both normal to the roadway centerline and parallel to the pavement seat.
(2 fill-ins)

6-02.3(13).GR6 Expansion Joints

6-02.3(13).INST1.GR6 (Section 6-02.3(13) is supplemented with the following)
Must use once preceding any of the following:

6-02.3(13).OPT3.FB6 (Modular Expansion Joint System)
(August 2, 2010)
Include in projects requiring a modular expansion joint system. The fill-in specifies the percentage of the amplified vertical load range to be used for the horizontal load range for fatigue design. The fill-in value shall be 20 percent except as otherwise specified. The fill-in value shall be 50 percent for all modular expansion joint systems installed at locations subject to significant braking and acceleration forces or to particularly large movement ranges. Coordination with the Bridge and Structures Office Bearing and Expansion Joint Specialist is required. Include with ***6-03.3(30).OPT1.FB6*****. Must use with 6-02.4.OPT3.FB6, 6-02.2.OPT22.GB6, and 6-02.5.OPT28.GB6.**
(1 fill-in)

6-02.3(13).OPT7.~~BSP.~~GB6 Expansion Joint Modification

6-02.3(13).OPT7(A).~~BSP.~~GB6 (Plans of Existing Expansion Joint)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with expansion joint modification when plans of the existing joint are available. Include with **6-02.4.OPT8.~~BSP.~~FB6** and **6-02.5.OPT33.~~BSP.~~GB6,** and all applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).

6-02.3(13).OPT7(B).~~BSP.~~GB6 (Expansion Joint Demolition Plan)

(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where removal of portions of the existing bridge expansion joint assembly, and/or adjacent concrete and steel reinforcing bars, is required. Include with ***6-02.3(13).OPT7(E).~~BSP.~~FB6, 6-02.4.OPT8.~~BSP.~~FB6*** *and* ***6-02.5.OPT33.~~BSP.~~GB6,*** *and all other applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).*

6-02.3(13).OPT7(C).~~BSP.~~GB6 (Joint Preparation and Installation Procedure)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where rapid cure silicone sealant is used for expansion joint modification. Include with **6-02.2.OPT26.~~BSP.~~GB6, either 6-02.3(13).OPT7(I).~~BSP.~~GB6 or 6-02.3(13).OPT7(J).~~BSP.~~GB6, 6-02.4.OPT8.~~BSP.~~FB6 and 6-02.5.OPT33.~~BSP.~~GB6,** and all other applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).

6-02.3(13).OPT7(D).~~BSP.~~FB6 (Field Measuring Existing Expansion Joint)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where field measuring of the existing expansion joint is required. The fill-in specifies the bridge(s) included in the field measuring requirement. Include with ***6-02.4.OPT8.~~BSP.~~FB6*** *and* ***6-02.5.OPT33.~~BSP.~~GB6,*** *and all other applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).*
(1 fill-in)

6-02.3(13).OPT7(E).~~BSP.F~~B6 (Removing Portions of Existing Bridge Expansion Joints)
(~~BSP January 29, 2007~~April 6, 2015)
Use in projects where removal of portions of the existing bridge expansion joint assembly, and/or adjacent concrete and steel reinforcing bars, is required. The fill-in specified the bridge(s) where the expansion joint removal work is required. Include with ***6-02.3(13).OPT7(B).~~BSP.~~GB6, 6-02.4.OPT8.~~BSP.~~FB6*** *and* ***6-02.5.OPT33.~~BSP.~~GB6,*** *and all other applicable expansion joint modification ~~Bridge Special~~*

~~Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).
(1-fill-in)

6-02.3(13).OPT7(F).~~BSP.~~GB6 (Drilling Holes and Setting St. Reinf. Bars)

(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with expansion joint modification where drilling holes and setting steel reinforcing bar dowels are required. Include with ***6-02.2.OPT2.GB6, 6-02.3(24)C.OPT1.GB6, 6-02.4.OPT8.~~BSP.~~FB6*** *and* ***6-02.5.OPT33.~~BSP.~~GB6,*** *and all other applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).*

6-02.3(13).OPT7(G).~~BSP.~~GB6 (Placing Polyester Concrete or Elastomeric Concrete Headers)
(~~BSP January 29, 2007~~April 6, 2015)
Use in projects when the headers for modified bridge expansion joints are made of either polyester concrete or elastomeric concrete. Include with either ***6-02.2.OPT27.~~BSP.~~GB6*** *and* ***6-02.3.OPT9.~~BSP.~~GB6,*** *or* ***6-02.2.OPT28.~~BSP.~~GB6*** *and* ***6-02.3.OPT10.~~BSP.~~GB6, 6-02.4.OPT8.~~BSP.~~FB6*** *and* ***6-02.5.OPT33.~~BSP.~~GB6,*** *and all other applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).*

6-02.3(13).OPT7(H).~~BSP.~~GB6 (Placing Concrete Headers)
(~~BSP January 4, 2010~~April 6, 2015)
Use in projects where the headers for modified bridge expansion joints are made of concrete. Include with **6-02.2.OPT2.GB6, 6-02.3(24)C.OPT1.GB6, 6-02.3(13).OPT7(F).~~BSP.~~GB6, 6-02.3(2).OPT1.~~BSP.~~GB6, 6-02.4.OPT8.~~BSP.~~FB6 and 6-02.5.OPT33.~~BSP.~~GB6,** and all other applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).

6-02.3(13).OPT7(I).~~BSP.~~GB6 (Placing Expansion Joint Sealant)
(~~BSP August 3, 2009~~April 6, 2015)
Use in projects where rapid cure silicone sealant is used for modified bridge expansion joints with concrete or polymer concrete or polyester concrete or elastomeric concrete headers. Include with ***6-02.2.OPT26.~~BSP.~~GB6, 6-02.3(13).OPT7(C).~~BSP.~~GB6, 6-02.4.OPT8.~~BSP.~~FB6*** *and* ***6-***

***02.5.OPT33.~~BSP.~~GB6,** and all other applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).*

6-02.3(13).OPT7(J).~~BSP.~~GB6 (Placing Expansion Joint Sealant)
(~~BSP August 3, 2009~~April 6, 2015)
Use in projects where rapid cure silicone sealant is used for modified bridge expansion joints with modified concrete overlay headers. To be used only for bridges with low ADT, and only with the approval of the Bridge and Structures Office Bearing and Expansion Joint Specialist. Include with ***6-02.2.OPT26.~~BSP.~~GB6, 6-02.3(13).OPT7(C).~~BSP.~~GB6, 6-02.4.OPT8.~~BSP.~~FB6** and **6-02.5.OPT33.~~BSP.~~GB6,** and all other applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13) and the pertinent modified concrete overlay GSP's.*

6-02.3(14).GR6 Finishing Concrete Surfaces

6-02.3(14).INST1.GR6 (Section 6-02.3(14) is supplemented with the following)
Must use once preceding any of the following:

6-02.3(14).OPT1.GB6 (Exposed Aggregate Finish)
(June 26, 2000)
Use in projects requiring exposed aggregate finish of concrete surfaces. Include with ***6-02.2.OPT5.GB6, 6-02.3(5)A.OPT1.GB6, 6-02.2.OPT6.GB6*** and ***6-02.3(14).OPT3.GB6***.

6-02.3(14).OPT2.GB6 (Containment)
(June 26, 2000)
Use in projects requiring exposed aggregate finish of concrete surfaces over water. Include with **6-02.2.OPT5.GB6, 6-02.3(5)A.OPT1.GB6, 6-02.3(14).OPT1.GB6, 6-02.2.OPT6.GB6 and 6-02.3(14).OPT3.GB6.**

6-02.3(14).OPT3.GB6 (Applying Clear Sealer)
(April 2, 2007)
Use in projects with an exposed aggregate finish. Include with **6-02.2.OPT5.GB6, 6-02.2.OPT6.GB6, 6-02.3(5)A.OPT1.GB6, and 6-02.3(14).OPT1.GB6.**

6-02.3(14).OPT5.GB6 (Fractured Basalt Finish)
(April 7, 2008)
Use in projects requiring fractured basalt finish of concrete surfaces. Include with ***6-02.2.OPT7.GB6***.

6-02.3(14).OPT6.GB6	(Fractured Fin Finish) (June 26, 2000) Use in projects requiring fractured fin finish of concrete surfaces. Include with ***6-02.2.OPT8.GB6***.
6-02.3(14).OPT7.GB6	(Fractured Granite Finish) (June 26, 2000) Use in projects requiring fractured granite finish of concrete surfaces. Include with ***6-02.2.OPT9.GB6***.
6-02.3(14).OPT8.GB6	(Variable Depth Random Board Finish and 3/4 Inch Random Board Finish) (April 7, 2008) Use in projects requiring use of elastomeric, ABS, or plastic form liners to produce random board finish of concrete surfaces. Include with ***6-02.2.OPT10.GB6***.
6-02.3(14).OPT9.GB6	(Random Board Finish) (June 26, 2000) Use in projects requiring use of wooden forms conforming to Section 6-02.3(17)J to produce random board finish of concrete surfaces.
6-02.3(14).OPT10.GB6	(Ribbed Finish) (August 6, 2007) Use in projects requiring ribbed finish of concrete surfaces. Include with ***6-02.2.OPT11.GB6***.
6-02.3(14).OPT11.GB6	(Striated Finish) (August 6, 2007) Use in projects requiring striated finish of concrete surfaces. Include with ***6-02.2.OPT12.GB6***.
6-02.3(14).OPT12.GB6	(Ashlar Stone Finish) (August 6, 2007) Use in projects requiring ashlar stone finish of concrete surfaces. Include with ***6-02.2.OPT13.GB6***.
6-02.3(14).OPT13.GB6	(Block Finish) (August 6, 2007) Use in projects requiring block finish of concrete surfaces. Include with ***6-02.2.OPT14.GB6***.
6-02.3(14).OPT14.GB6	(Split Face Finish) (April 7, 2008) Use in projects requiring split face finish of concrete surfaces. Include with ***6-02.2.OPT15.GB6***.
6-02.3(14).OPT15.GB6	(River Rock Finish) (April 7, 2008) Use in projects requiring river rock finish of concrete surfaces. Include with ***6-02.2.OPT16.GB6***.

6-02.3(14).OPT16.GB6 (Cascadian Stone Finish)
(April 5, 2010)
Use in projects requiring cascadian stone finish of concrete surfaces. Include with ***6-02.2.OPT17.GB6***.

6-02.3(14).OPT25.~~BSP.~~GB6 (Permeon Treatment)
(~~BSP April 29, 2013~~April 6, 2015)
Use in projects where aesthetic surface aging of specific concrete surfaces is required. Include with ***6-02.2.OPT55.~~BSP.~~GB6, 6-02.4.OPT47.~~BSP.~~GB6, and 6-02.5.OPT75.~~BSP.~~GB6***.

6-02.3(14)C.GR6 Pigmented Sealer for Concrete Surfaces

6-02.3(14)C.INST1.GR6 (Section 6-02.3(14)C is supplemented with the following)
Must use once preceding any of the following:

6-02.3(14)C.OPT1.GB6 (Washington Gray Pigmented Sealer)
(April 6, 2009)
Use in projects requiring application of pigmented sealer to concrete surfaces, with Washington Gray being the sole color.

6-02.3(14)C.OPT2.GB6 (Mt. St. Helens Gray Pigmented Sealer)
(April 6, 2009)
Use in projects requiring application of pigmented sealer to concrete surfaces, with Mt. St. Helens Gray being the sole color.

6-02.3(14)C.OPT3.GB6 (Mt. Baker Gray Pigmented Sealer)
(April 6, 2009)
Use in projects requiring application of pigmented sealer to concrete surfaces, with Mt. Baker Gray being the sole color.

6-02.3(14)C.OPT4.GB6 (Cascade Green Pigmented Sealer)
(April 6, 2009)
Use in projects requiring application of pigmented sealer to concrete surfaces, with Cascade Green being the sole color.

6-02.3(14)C.OPT5.FB6 (Multiple Color Pigmented Sealer)
(April 6, 2009)
Use in projects requiring application of pigmented sealer to concrete surfaces, with two or more colors specified. Each fill-in pair is to be used to specify the structural features receiving a specific color of pigmented sealer.
(2 fill-ins)

6-02.3(17).GR6 Falsework and Formwork

6-02.3(17)C.GR6 Falsework and Formwork at Special Locations

6-02.3(17)C.INST1.GR6 (Section 6-02.3(17)C is supplemented with the following)
Must use once preceding any of the following:

6-02.3(17)C.OPT1.GB6 (Falsework Adjacent to or over Railroad Tracks)
(June 26, 2000)
Use in bridge projects requiring falsework adjacent to or over railroad tracks.

6-02.3(17)K.GR6 Concrete Forms on Steel Spans

6-02.3(17)K.INST1.GR6 (The first paragraph of Section 6-02.3(17)K is revised to read as follows)
Must use once preceding any of the following:

6-02.3(17)K.OPT1.GB6 (Stay-in-place Metal forms for Steel Box Girders)
(August 4, 2010)
Use in projects with steel box girder bridges when stay-in-place metal forms are allowed by the Bridge and Structures Office Steel Specialist. Include with ***6-02.4.OPT1.FB6, 6-02.5.OPT26.FB6, 6-03.3(28)B.OPT1.GB6, 6-03.3(30).OPT1.FB6, 6-03.3(39).OPT1.GB6,*** and ***6-03.4.OPT1.FB6***.

6-02.3(18).GR6 Placing Anchor Bolts

6-02.3(18).INST1.GR6 (Section 6-02.3(18) is supplemented with the . following)
Must use once preceding any of the following:

6-02.3(18).OPT1.GR6 (January 3, 2011)
Include in projects requiring resin bonded anchors for attaching and anchoring items to concrete structures. Must also include **6-02.2.OPT1.GR6**.

6-02.3(19).GR6 Bridge Bearings

6-02.3(19)A.GR6 Elastomeric Bearing Pads

6-02.3(19)A.INST1.GR6 (Section 6-02.3(19)A is supplemented with the following)
Must use once preceding any of the following:

6-02.3(19)A.OPT1.BSP.GB6 (High-Load Elastomeric Bearing Pad Assembly)
(BSP June 26, 2000)

Use in projects with high-load elastomeric bearing pad assemblies. Include with ***6-02.2.OPT38.BSP.GB6, 6-02.4.OPT19.BSP.GB6,*** *and* ***6-02.5.OPT44.BSP.GB6***.

6-02.3(19)B.GR6 Bridge Bearing Assemblies

6-02.3(19)B.INST1.GR6 (Section 6-02.3(19)B is supplemented with The following)
Must use once preceding any of the following:

6-02.3(19)B.OPT1.GB6 (Fabric Pad Bearing)
(August 6, 2012)
Use in projects requiring fabric pad bearings. Include with **6-02.2.OPT33.GB6, 6-02.4.OPT13.FB6, 6-02.5.OPT38.GB6, and 6-03.3(30).OPT1.FB6.**

6-02.3(19)B.OPT6.~~BSP.~~GB6 (Transverse Stop Bearing)
(~~BSP September 27, 2004~~April 6, 2015)
Use in projects with fabric pad transverse stop bearing assemblies. Include with **6-02.2.OPT33.GB6, 6-02.3(19)B.OPT1.GB6, 6-02.4.OPT18.~~BSP.~~GB6, 6-02.5.OPT43.~~BSP.~~GB6, and 6-03.3(30).OPT1.FB6.**

6-02.3(19)B.OPT7.BSP.GB6 (Cylindrical Bearing)
(BSP June 4, 2012)
Use in projects with cylindrical bearing assemblies. Include with ***6-02.2.OPT39.BSP.GB6, 6-02.4.OPT13.FB6, 6-02.5.OPT38.GB6,*** *and* ***6-03.3(30).OPT1.FB6***. Include with ***6-02.2.OPT56.BSP.GB6*** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-02.3(19)B.OPT8.BSP.GB6 (Disc Bearing)
(BSP June 4, 2012)
Use in projects with disc bearing assemblies. Include with ***6-02.2.OPT40.BSP.GB6, 6-02.4.OPT13.FB6, 6-02.5.OPT38.GB6,*** *and* ***6-03.3(30).OPT1.FB6***. Include with ***6-02.2.OPT56.BSP.GB6*** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-02.3(19)B.OPT9.BSP.GB6 (Spherical Bearing)
(BSP June 4, 2012)
Use in projects with spherical bearing assemblies. Include with ***6-02.2.OPT41.BSP.GB6, 6-02.4.OPT13.FB6, 6-02.5.OPT38.GB6,*** *and* ***6-03.3(30).OPT1.FB6***. Include with ***6-02.2.OPT56.BSP.GB6*** when resin

filler is used to fill slotted base plate holes for bearing anchor bolts.

6-02.3(20).GR6 Grout for Anchor Bolts and Bridge Bearings

6-02.3(20).INST1.GR6 (Section 6-02.3(20) is supplemented with the following)
Must use once preceding any of the following:

6-02.3(20).OPT1.FB6 (Grout)
(June 26, 2000)
Use in projects requiring grout for structural applications such as grout pads for beams and girders, bridge bearing plates, post base plates, (does not include cantilever sign structures) etc. The fill-in specifies the locations where the grout is required.
(1 fill-in)

6-02.3(24).GR6 Reinforcement

6-02.3(24)C.GR6 Placing and Fastening

6-02.3(24)C.INST1.GR6 (Section 6-02.3(24)C is supplemented with the following)
Must use once preceding any of the following:

6-02.3(24)C.OPT1.GB6 (Drilling Holes for, and Setting, Steel Reinforcing Bar Dowels)
(June 26, 2000)
Use in projects where holes are drilled into existing concrete and steel reinforcing bar dowels are set with epoxy resin. Include with ***6-02.2.OPT2.GB6*** and ***6-02.5.OPT9.FB6***. Include the above with ***2-02.1.OPT3.GR2, 2-02.3(2).OPT8.GB2, 2-02.3(2).OPT12.GR2, 6-02.3(24)C.OPT2.GR6,*** and either ***2-02.5.OPT7.GR2*** or ***2-02.5.OPT10.GR2*** when extending a conc. box culvert.

6-02.3(24)C.OPT2.GR6 (Drilling Holes for, and Setting, Dowels for Conc. Box Culvert Extension)
(June 26, 2000)
Use in projects requiring the extension of an existing conc. box culvert. Include with **2-02.1.OPT3.GR2, 2-02.3(2).OPT8.GB2, 2-02.3(2).OPT12.GR2, 6-02.2.OPT2.GB6, 6-02.3(24)C.OPT1.GB6, 6-02.5.OPT9.FB6, and either 2-02.5.OPT7.GR2 or 2-02.5.OPT10.GR2.**

6-02.3(24)D.GR6 Splicing

6-02.3(24)D.INST1.GR6 (Section 6-02.3(24)D is supplemented with the following)

Must use once preceding any of the following:

6-02.3(24)D.OPT1.~~BSP.~~GB6 (Splicing of Hoop Reinforcement for Columns and Shafts)
(~~BSP January 7, 2013~~April 6, 2015)
Use in projects using steel reinforcing bar hoops for columns and shafts. Include with ***6-02.3(24)E.OPT2.~~BSP.~~GB6.***

6-02.3(24)E.GR6 Welding Reinforcing Steel

6-02.3(24)E.INST1.GR6 (Section 6-02.3(24)E is supplemented with the following)
Must use once preceding any of the following:

6-02.3(24)E.OPT2.~~BSP.~~GB6 (Welded Splice Requirements for Hoop Reinforcement)
(~~BSP January 7, 2013~~April 6, 2015)
Use in projects using steel reinforcing bar hoops for columns and shafts. Include with ***6-02.3(24)D.OPT1.~~BSP.~~GB6.***

6-02.3(25).GR6 Prestressed Concrete Girders

6-02.3(26).GR6 Cast-in-Place Prestressed Concrete

6-02.3(26).INST1.GR6 (The third paragraph of Section 6-02.3(26) is revised to
read as follows)
Must use once preceding any of the following:

6-02.3(26).OPT1.GB6 (Cast-in-Place Prestressed Concrete)
(January 4, 2010)
Use in projects with segmental post-tensioned structures. Check with the Region Construction Engineer to see if testing equipment is available.

6-02.3(28).GR6 Precast Concrete Panels

6-02.3(28).INST1.GR6 (Section 6-02.3(28) is supplemented with the following)
Must use once preceding any of the following:

6-02.3(28).OPT1.GR6 (Precast Reinforced Concrete Three Sided Structures)
(January 7, 2013)
Use in projects requiring precast reinforced concrete three sided structures of span lengths of 26 feet or less. Must include **6-02.3(28)A.OPT1.GR6, 6-02.3(28)B.OPT1.GR6, 6-02.3(28)E.OPT1.GR6, 6-02.3(28)G.OPT1.GR6, 6-02.3(28)H.OPT1.GR6, 6-02.3(28)I.OPT1.GR6, and 6-02.5.OPT25.GR6.**

6-02.3(28)A.GR6 Shop Drawings

6-02.3(28)A.INST1.GR6 (The third paragraph of Section 6-02.3(28)A is supplemented with the following)
Must use once preceding any of the following:

6-02.3(28)A.OPT1.GR6 (Precast Reinforced Concrete Three Sided Structures)
(August 1, 2011)
Use in projects requiring precast reinforced concrete three sided structures of span lengths of 26 feet or less. Must include with **6-02.3(28).OPT1.GR6, 6-02.3(28)B.OPT1.GR6, 6-02.3(28)E.OPT1.GR6, 6-02.3(28)G.OPT1.GR6, 6-02.3(28)H.OPT1.GR6, 6-02.3(28)I.OPT1.GR6,** and **6-02.5.OPT25.GR6**.

6-02.3(28)A.INST2.GR6 (The list included in the third paragraph of Section 6-02.3(28)A is supplemented with the following)
Must use once preceding any of the following:

6-02.3(28)A.OPT6.BSP.GB6 (PCPS Conc. SIP Panels)
(BSP April 5, 2010)
Use in projects with precast prestressed concrete stay-in-place panels. Include with **6-02.2.OPT61.BSP.GB6, 6-02.3(28)B.OPT6.BSP.GB6, 6-02.3(28)E.OPT6.BSP.GB6, 6-02.3(28)F.OPT1.BSP.GB6, 6-02.3(28)G.OPT6.BSP.GB6 and 6-02.3(28)I.OPT6.BSP.GB6.**

6-02.3(28)B.GR6 Casting

6-02.3(28)B.INST1.GR6 (Section 6-02.3(28)B is supplemented with the following)
Must use once preceding any of the following:

6-02.3(28)B.OPT1.GR6 (Precast Reinforced Concrete Three Sided Structures)
(April 30, 2001)
Use in projects requiring precast reinforced concrete three sided structures of span lengths of 26 feet or less. Must include with **6-02.3(28).OPT1.GR6, 6-02.3(28)A.OPT1.GR6, 02328E1,GR6, 6-02.3(28)G.OPT1.GR6, 6-02.3(28)H.OPT1.GR6, 6-02.3(28)I.OPT1.GR6**, and **6-02.5.OPT25.GR6**.

6-02.3(28)B.OPT6.BSP.GB6 (PCPS Conc. SIP Panels)
(BSP April 5, 2010)

Use in projects with precast prestressed concrete stay-in-place panels. Include with **6-02.2.OPT61.BSP.GB6, 6-02.3(28)A.OPT6.BSP.GB6, 6-02.3(28)E.OPT6.BSP.GB6, 6-02.3(28)F.OPT1.BSP.GB6, 6-02.3(28)G.OPT6.BSP.GB6 and 6-02.3(28)I.OPT6.BSP.GB6.**

6-02.3(28)E.GR6 Finishing

6-02.3(28)E.INST1.GR6 (Section 6-02.3(28)E is supplemented with the following)
Must use once preceding any of the following:

6-02.3(28)E.OPT1.GR6 (Precast Reinforced Concrete Three Sided Structures)
(January 7, 2002)
Use in projects requiring precast reinforced concrete three sided structures of span lengths of 26 feet or less. Must include with **6-02.3(28).OPT1.GR6, 6-02.3(28)A.OPT1.GR6, 6-02.3(28)B.OPT1.GR6, 6-02.3(28)G.OPT1.GR6, 6-02.3(28)H.OPT1.GR6, 6-02.3(28)I.OPT1.GR6,** and **6-02.5.OPT25.GR6**.

6-02.3(28)E.OPT6.BSP.GB6 (PCPS Conc. SIP Panels)
(BSP April 5, 2010)
Use in projects with precast prestressed concrete stay-in-place panels. Include with **6-02.2.OPT61.BSP.GB6, 6-02.3(28)A.OPT6.BSP.GB6, 6-02.3(28)B.OPT6.BSP.GB6, 6-02.3(28)F.OPT1.BSP.GB6, 6-02.3(28)G.OPT6.BSP.GB6 and 6-02.3(28)I.OPT6.BSP.GB6.**

6-02.3(28)F.GR6 Tolerances

6-02.3(28)F.INST1.GR6 (Section 6-02.3(28)F is supplemented with the following)
Must use once preceding any of the following:

6-02.3(28)F.OPT1.BSP.GB6 (PCPS Conc. SIP Panels)
(BSP April 5, 2010)
Use in projects with precast prestressed concrete stay-in-place panels. Include with **6-02.2.OPT61.BSP.GB6, 6-02.3(28)A.OPT6.BSP.GB6, 6-02.3(28)B.OPT6.BSP.GB6, 6-02.3(28)E.OPT6.BSP.GB6, 6-02.3(28)G.OPT6.BSP.GB6 and 6-02.3(28)I.OPT6.BSP.GB6.**

6-02.3(28)G.GR6 Handling and Storage

6-02.3(28)G.INST1.GR6 (Section 6-02.3(28)G is supplemented with the following)
Must use once preceding any of the following:

6-02.3(28)G.OPT1.GR6 (Precast Reinforced Concrete Three Sided Structures)
(April 30, 2001)
Use in projects requiring precast reinforced concrete three sided structures of span lengths of 26 feet or less. Must include with **6-02.3(28).OPT1.GR6, 6-02.3(28)A.OPT1.GR6, 6-02.3(28)B.OPT1.GR6, 6-02.3(28)E.OPT1.GR6, 6-02.3(28)H.OPT1.GR6, 6-02.3(28)I.OPT1.GR6,** and **6-02.5.OPT25.GR6**.

6-02.3(28)G.OPT6.BSP.GB6 (PCPS Conc. SIP Panels)
(BSP April 5, 2010)
Use in projects with precast prestressed concrete stay-in-place panels. Include with **6-02.2.OPT61.BSP.GB6, 6-02.3(28)A.OPT6.BSP.GB6, 6-02.3(28)B.OPT6.BSP.GB6, 6-02.3(28)E.OPT6.BSP.GB6, 6-02.3(28)F.OPT1.BSP.GB6 and 6-02.3(28)I.OPT6.BSP.GB6.**

6-02.3(28)H.GR6 Shipping

6-02.3(28)H.INST1.GR6 (Section 6-02.3(28)H is supplemented with the following)
Must use once preceding any of the following:

6-02.3(28)H.OPT1.GR6 (Precast Reinforced Concrete Three Sided Structures)
(April 30, 2001)
Use in projects requiring precast reinforced concrete three sided structures of span lengths of 26 feet or less. Must include with **6-02.3(28).OPT1.GR6**, **6-02.3(28)A.OPT1.GR6, 6-02.3(28)B.OPT1.GR6, 6-02.3(28)E.OPT1.GR6, 6-02.3(28)G.OPT1.GR6, 6-02.3(28)I.OPT1.GR6**, and **6-02.5.OPT25.GR6**.

6-02.3(28)I.GR6 Erection

6-02.3(28)I.INST1.GR6 (Section 6-02.3(28)I is supplemented with the following)
Must use once preceding any of the following:

6-02.3(28)I.OPT1.GR6 (Precast Reinforced Concrete Three Sided Structures)
(August 3, 2009)
Use in projects requiring precast reinforced concrete three sided structures of span lengths of 26 feet or less. Must include with **6-02.3(28).OPT1.GR6, 6-02.3(28)A.OPT1.GR6, 6-02.3(28)B.OPT1.GR6, 6-02.3(28)E.OPT1.GR6, 6-02.3(28)G.OPT1.GR6, 6-02.3(28)H.OPT1.GR6**, **and 6-02.5.OPT25.GR6.**

6-02.3(28)I.OPT6.BSP.GB6 (PCPS Conc. SIP Panels)
(BSP April 5, 2010)
Use in projects with precast prestressed concrete stay-in-place panels. Include with **6-02.2.OPT61.BSP.GB6, 6-02.3(28)A.OPT6.BSP.GB6, 6-02.3(28)B.OPT6.BSP.GB6, 6-02.3(28)E.OPT6.BSP.GB6, 6-02.3(28)F.OPT1.BSP.GB6 and 6-02.3(28)G.OPT6.BSP.GB6.**

6-02.4.GR6 Measurement

6-02.4.INST1.GR6 (Section 6-02.4 is supplemented with the following)
Must use once preceding any of the following:

6-02.4.OPT1.FB6 (Summary of Quantities for Superstructure and Bridge Deck)
(August 2, 2010)
Use in bridge construction projects with lump sum items for superstructure or bridge deck. The first and third fill-in specify the appropriate bid item name ("Superstructure - _____" or "Bridge Deck - _____"). The second fill-in itemizes the approximate quantities included. Include with ***6-02.5.OPT9.FB6*** for superstructure, and with ***6-02.5.OPT26.FB6*** for bridge deck.
(3 fill-ins)

6-02.4.OPT3.FB6 (Modular Expansion Joint System)
(August 2, 2010)
Include in projects requiring a modular expansion joint system. The fill-in in is to itemize the quantities of work and materials included in the lump sum item. Coordination with the Bridge and Structures Office Bearing and Expansion Joint Specialist is required. Include with ***6-03.3(30).OPT1.FB6***. **Must use with 6-02.2.OPT22.GB6, 6-02.3(13).OPT3.FB6, and 6-02.5.OPT28.GB6.**
(1 fill-in)

6-02.4.OPT8.~~BSP.~~FB6 (Expansion Joint Modification)
(~~BSP June 26, 2000~~April 6, 2015)

Use in projects with lump sum item for expansion joint modification. The fill-in specifies the approximate quantities included. Include with **6-02.5.OPT33.~~BSP.~~GB6** and all applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).
(1 fill-in)

6-02.4.OPT13.FB6 (Bridge Bearing Assembly)
(June 26, 2000)
Use in projects with bridge bearing assemblies. The fill-in specifies the type of bridge bearing assembly. Include with ***6-02.5.OPT38.GB6***. Include with ***6-02.2.OPT33.GB6***, ***6-02.3(19)B.OPT1.GB6,*** and ***6-03.3(30).OPT1.FB6*** for fabric pad bearings.
(1 fill-in)

6-02.4.OPT18.~~BSP.~~GB6 (Transverse Stop Bearing)
(~~BSP September 27, 2004~~April 6, 2015)
Use in projects with fabric pad transverse stop bearing assemblies. Include with **6-02.2.OPT33.GB6, 6-02.3(19)B.OPT1.GB6, 6-02.3(19)B.OPT6.~~BSP.~~GB6, 6-02.5.OPT43.~~BSP.~~GB6, and 6-03.3(30).OPT1.FB6.**

6-02.4.OPT19.BSP.GB6 (High-Load Elastomeric Bearing Pad)
(BSP June 26, 2000)
Use in projects with high-load elastomeric bearing pad assemblies. Include with **6-02.2.OPT38.BSP.GB6, 6-02.3(19)A.OPT1.BSP.GB6, and 6-02.5.OPT44.BSP.GB6.**

6-02.4.OPT24.GB6 (Epoxy Crack Sealing)
(August 6, 2012)
Use in projects which require sealing cracks in existing concrete with injected epoxy resin. Include with ***6-02.2.OPT4.GB6, 6-02.3.OPT1.GB6,*** and ***6-02.5.OPT49.GB6***.

6-02.4.OPT25.GB6 (Bridge Grate Inlet)
(June 26, 2000)
Use in projects with bridge grate inlets. Include with ***6-02.2.OPT47.GB6*** and ***6-02.5.OPT50.GB6***.

6-02.4.OPT26.GB6 (Modifying Bridge Drain)
(June 26, 2000)
Use in projects where modifying bridge drains is a stand-alone bid item. Include with ***6-02.2.OPT48.GB6, 6-02.3(10)D.OPT3.GB6,*** and ***6-02.5.OPT51.GB6*** with modified concrete overlay projects. Include the above with ***6-02.3(10)D.OPT4.GB6*** with membrane waterproofing and ACP overlay projects.

6-02.4.OPT27.GB6 (Plugging Existing Bridge Drain)
(June 26, 2000)

Use in projects where plugging existing bridge drains is a stand-alone bid item. Include with ***6-02.3(10)D.OPT5.GB6*** and ***6-02.5.OPT52.GB6***.

6-02.4.OPT32.~~BSP.~~GB6 (Core Drilled Bridge Deck Drain)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where core drilled bridge deck drain is a stand-alone bid item. Include with 6-**02.2.OPT58.~~BSP.~~GB6, 6-02.3(10)D.OPT12.~~BSP.~~GB6, and 6-02.5.OPT58.~~BSP.~~GB6.**

6-02.4.OPT37.GB6 (Bridge Deck Repair)
(June 26, 2000)
Use in projects where bridge deck repair is required and when the volume of work can be determined from the deck survey data (except not required for bridge deck overlay projects with modified concrete). Include with ***6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6,*** and ***6-02.5.OPT64.GB6***.

6-02.4.OPT42.~~BSP.~~GB6 (Bridge Deck Repair)
(~~BSP January 12, 2009~~April 6, 2015)
Use in projects where bridge deck repair is required and when the work is to be measured by the square foot area (except not required for bridge deck overlay projects with modified concrete). Include with ***6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6*** *and* ***6-02.5.OPT70.~~BSP.~~GB6***.

6-02.4.OPT43.~~BSP.~~GB6 (Longitudinal Seismic Restrainer)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where longitudinal seismic restrainer is a stand-alone bid item. Include with **6-02.2.OPT60(B).~~BSP.~~GB6, 6-02.2.OPT60(C).~~BSP.~~GB6, 6-02.2.OPT60(D).~~BSP.~~GB6, 6-02.2.OPT60(E).~~BSP.~~GB6, 6-02.3.OPT8(L).~~BSP.~~GB6, 6-02.3(18).OPT1.GR6, 6-02.5.OPT71.~~BSP.~~GB6** and all other applicable seismic retrofit ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3.

6-02.4.OPT44.~~BSP.~~FB6 (Seismic Retrofit)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with a lump sum item for seismic retrofit. The fill-in specifies the approximate quantities included. Include with ***6-02.5.OPT72.~~BSP.~~GB6*** *and all other applicable seismic retrofit ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3*.
(1 fill-in)

6-02.4.OPT45.~~BSP.~~FB6 (Column Jacketing)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with a lump sum item for column jacketing. The fill-in specifies the approximate quantities included. Include with ***6-02.2.OPT60(F).~~BSP.~~GB6, 6-***

02.3.OPT8(C).~~BSP.~~GB6, 6-02.3.OPT8(D).~~BSP.~~GB6, 6-02.3.OPT8(E).~~BSP.~~GB6, 6-02.3.OPT8(M).~~BSP.~~GB6, 6-02.5.OPT73.~~BSP.~~GB6, and ***6-03.3(30).OPT1.FB6***. Include with ***6-02.3.OPT8(F).~~BSP.~~FB6*** when the pre-fabrication field measuring requirements for specific existing bridge columns are waived.
(1 fill-in)

6-02.4.OPT47.~~BSP.~~GB6 (Permeon Treatment)
(~~BSP April 7, 2008~~April 6, 2015)
Use in projects where aesthetic surface aging of specific concrete surfaces is required. Include with **6-02.2.OPT55.~~BSP.~~GB6, 6-02.3(14).OPT25.~~BSP.~~GB6, and 6-02.5.OPT75.~~BSP.~~GB6.**

6-02.5.GR6 Payment

6-02.5.INST1.GR6 (The first bid item under Section 6-02.5 is supplemented with the following)
Must use once preceding any of the following:

6-02.5.OPT1.GB6 (Coating Surfaces with Epoxy Mortar)
(June 26, 2000)
Use in projects requiring coating of concrete surfaces with epoxy mortar. Include with ***6-02.2.OPT3.GB6*** and ***6-02.3(10)D.OPT2.GB6***.

6-02.5.OPT3.GR6 (Payment)
(April 3, 2006)
Must include with **6-02.3.OPT3.GR6, 5-01.3(1)A.OPT1.GR5, 5-01.5.OPT1.GR5, 5-05.3(1).OPT2.GR5, 5-05.5.OPT1.GR5, 8-01.3(1)A.OPT1.GR8, and 8-01.5.OPT1.GR8.**

6-02.5.INST2.GR6 (The third bid item under Section 6-02.5 is supplemented with the following)
Must use once preceding any of the following:

6-02.5.OPT9.FB6 (Superstructure)
(June 26, 2000)
Use in bridge projects with lump sum items for superstructure when payment for certain features is to be included in the superstructure item. The fill-in specifies work items included in the bid item. Include with ***6-02.4.OPT1.FB6***.
(1 fill-in)

6-02.5.INST3.GR6 (The fifth and sixth bid items under Section 6-02.5 are supplemented with the following)
Must use once preceding any of the following:

6-02.5.OPT20.~~BSP.~~GB6 (Epoxy-coated St. Reinf. Bar for Bridge)
(~~BSP June 26, 2000~~April 6, 2015)

Use in projects with small amounts of epoxy-coated steel reinforcing bar in bridge substructure which is included in the quantity for “St. Reinf. Bar for Bridge” in lieu of a separate stand-alone bid item.

6-02.5.INST4.GR6 (Section 6-02.5 is supplemented with the following)
Must use once preceding any of the following:

6-02.5.OPT25.GR6 (Precast Reinforced Concrete Three Sided Structures)
(April 28, 1997)
Use in projects requiring precast reinforced concrete three sided structures of span lengths of 26 feet or less. Must include with **6-02.3(28).OPT1.GR6, 6-02.3(28)A.OPT1.GR6, 6-02.3(28)B.OPT1.GR6, 6-02.3(28)E.OPT1.GR6, 6-02.3(28)G.OPT1.GR6, 6-02.3(28)H.OPT1.GR6**, and **6-02.3(28)I.OPT1.GR6**

6-02.5.OPT26.FB6 (Bridge Deck)
(August 2, 2010)
Use in steel bridge construction projects with lump sum items for bridge deck. The fill-in specifies work items included in the bid item. Include with ***6-02.4.OPT1.FB6***.
(1 fill-in)

6-02.5.OPT28.GB6 (Modular Expansion Joint System)
(August 2, 2010)
Include in projects requiring a modular expansion joint system. Coordination with the Bridge and Structures Office Bearing and Expansion Joint Specialist is required. Include with ***6-03.3(30).OPT1.FB6*. Must use with 6-02.2.OPT22.GB6, 6-02.3(13).OPT3.FB6, and 6-02.4.OPT3.FB6.**

6-02.5.OPT33.~~BSP.~~GB6 (Expansion Joint Modification)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where expansion joint modification is a lump sum item. Include with **6-02.4.OPT8.~~BSP.~~FB6** and all applicable expansion joint modification ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3(13).

6-02.5.OPT38.GB6 (Bridge Bearing Assembly)
(June 26, 2000)
Use in projects with bridge bearing assemblies. Include with ***6-02.4.OPT13.FB6***. Include with ***6-02.2.OPT33.GB6, 6-02.3(19)B.OPT1.GB6,*** and ***6-03.3(30).OPT1.FB6*** for fabric pad bearings.

6-02.5.OPT43.~~BSP.~~GB6 (Transverse Stop Bearing)
(~~BSP September 27, 2004~~April 6, 2015)
Use in projects with fabric pad transverse stop bearing assemblies. Include with **6-02.2.OPT33.GB6, 6-**

02.3(19)B.OPT1.GB6, 6-02.3(19)B.OPT6.~~BSP.~~GB6, 6-02.4.OPT18.~~BSP.~~GB6, and 6-03.3(30).OPT1.FB6.

6-02.5.OPT44.BSP.GB6 (High-Load Elastomeric Bearing Pad)
(BSP June 26, 2000)
Use in projects with high-load elastomeric bearing pad assemblies. Include with **6-02.2.OPT38.BSP.GB6, 6-02.3(19)A.OPT1.BSP.GB6, and 6-02.4.OPT19.BSP.GB6.**

6-02.5.OPT49.GB6 (Epoxy Crack Sealing)
(August 1, 2011)
Use in projects which require sealing cracks in existing concrete with injected epoxy resin. Include with ***6-02.2.OPT4.GB6, 6-02.3.OPT1.GB6,*** and ***6-02.4.OPT24.GB6***.

6-02.5.OPT50.GB6 (Bridge Grate Inlet)
(June 26, 2000)
Use in projects with bridge grate inlets. Include with ***6-02.2.OPT47.GB6*** and ***6-02.4.OPT25.GB6***.

6-02.5.OPT51.GB6 (Modify Bridge Drain)
(June 26, 2000)
Use in projects where modifying bridge drains is a stand-alone bid item. Include with ***6-02.2.OPT48.GB6, 6-02.3(10)D.OPT3.GB6,*** and ***6-02.4.OPT26.GB6*** with modified concrete overlay projects. Include the above with ***6-02.3(10)D.OPT4.GB6*** with membrane waterproofing and ACP overlay projects.

6-02.5.OPT52.GB6 (Plugging Existing Bridge Drain)
(June 26, 2000)
Use in projects where plugging existing bridge drains is a stand-alone bid item. Include with ***6-02.3(10)D.OPT5.GB6*** and ***6-02.4.OPT27.GB6***.

6-02.5.OPT53.FB6 (Modifying or Plugging Existing Bridge Drain)
(June 26, 2000)
Use in projects where payment for modifying or plugging existing bridge drains is included under either "Membrane Waterproofing (Deck Seal)" or "Finishing and Curing Modified Conc. Overlay". The first fill-in specifies whether the work is modifying or plugging existing bridge drains. The second fill-in specifies appropriate pay item for the work. Include with ***6-02.2.OPT48.GB6,*** and ***6-02.3(10)D.OPT3.GB6*** for modifying bridge drains with modified concrete overlay projects. Include the above with ***6-02.3(10)D.OPT4.GB6*** for modifying bridge drains with membrane waterproofing and ACP overlay projects. Include with ***6-02.3(10)D.OPT5.GB6*** for plugging existing bridge drains.
(2 fill-ins)

6-02.5.OPT58.~~BSP.~~GB6 (Core Drilled Bridge Deck Drain)

(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where core drilled bridge deck drain is a stand-alone bid item. Include with **6-02.2.OPT58.~~BSP.~~GB6, 6-02.3(10)D.OPT12.~~BSP.~~GB6, and 6-02.4.OPT32.~~BSP.~~GB6.**

6-02.5.OPT59.~~BSP.~~FB6 (Core Drilled Bridge Deck Drain)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where core drilled bridge deck drain is included in a separate bid item. The fill-in specifies the bid item including this work. Include with ***6-02.2.OPT58.~~BSP.~~GB6*** *and* ***6-02.3(10)D.OPT12.~~BSP.~~GB6***.
(1 fill-in)

6-02.5.OPT64.GB6 (Bridge Deck Repair)
(June 26, 2000)
Use in projects where bridge deck repair is required and when the volume of work can be determined from deck survey data (except not required for bridge deck overlay projects with modified concrete). Include with ***6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6,*** and ***6-02.4.OPT37.GB6***.

6-02.5.OPT65.GB6 (Bridge Deck Repair)
(June 26, 2000)
Use in projects where bridge deck repair is required and when the volume of work cannot be determined because of existing overlay (except not required for bridge deck overlay projects with modified concrete). Include with ***6-02.2.OPT49.GB6*** and ***6-02.3(10)D.OPT6.GB6***.

6-02.5.OPT70.~~BSP.~~GB6 (Bridge Deck Repair)
(~~BSP January 7, 2013~~April 6, 2015)
Use in projects where bridge deck repair is required and when the work is to be measured by the square foot area (except not required for bridge deck overlay projects with modified concrete). Include with ***6-02.2.OPT49.GB6, 6-02.3(10)D.OPT6.GB6*** *and* ***6-02.4.OPT42.~~bsp.~~gb6***.

6-02.5.OPT71.~~BSP.~~GB6 (Longitudinal Seismic Restrainer)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects where longitudinal seismic restrainer is a stand-alone bid item. Include with **6-02.2.OPT60(B).~~BSP.~~GB6, 6-02.2.OPT60(C).~~BSP.~~GB6, 6-02.2.OPT60(D).~~BSP.~~GB6, 6-02.2.OPT60(E).~~BSP.~~GB6, 6-02.3.OPT8(L).~~BSP.~~GB6, 6-02.3(18).OPT1.GR6, 6-02.4.OPT43.~~BSP.~~GB6** and all applicable seismic retrofit ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3.

6-02.5.OPT72.~~BSP.~~GB6 (Seismic Retrofit)
(~~BSP June 26, 2000~~April 6, 2015)

Use in projects with seismic retrofit of bridges. Include with **6-02.4.OPT44.~~BSP.~~FB6** and all applicable seismic retrofit ~~Bridge Special Provisions~~GSPs supplementing Sections 6-02.2 and 6-02.3.

6-02.5.OPT73.~~BSP.~~GB6 (Column Jacketing)
(~~BSP June 26, 2000~~April 6, 2015)
Use in projects with column jacketing of bridges. Include with **6-02.2.OPT60(F).~~BSP.~~GB6, 6-02.3.OPT8(C).~~BSP.~~GB6, 6-02.3.OPT8(D).~~BSP.~~GB6, 6-02.3.OPT8(E).~~BSP.~~GB6, 6-02.3.OPT8(M).~~BSP.~~GB6, 6-02.4.OPT45.~~BSP.~~FB6, and 6-03.3(30).OPT1.FB6. Include with 6-02.3.OPT8(F).~~BSP.~~FB6** when the pre-fabrication field measuring requirements for specific existing bridge columns are waived.

6-02.5.OPT75.~~BSP.~~GB6 (Permeon Treatment)
(~~BSP August 4, 2008~~April 6, 2015)
Use in projects where aesthetic surface aging of specific concrete surfaces is required. Include with ***6-02.2.OPT55.~~BSP.~~GB6, 6-02.3(14).OPT25.~~BSP.~~GB6, and 02419A.GB6***.

6-02.5.OPT91.FB6 (Bridge and Structures Minor Items)
(June 26, 2000)
Use in projects with bridges and other structures when there are minor items that are incidental to a lump sum or a unit price bid item. The first fill-in specifies the minor items. The second fill-in specifies the appropriate pay item(s) for the minor items.
(2 fill-ins)

6-02.5.OPT92.FB6 (Bridge Supported Utilities)
(June 26, 2000)
Use in projects requiring installation of bridge supported utilities. The first fill-in specifies the type of utility. The second fill-in specifies the bridge(s). The third fill-in specifies the work performed by the Contractor (furnishing materials, installing materials, coordination with utility, etc.), excluding furnishing and installing inserts. The fourth fill-in specifies the pay item. Include with ***6-02.3.OPT2(B).GB6***, with appropriate bridge supported utility material GSP's, if all materials and work are supplied and performed by the Contractor. Include with ***6-02.3.OPT2(C).GB6*** and ***6-02.5.OPT93.GB6*** if a utility company is supplying and performing a portion of the utility materials and work. Include with ***6-02.2.OPT46(A).GB6, 6-02.3.OPT2(A).GB6, 6-02.4.OPT1.FB6,*** and either ***6-02.5.OPT9.FB6*** or ***6-02.5.OPT26.FB6*** when the supports include concrete inserts.
(4 fill-ins)

6-02.5.OPT93.GB6 (Bridge Supported Utilities)
(June 26, 2000)
Use in projects requiring installation of bridge supported utilities where a utility company is supplying and performing a portion of the utility materials and work. Include with ***6-02.3.OPT2(C).GB6*** and ***6-02.5.OPT92.FB6***, and appropriate bridge supported utility material GSP's. Include with ***6-02.2.OPT46(A).GB6, 6-02.3.OPT2(A).GB6, 6-02.4.OPT1.FB6,*** and either ***6-02.5.OPT9.FB6*** or ***6-02.5.OPT26.FB6*** when the supports include concrete inserts.

6-03.GR6 Steel Structures

6-03.2.GR6 Materials

6-03.2.INST1.GR6 (Section 6-03.2 is supplemented with the following)
Must use once preceding any of the following:

6-03.2.OPT2.BSP.GB6 (Pin Bearing)
(BSP January 7, 2013)
Use in projects with pin bearing assemblies. Include with **6-03.3.OPT2.BSP.GB6, 6-03.3(30).OPT1.FB6, 6-03.3(37).OPT1.~~BSP.~~GB6, 6-03.4.OPT6.~~BSP.~~GB6, and 6-03.5.OPT12.~~BSP.~~GB6.** Include with 6-**02.2.OPT56.BSP.GB6** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-03.3.GR6 Construction Requirements

6-03.3.INST1.GR6 (Section 6-03.3 is supplemented with the following)
Must use once preceding any of the following:

6-03.3.OPT2.BSP.GB6 (Pin Bearing)
(BSP June 4, 2012)
Use in projects with pin bearing assemblies. Include with **6-03.2.OPT2.BSP.GB6, 6-03.3(30).OPT1.FB6, 6-03.3(37).OPT1.~~BSP.~~GB6, 6-03.4.OPT6.~~BSP.~~GB6, and 6-03.5.OPT12.~~BSP.~~GB6. Include with 6-02.2.OPT56.BSP.GB6** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-03.3(7).GR6 Shop Plans

6-03.3(7)A.GR6 Erection Methods

6-03.3(7)A.INST1.GR6 (The list in the second paragraph of Section 6-03.3(7)A is supplemented with the following)
Must use once preceding any of the following:

6-03.3(7)A.OPT1.~~BSP.~~GB6 (Erection by Girder Launching)
(~~BSP July 12, 2000~~April 6, 2015)

Use in projects where girder launching may be used as an erection method.

6-03.3(7)A.OPT2.~~BSP.~~GB6 (Hand-held Drilling and Reaming)
(~~BSP July 12, 2000~~April 6, 2015)
Use in projects where drilling and reaming operations with hand-held devices is permissible~~, with the approval of the Bridge and Structures Office Steel Specialist~~. Include with ***6-03.3(27)B.OPT1.~~BSP.~~FB6***.
(1 fill-in)

6-03.3(25).GR6 Welding and Repair Welding

6-03.3(25).INST1.GR6 (Section 6-03.3(25) is supplemented with the following)
Must use once preceding any of the following:

6-03.3(25).OPT2.~~BSP.~~GB6 (Narrow Gap Improved-Electroslag Welding (NGI-ESW) Procedure)
(~~BSP May 17, 2004~~April 6, 2015)
Use in projects with steel plate girder bridges and box girder bridges primarily with Grades 50 and 50W steel~~ and four or more girders per span, with the concurrence of the Bridge and Structures Office Steel Specialist~~. Accompanying details are required in the Plans for NGI-ESW ~~consumable guide configurations, and~~ test joint configurations for WPS qualification and charpy v-notch test specimens.

6-03.3(27).GR6 High Strength Bolt Holes

6-03.3(27)B.GR6 Reamed and Drilled Holes

6-03.3(27)B.INST1.GR6 (The second sentence of the first paragraph of Section 6-03.3(27)B is revised to read)
Must use once preceding any of the following:

6-03.3(27)B.OPT1.~~BSP.~~FB6 (Hand-held Drilling and Reaming)
(~~BSP July 12, 2000~~April 6, 2015)
Use in projects where drilling and reaming operations with hand-held devices is permissible~~, with the approval of the Bridge and Structures Office Steel Specialist~~. The first fill-in specifies the members and items being drilled and reamed, and the second fill-in specifies the bridge(s) where the work is being done. Include with ***6-03.3(7)A.OPT2.~~BSP.~~GB6.***
(2 fill-ins)

6-03.3(28).GR6 Shop Assembly

6-03.3(28)A.GR6 Method of Shop Assembly

6-03.3(28)A.INST1.GR6 (Section 6-03.3(28)A is supplemented with the following)
Must use once preceding any of the following:

6-03.3(28)A.OPT1.GB6 (Progressive Transverse Shop Assembly)
(August 5, 2013)
Use in projects with new steel girder bridges that have curved or skewed geometry, with the concurrence of the Bridge and Structures Office Steel Specialist. Include with ***6-03.3(28)B.OPT1.GB6, 6-03.3(30).OPT1.FB6, 6-03.3(39).OPT1.GB6, 6-03.4.OPT1.FB6, and 6-03.5.OPT1.GB6.***

6-03.3(28)B.GR6 Check of Shop Assembly

6-03.3(28)B.INST1.GR6 (Section 6-03.3(28)B is supplemented with the following)
Must use once preceding any of the following:

6-03.3(28)B.OPT1.GB6 (Check of Shop Assembly)
(June 26, 2000)
Use in projects with new steel bridges. Include with **6-03.3(30).OPT1.FB6, 6-03.3(39).OPT1.GB6, 6-03.4.OPT1.FB6, and 6-03.5.OPT1.GB6**.

6-03.3(30).GR6 Painting

6-03.3(30).INST1.GR6 (Section 6-03.3(30) is supplemented with the following)
Must use once preceding any of the following:

6-03.3(30).OPT1.FB6 (Color of Finish Coat)
(August 3, 2009)
Use in projects with new steel bridges and steel members to cover paint color requirements by specifying the Federal Standard 595B Color Number, or the color name if no number. Include with ***6-03.3(28)B.OPT1.GB6, 6-03.3(39).OPT1.GB6, 6-03.4.OPT1.FB6, and 6-03.5.OPT1.GB6***.

Also include in projects with new minor steel items such as steel expansion joints (***6-02.3(13).OPT3.FB6, 6-02.4.OPT3.FB6, 6-02.5.OPT28.GB6, and 6-02.2.OPT22.GB6***) and bearings (***6-02.3(19)B.OPT1.GB6***).
(1 fill-in)

6-03.3(30).OPT6.~~BSP.~~FB6 (Painting Galvanized Seismic Retrofit Components)
(~~BSP August 3, 2009~~April 6, 2015)

Use in seismic retrofit projects where galvanized steel components are attached to painted members of existing steel bridges to cover paint color requirements. The first fill-in specifies the galvanized components to be painted. The second fill-in specifies the Federal Standard 595B Color Number, or the color name if no number.
(2 fill-ins)

6-03.3(37).GR6 Setting Steel Bridge Bearings

6-03.3(37).INST1.GR6 (Supplemental Instructions)
Must use once preceding any of the following:

6-03.3(37).OPT1.~~BSP.~~GB6 (Pin Bearing)
(~~BSP September 27, 2004~~April 6, 2015)
Use in projects with pin bearing assemblies. Include with **6-03.2.OPT2.BSP.GB6, 6-03.3.OPT2.BSP.GB6, 6-03.3(30).OPT1.FB6, 6-03.4.OPT6.~~BSP.~~GB6, and 6-03.5.OPT12.~~BSP.~~GB6. Include with 6-02.2.OPT56.BSP.GB6** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-03.3(38).GR6 Placing Superstructure

6-03.3(38).INST1.GR6 (Section 6-03.3(38) is supplemented with the following)
Must use once preceding any of the following:

6-03.3(38).OPT1.GB6 (Concrete Protection)
(June 26, 2000)
Use within projects with bridges having weathering steel superstructure members which remain unpainted at completion of construction, and which are above concrete surfaces which require protection from staining while the steel members develop their weathered protective surface. Include with ***6-03.5.OPT7.FB6***.

6-03.3(39).GR6 Swinging the Span

6-03.3(39).INST1.GR6 (Supplemental Instructions)
Must use once preceding any of the following:

6-03.3(39).OPT1.GB6 (Girder Camber Field Measurements)
(June 26, 2000)
Use in projects with new steel bridges. Include with **6-03.3(28)B.OPT1.GB6, 6-03.3(30).OPT1.FB6, 6-03.4.OPT1.FB6, and 6-03.5.OPT1.GB6.**

6-03.4.GR6 Measurement

6-03.4.INST1.GR6 (Section 6-03.4 is supplemented with the following)
Must use once preceding any of the following:

6-03.4.OPT1.FB6 (Structural Low Alloy Quantities)
(August 6, 2007)
Use in projects with new steel bridges. Include with **6-03.3(28)B.OPT1.GB6, 6-03.3(30).OPT1.FB6,** and **6-03.3(39).OPT1.GB6.** Include with **6-03.5.OPT1.GB6** when the steel girder includes a pipe railing.
(2 fill-ins)

6-03.4.OPT6.~~BSP.~~GB6 (Pin Bearing)
(~~BSP September 27, 2004~~April 6, 2015)
Use in projects with pin bearing assemblies. Include with **6-03.2.OPT2.BSP.GB6, 6-03.3.OPT2.BSP.GB6, 6-03.3(30).OPT1.FB6, 6-03.3(37).OPT1.~~BSP.~~GB6, and 6-03.5.OPT12.~~BSP.~~GB6. Include with 6-02.2.OPT56.BSP.GB6** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-03.5.GR6 Payment

6-03.5.INST1.GR6 (The second bid item under Section 6-03.5 is supplemented with the following)
Must use once preceding any of the following:

6-03.5.OPT1.GB6 (Payment for Steel Girder Railing)
(August 6, 2007)
Use in projects with new steel bridges when the steel girder includes a pipe railing. Include with **6-03.3(28)B.OPT1.GB6, 6-03.3(30).OPT1.FB6, 6-03.3(39).OPT1.GB6, and 6-03.4.OPT1.FB6.**

6-03.5.INST2.GR6 (Section 6-03.5 is supplemented with the following)
Must use once preceding any of the following:

6-03.5.OPT7.FB6 (Payment for Concrete Protection)
(June 26, 2000)
Use in projects with bridges having weathering steel members which remain unpainted at the completion of construction, and which are above concrete surfaces which require protection from staining while the steel members develop their weathered protective surface. Include with ***6-03.3(38).OPT1.GB6.***
(1 fill-in)

6-03.5.OPT12.~~BSP.~~GB6 (Pin Bearing)
(~~BSP September 27, 2004~~April 6, 2015)
Use in projects with pin bearing assemblies. Include with **6-03.2.OPT2.BSP.GB6, 6-03.3.OPT2.BSP.GB6, 6-03.3(30).OPT1.FB6, 6-03.3(37).OPT1.~~BSP.~~GB6, and 6-03.4.OPT6.~~BSP.~~GB6. Include with 6-02.2.OPT56.BSP.GB6** when resin filler is used to fill slotted base plate holes for bearing anchor bolts.

6-04.GR6 Timber Structures

6-04.3.GR6 Construction Requirements

6-04.3(1).GR6 Storing and Handling Material

6-04.3(1).INST1.GR6 (Section 6-04.3(1) is supplemented with the following)
Must use once preceding any of the following:

6-04.3(1).OPT1.GB6 (Fire Prevention)
(March 6, 2000)
Use in all timber bridge construction and timber deck replacement projects. Include with ***6-04.5.OPT1.FB6***.

6-04.3(1).OPT2.GB6 (Top Flange Treatment)
(August 1, 2011)
Include in timber redecking projects. Include with ***6-04.3(1).OPT1.GB6***, ***6-04.5.OPT1.FB6***, ***and 6-04.5.OPT2.FB6***.

6-04.5.GR6 Payment

6-04.5.INST1.GR6 (Section 6-04.5 is supplemented with the following)
Must use once preceding any of the following:

6-04.5.OPT1.FB6 (Fire Protection)
(March 6, 2000)
Use in all timber bridge construction and timber deck replacement projects. Include with ***6-04.3(1).OPT1.GB6***.
(1 fill-in)

6-04.5.OPT2.FB6 (Top Flange Treatment)
(March 6, 2000)
Use in timber deck replacement projects. Include with ***6-04.3(1).OPT1.GB6***, ***6-04.3(1).OPT2.GB6***, ***and 6-04.5.OPT1.FB6***.
(1 fill-in)

6-05.GR6 Piling

6-05.2.GR6 Materials

6-05.2.INST1.GR6 (Section 6-05.2 is supplemented with the following)
Must use once preceding any of the following:

6-05.2.OPT1.~~BSP.~~GB6 Micropiles
(~~BSP August 2, 2010~~April 6, 2015)
Use in projects where micropiles are required. Include with **6-05.3.OPT1.~~BSP.~~FB6, 6-05.4.OPT6.~~BSP.~~GB6, and 6-05.5.OPT6.~~BSP.~~GB6.**

6-05.3.GR6 Construction Requirements

6-05.3.INST1.GR6 (Section 6-05.3 is supplemented with the following)

Must use once preceding any of the following:

6-05.3.OPT1.~~BSP.~~FB6 Micropiles
(~~BSP August 6, 2012~~April 6, 2015)
Use in projects where micropiles are required. The first fill-in specifies the top elevation of the micropile bond zone. The second fill-in specified the permanent casting minimum tip elevations. The third fill-in specifies the location(s) of micropile verification tests. Include with ***6-05.2.OPT1.~~BSP.~~FB6, 6-05.4.OPT6.~~BSP.~~GB6, and 6-05.5.OPT6.~~BSP.~~GB6***.
(Three fill-ins)

6-05.3(5).GR6 Manufacture of Steel Piles

6-05.3(5).INST1.GR6 (Section 6-05.3(5) is supplemented with the following)
Must use once preceding any of the following:

6-05.3(5).OPT1.~~BSP.~~GB6 (Furnishing St. Piling)
(~~BSP March 3, 2014~~April 6, 2015)
Use in projects with steel piling where the piling consists of hollow steel pipe that may or may not be filled with concrete and steel reinforcing bars for a portion of its length. Include with ***6-05.3(6).OPT1.~~BSP.~~GB6***

6-05.3(6).GR6 Splicing Steel Casings and Steel Piles

6-05.3(6).INST1.GR6 (Section 6-05.3(6) is supplemented with the following)
Must use once preceding any of the following:

6-05.3(6).OPT1.~~BSP.~~GB6 (Furnishing St. Piling)
(~~BSP April 5, 2010~~April 6, 2015)
Use in projects with steel piling where the piling consists of hollow steel pipe that may or may not be filled with concrete and steel reinforcing bars for a portion of its length. Include with ***6-05.3(5).OPT1.~~BSP.~~GB6***.

6-05.3(10).GR6 Test Piles

6-05.3(10).INST1.GR6 (Section 6-05.3(10) is supplemented with the following)
Must use once preceding any of the following:

6-05.3(10).OPT1.FB6 (Furnishing and Driving Test Piles)
(March 6, 2000)
Include in projects having test piles, as recommended by the Materials Laboratory Geotechnical Branch. The first, third, and fourth fill-ins specify the pile type (cast-

in-place conc., steel, timber, etc.). The second fill-in specifies the general location (bridge and pier). (4 fill-ins)

6-05.3(11).GR6 Driving Piles

6-05.3(11)D.GR6 Achieving Minimum Tip Elevation and Bearing

6-05.3(11)D.INST1.GR6 (Section 6-05.3(11)D is supplemented with the following)
Must use once preceding any of the following:

6-05.3(11)D.OPT1.FB6 (Minimum Pile Tip Elevation)
(March 6, 2000)
Include in projects which have a minimum pile tip elevation specified, as recommended by the Materials Laboratory Geotechnical Branch. The first fill-in specifies the pile type (cast-in-place conc., steel, timber, etc.). The second fill-in specifies the general location (bridge and pier).
(2 fill-ins)

6-05.3(11)D.OPT2.GB6 (Vibration From Pile Driving)
(March 6, 2000)
Include in projects where minimizing vibration from driving piles is critical, as recommended by the Materials Laboratory Geotechnical Branch.

6-05.3(11)D.OPT3.FB6 (Preboring Piles)
(March 6, 2000)
Include in projects where preboring of piles is required to prevent downdrag from settlement, as recommended by the Materials Laboratory Geotechnical Branch. The first fill-in specifies the pile type (cast-in-place conc., steel, timber, etc.). The second fill-in specifies the general location (bridge and pier). The third fill-in specifies the bottom elevation of the preboring. Include with ***6-05.4.OPT1.FB6 and 6-05.5.OPT1.FB6.***
(3 fill-ins)

6-05.3(11)D.OPT4.FB6 (Preboring Piles)
(March 6, 2000)
Include in projects where preboring of piles is required, as recommended by the Materials Laboratory Geotechnical Branch. The first fill-in specifies the pile type (cast-in-place conc., steel, timber, etc.). The second fill-in specifies the general location (bridge and pier). The third fill-in specifies the bottom elevation of the preboring. Include with ***6-05.4.OPT1.FB6 and 6-05.5.OPT1.FB6.***

(3 fill-ins)

6-05.3(11)D.OPT9.~~BSP.~~FB6 (Overdriving)
(~~BSP August 22, 2005~~April 6, 2015)
Include in projects where overdriving of piles is anticipated in order to reach the minimum tip elevation, as recommended by the Materials Laboratory Geotechnical Branch. The first fill-in specifies the general location(s) (bridge and pier) of the anticipated pile overdriving. The second fill-in specifies the approximate magnitude of expected overdriving.
(2 fill-ins)

6-05.4.GR6 Measurement

6-05.4.INST1.GR6 (Section 6-05.4 is supplemented with the following)
Must use once preceding any of the following:

6-05.4.OPT1.FB6 (Preboring Piles)
(March 6, 2000)
Use in projects where preboring of piles is required, as recommended by the Materials Laboratory Geotechnical Branch. The fill-in specifies the pile type (cast-in-place conc., steel, timber, etc.). Include with ***6-05.3(11)D.OPT3.FB6 or 6-05.3(11)D.OPT4.FB6, and 6-05.5.OPT1.FB6***.
(1 fill-in)

6-05.4.OPT6.~~BSP.~~GB6 Micropiles
(~~BSP August 2, 2010~~April 6, 2015)
Use in projects where micropiles are required. Include with **6-05.2.OPT1.~~BSP.~~FB6, 6-05.3.OPT1.~~BSP.~~FB6, and 6-05.5.OPT6.~~BSP.~~GB6.**

6-05.5.GR6 Payment

6-05.5.INST1.GR6 (Section 6-05.5 is supplemented with the following)
Must use once preceding any of the following:

6-05.5.OPT1.FB6 (Preboring Piles)
(March 6, 2000)
Use in projects where preboring of piles is required, as recommended by the Materials Laboratory Geotechnical Branch. Both fill-ins specify the pile type (cast-in-place conc., steel, timber, etc.). Include with ***6-05.3(11)D.OPT3.FB6 or 6-05.3(11)D.OPT4.FB6, and 6-05.4.OPT1.FB6.***
(2 fill-ins)

6-05.5.OPT6.~~BSP.~~GB6 Micropiles
(~~BSP August 2, 2010~~April 6, 2015)

Use in projects where micropiles are required. Include with **6-05.2.OPT1.~~BSP.~~FB6, 6-05.3.OPT1.~~BSP.~~FB6, and 6-05.4.OPT6.~~BSP.~~GB6.**

6-06.GR6 Bridge Railings

6-06.2.GR6 Materials

6-06.2.INST1.GR6 (Section 6-06.2 is supplemented with the following)
Must use once preceding any of the following:

6-06.2.OPT1.GB6 (Bridge Railing Type Chain Link Fence)
(January 5, 2004)
Use in projects with Bridge Railing Type Chain Link Fence. Include with ***6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, and 6-06.3(2).OPT1.GB6***. Also include ***6-06.5.OPT1.FB6*** if the work is included as part of a separate bid item such as "Superstructure - ___", or "Roadway Deck - ___".

6-06.2.OPT2.GB6 (Bridge Railing Type Chain Link Fence)
(March 6, 2000)
Use in projects with Bridge Railing Type Chain Link Fence where the posts are set into blockouts with epoxy resin. Include with ***6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, 6-06.2.OPT1.GB6 and 6-06.3(2).OPT2.GB6***. Also include ***6-06.5.OPT1.FB6*** if the work is included as part of a separate bid item such as "Superstructure - ___", or "Roadway Deck - ___".

6-06.2.OPT7.~~BSP.~~GB6 (Tamper Proof Nuts for steel Bridge Railing Type BP)
(~~BSP December 29, 2008~~April 6, 2015)
Use in projects where steel Bridge Railing Type BP is used.

6-06.2.OPT8.~~BSP.~~FB6 (Bridge Railing Type Snow Fence and Bridge Railing Type Wire Fabric Fence)
(~~March 3, 2014~~April 6, 2015)
Use in projects with Bridge Railing Type Snow Fence or Bridge Railing Type Wire Fabric Fence. The fill-in specifies the Federal Standard 595 Color Number, or the color name if no number.
Include with **6-06.3(2).OPT7.~~BSP.~~GB6.**
(1 fill-in)

6-06.3.GR6 Construction Requirements

6-06.3(2).GR6 Metal Railings

6-06.3(2).INST1.GR6 (Section 6-06.3(2) is supplemented with the following)
Must use once preceding any of the following:

6-06.3(2).OPT1.GB6 (Bridge Railing Type Chain Link Fence)
(March 6, 2000)
Use in projects with Bridge Railing Type Chain Link Fence where the posts are fastened into position with anchor bolts or resin bonded anchors. Include with ***6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, and 6-06.2.OPT1.GB6***. Also include ***6-06.5.OPT1.FB6*** if the work is included as part of a separate bid item such as "Superstructure - ___", or "Roadway Deck - ___".

6-06.3(2).OPT2.GB6 (Bridge Railing Type Chain Link Fence)
(March 6, 2000)
Use in projects with Bridge Railing Type Chain Link Fence where the posts are set into blockouts with epoxy resin. Include with ***6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, 6-06.2.OPT1.GB6 and 6-06.2.OPT2.GB6***. Also include ***6-06.5.OPT1.FB6*** if the work is included as part of a separate bid item such as "Superstructure - ___", or "Roadway Deck - ___".

6-06.3(2).OPT7.~~BSP.~~GB6 (Bridge Railing Type Snow Fence and Bridge Railing Type Wire Fabric Fence)
(~~BSP March 3, 2014~~April 6, 2015)
Use in projects with Bridge Railing Type Snow Fence or Bridge Railing Type Wire Fabric Fence. Include with **6-06.2.OPT8.~~BSP.~~FB6.**

6-06.5.GR6 Payment

6-06.5.INST1.GR6 (Section 6-06.5 is supplemented with the following)
Must use once preceding any of the following:

6-06.5.OPT1.FB6 (Bridge Railing)
(March 6, 2000)
Use in projects with bridge railing where the work is included as part of a separate bid item such as "Superstructure - ___", or "Roadway Deck - ___". The first fill-in specifies the bridge railing type. The second fill-in specifies the bid item name.
(2 fill-ins)

6-07.GR6 Painting

6-07.1.GR6 Description

6-07.1.INST1.GR6 (Section 6-07.1 is supplemented with the following)
Must use once preceding any of the following:

6-07.1.OPT1.FB6 (Scope of Work)
(August 3, 2009)
Include in projects with cleaning and painting of existing steel bridge(s). Use to define limits of cleaning and

painting by using the second fill-in to specify surfaces that are not to be painted (light fixtures, utilities, bridge attachments, etc.). Include with ***6-07.3(10)D.OPT1.FB6 and/or 6-07.3(10)E.OPT1.FB6*** as appropriate for the surface preparation requirements. Include with ***DESWORK2.FB1 and 6-07.3(10)I.OPT1.FB6***. Include with ***1-07.1.OPT2.FR1*** if the existing bridge(s) contain lead paint. Include with ***1-07.6.OPT4.GB1*** if the bridge(s) cross a navigable waterway.
(2 fill-ins)

6-07.1.OPT2.FB6 (Scope of Work)
(August 3, 2009)
Include in projects with cleaning and painting of existing timber bridge(s). Use to define limits of cleaning and painting by using the second fill-in to specify the surfaces to be painted (railing, rail posts, wheelguards, etc.). Include with ***1-07.1.OPT2.FR1*** if the existing bridge(s) contain lead paint. Project specific Special Provisions supplementing Section 6-07.3(13) may be required to specify specific primer and top coat paint requirements.
(2 fill-ins)

6-07.3.GR6 Construction Requirements

6-07.3(10).GR6 Painting Existing Steel Structures

6-07.3(10).INST1.GR6 (Section 6-07.3(10) is supplemented with the following)
Must use once preceding any of the following:

6-07.3(10).OPT1.FB6 (Utility Conduits)
(August 3, 2009)
Include only when utility conduits are attached to the existing bridge(s) being painted. Fill-in to read "shall or "shall not". Include with ***DESWORK2.FB1, 6-07.1.OPT1.FB6*** *and* ***6-07.3(10)I.OPT1.FB6***.
(1 fill-in)

6-07.3(10).OPT2.GB6 (Light Fixtures)
(August 3, 2009)
Include only when light fixtures are attached to existing bridge(s) being painted. Include with ***DESWORK2.FB1, 6-07.1.OPT1.FB6*** *and* ***6-07.3(10)I.OPT1.FB6***.

6-07.3(10).OPT3.GB6 (Railroad Facilities)
(August 3, 2009)
Include when paint could spill or drip on railroad right-of-way. Include with **DESWORK2.FB1, 6-07.1.OPT1.FB6, 1-07.18.OPT1.FR1, either 07183.GR1 or 1-07.18.OPT3.GR1, and 6-07.3(10)I.OPT1.FB6.**

6-07.3(10).OPT4.GB6 (Cleaning Grid Deck)
(August 3, 2009)
Use with ***DESWORK2.FB1, 6-07.1.OPT1.FB6, 6-07.3(10)I.OPT1.FB6, and 6-07.3(10)N.OPT1.GB6*** if the bridge has a grid roadway deck or steel grid catwalks which require cleaning and painting.

6-07.3(10)A.GR6 Containment

6-07.3(10)A.INST1.GR6 (Section 6-07.3(10)A is supplemented with the following)
Must use once preceding any of the following:

6-07.3(10)A.OPT1.GB6 (Protection of Existing Structure)
(August 3, 2009)
Use only when the bridge has mechanical equipment to protect such as a draw bridge. Include with ***DESWORK2.FB1, 6-07.1.OPT1.FB6 and 6-07.3(10)I.OPT1.FB6***.

6-07.3(10)D.GR6 Surface Preparation Prior to Overcoat Painting

6-07.3(10)D.INST1.GR6 (Section 6-07.3(10)D is supplemented with the following)
Must use once preceding any of the following:

6-07.3(10)D.OPT1.FB6 (Surfaces Requiring Overcoat Painting Surface Preparation)
(~~April 5, 2010~~April 6, 2015)
Use in bridge painting projects with bridges and bridge members requiring surface preparation for overcoat painting. Include with ***DESWORK2.FB1, 6-07.1.OPT1.FB6 and 6-07.3(10)I.OPT1.FB6***. Include with ***6-07.3(10)E.OPT1.FB6*** if the bridge(s) also have bridge members requiring full paint removal. Include with ***1-07.1.OPT2.FR1*** if the existing bridge(s) contain lead paint. Include with ***1-07.6.OPT4.GB1*** if the bridge(s) cross a navigable waterway. The first fill-in specifies the bridge(s) requiring overcoat painting surface preparation. The second fill-in specifies the bridge members requiring overcoat painting surface preparation.
(2 fill-ins)

6-07.3(10)E.GR6 Surface Preparation – Full Paint Removal

6-07.3(10)E.INST1.GR6 (Section 6-07.3(10)E is supplemented with the following)
Use once preceding any of the following:

6-07.3(10)E.OPT1.FB6 (Surfaces Requiring Full Paint Removal Surface Preparation)
(April 5, 2010)
Use in bridge painting projects with bridges and bridge members requiring surface preparation for full paint removal. Include with ***DESWORK2.FB1, 6-07.1.OPT1.FB6 and 6-07.3(10)I.OPT1.FB6***. Include with ***6-07.3(10)D.OPT1.FB6*** if the bridge(s) also have bridge members requiring overcoat painting. Include with ***1-07.1.OPT2.FR1*** if the existing bridge(s) contain lead paint. Include with ***1-07.6.OPT4.GB1*** if the bridge(s) cross a navigable waterway. The first fill-in specifies the bridge(s) requiring full paint removal surface preparation. The second fill-in specifies the bridge members requiring full paint removal surface preparation.
(2 fill-ins)

6-07.3(10)I.GR6 Paint Color

6-07.3(10)I.INST1.GR6 (Section 6-07.3(10)I is supplemented with the following)
Must use once preceding any of the following:

6-07.3(10)I.OPT1.FB6 (Color of Top Coat)
(August 3, 2009)
Use in projects with existing steel bridges and bridge members to cover paint color requirements by specifying the Federal Standard 595 Color Number, or the color name if no number. Use with ***DESWORK2.FB1,*** and ***6-07.1.OPT1.FB6***. Include with ***6-07.3(10)D.OPT1.FB6 and/or 6-07.3(10)E.OPT1.FB6*** as appropriate for the surface preparation requirements. Include with ***1-07.1.OPT2.FR1*** if the existing bridge(s) contain lead paint. Include with ***1-07.6.OPT4.GB1*** if the bridge(s) cross a navigable waterway.
(1 fill-in)

6-07.3(10)N.GR6 Field Coating Application Methods

6-07.3(10)N.INST1.GR6 (Section 6-07.3(10)N is supplemented with the following)
Must use once preceding any of the following:

6-07.3(10)N.OPT1.GB6 (Painting Grid Deck)
(August 3, 2009)
Use with ***DESWORK2.FB1, 6-07.1.OPT1.FB6, 6-07.3(10).OPT4.GB6 and 6-***

07.3(10)I.OPT1.FB6 if the bridge has a grid roadway deck or steel grid catwalks which require painting.

6-07.3(11).GR6 Painting or Powder Coating of Galvanized Surfaces

6-07.3(11).INST1.GR6 (Section 6-07.3(11) is supplemented with the following)
Must use once preceding any of the following:

6-07.3(11).OPT1.FB6 (Coating Color)
(August 3, 2009)
Use in projects requiring coating of galvanized surfaces with either paint or powder coating. The fill-in specifies the Federal Standard 595 color number, or the color name if no number.
(1 fill-in)

6-08.GR6 Waterproofing

6-08.1.GR6 Description

6-08.1.INST1.GR6 (Section 6-08.1 is supplemented with the following)
Must use once preceding any of the following:

6-08.1.OPT1.GB6 (Membrane Waterproofing (Deck Seal))
(January 3, 2011)
Use in all projects placing membrane waterproofing on bridge decks prior to HMA overlay. Include with **6-08.2.OPT1.GB6, 6-08.2(9-11.2).OPT1.GB6, 6-08.3(2).OPT1.GB6, 6-08.3(3).OPT1.GB6, 6-08.3(4).OPT1.GB6, and either 6-08.5.OPT2.FB6 or 6-08.4.OPT1.GB6, and 6-08.5.OPT1.GB6.**

6-08.2.GR6 Materials

6-08.2.INST1.GR6 (Section 6-08.2 is supplemented with the following)
Must use once preceding any of the following:

6-08.2.OPT1.GB6 (Primer for Membrane Waterproofing (Deck Seal))
(January 3, 2011)
Use in all projects placing membrane waterproofing on bridge decks prior to HMA overlay. Include with **6-08.1.OPT1.GB6, 6-08.2(9-11.2).OPT1.GB6, 6-08.3(2).OPT1.GB6, 6-08.3(3).OPT1.GB6, 6-08.3(4).OPT1.GB6, and either 6-08.5.OPT2.FB6, or 6-08.4.OPT1.GB6 and 6-08.5.OPT1.GB6.**

6-08.2(9-11.2).GR6 (Waterproofing Fabric)
(Section 9-11.2 is supplemented with the following)
Must use once preceding any of the following:

6-08.2(9-11.2).OPT1.GB6 (Membrane Waterproofing Membrane)

(January 2, 2012)
Use in all projects placing membrane waterproofing on bridge decks prior to HMA overlay. Include with **6-08.1.OPT1.GB6, 6-08.2.OPT1.GB6, 6-08.3(2).OPT1.GB6, 6-08.3(3).OPT1.GB6, 6-08.3(4).OPT1.GB6 and either 6-08.5.OPT2.FB6 or 6-08.4.OPT1.GB6, and 6-08.5.OPT1.GB6.**

6-08.3.GR6 Construction Requirements

6-08.3(2).GR6 Preparation of Surface

6-08.3(2).INST1.GR6 (Section 6-08.3(2) is supplemented with the following)
Must use once preceding any of the following:

6-08.3(2).OPT1.GB6 (Surface Preparation)
(January 3, 2011)
Use in all projects placing membrane waterproofing on bridge decks prior to HMA overlay. Include with **6-08.1.OPT1.GB6, 6-08.2.OPT1.GB6, 6-08.2(9-11.2).GR6, 6-08.3(3).OPT1.GB6, 6-08.3(4).OPT1.GB6 and either 6-08.5.OPT2.FB6 or 6-08.4.OPT1.GB6, and 6-08.5.OPT1.GB6.**

6-08.3(3).GR6 Application of Waterproofing

6-08.3(3).INST1.GR6 (Section 6-08.3(3) is supplemented with the following)
Must use once preceding any of the following:

6-08.3(3).OPT1.GB6 (Applying Membrane Waterproofing)
(January 3, 2011)
Use in all projects placing membrane waterproofing on bridge decks prior to HMA overlay. Include with **6-08.1.OPT1.GB6, 6-08.2.OPT1.GB6, 6-08.2(9-11.2).GR6, 6-08.3(2).OPT1.GB6, 6-08.3(4).OPT1.GB6 and either 6-08.5.OPT2.FB6 or 6-08.4.OPT1.GB6, and 6-08.5.OPT1.GB6.**

6-08.3(4).GR6 Protection Course

6-08.3(4).INST1.GR6 (Section 6-08.3(4) is supplemented with the following)
Must use once preceding any of the following:

6-08.3(4).OPT1.GB6 (Membrane Protection and Asphalt Overlay)
(January 3, 2011)
Use in all projects placing membrane waterproofing on bridge decks prior to HMA overlay. Include with **6-08.1.OPT1.GB6, 6-08.2.OPT1.GB6, 6-08.2(9-11.2).GR6, 6-08.3(2).OPT1.GB6, 6-08.3(3).OPT1.GB6 and either 6-08.5.OPT2.FB6 or 6-08.4.OPT1.GB6, and 6-08.5.OPT1.GB6.**

6-08.4.GR6 Measurement

6-08.4.INST1.GR6 (Section 6-08.4 is supplemented with the following)
Must use once preceding any of the following:

6-08.4.OPT1.GB6 (Membrane Waterproofing (Deck Seal))
(March 6, 2000)
Use in all projects placing membrane waterproofing on bridge decks prior to HMA overlay where the work is included as part of Standard Item 4455 "Membrane Waterproofing (Deck Seal)". Include with **6-08.1.OPT1.GB6, 6-08.2.OPT1.GB6, 6-08.2(9-11.2).GR6, 6-08.3(2).OPT1.GB6, 6-08.3(3).OPT1.GB6, 6-08.3(4).OPT1.GB6, and 6-08.5.OPT1.GB6.**

6-08.5.GR6 Payment

6-08.5.INST1.GR6 (Section 6-08.5 is supplemented with the following)
Must use once preceding any of the following:

6-08.5.OPT1.GB6 (Membrane Waterproofing (Deck Seal))
(August 2, 2004)
Use in all projects placing membrane waterproofing on bridge decks prior to HMA overlay where the work is included as part of Standard Item 4455 "Membrane Waterproofing (Deck Seal)". Include with **6-08.1.OPT1.GB6, 6-08.2.OPT1.GB6, 6-08.2(9-11.2).GR6, 6-08.3(2).OPT1.GB6, 6-08.3(3).OPT1.GB6, 6-08.3(4).OPT1.GB6, and 6-08.4.OPT1.GB6.**

6-08.5.OPT2.FB6 (Membrane Waterproofing (Deck Seal))
(January 3, 2011)
Use in all projects placing membrane waterproofing on bridge decks prior to HMA overlay where the work is included as part of a bid item other than Standard Item 4455 "Membrane Waterproofing (Deck Seal)". The fill-in identifies the name and the unit of measurement for the bid item being used to pay for this work. Include with **6-08.1.OPT1.GB6, 6-08.2.OPT1.GB6, 6-08(9-11.2).OPT1.GB6, 6-08.3(2).OPT1.GB6, 6-08.3(3).OPT1.GB6, and 6-08.3(4).OPT1.GB6.**
(1 fill-in)

6-09.GR6 Modified Concrete Overlays

6-09.2.GR6 Materials

6-09.2.INST1.GR6 (Section 6-09.2 is supplemented with the following)
Must use once preceding any of the following:

6-09.2.OPT7.BSP.GB6 (Special Materials For Rapid Set Latex Modified Concrete)
(BSP January 29, 2007)

Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.2.OPT8.BSP.GB6 (Materials For Polyester Concrete)
(BSP June 18, 2012)
Use in projects where polyester concrete is required. Include with **6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6 and 6-09.5.OPT9.BSP.GB6.**

6-09.3.GR6 Construction Requirements

6-09.3(1).GR6 **Equipment**

6-09.3(1).INST1.GR6 (Section 6-09.3(1) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(1).OPT1.BSP.GB6 (Mobile Mixer for Polyester Concrete)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6 and 6-09.5.OPT9.BSP.GB6.**

6-09.3(1)H.GR1 Mobile Mixer for Latex Modified Concrete

6-09.3(1)H.INST1.GR6 (Section 6-09.3(1)H is supplemented with the

following)
Must use once preceding any of the following:

6-09.3(1)H.OPT1.BSP.GB6 (Mobile Mixer Capacity for Rapid Set Latex Modified Concrete)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6**. Include with **6-09.2.OPT7.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.3(2).GR6 Submittals

6-09.3(2).INST1.GR6 (Section 6-09.3(2) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(2).OPT1.BSP.GB6 (Submittals for Polyester Concrete)
(BSP April 7, 2008)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(3).GR6 Concrete Overlay Mixes

6-09.3(3).INST1.GR6 (Section 6-09.3(3) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(3).OPT1.GB6 (FMC, LMC, and MMC)
(January 7, 2002)

Use in modified concrete overlay projects where all three concrete overlay mixes are allowed. Include with either **6-09.3(5).OPT2.GB6 or 6-09.3(5).OPT1.GB6**.

6-09.3(3).OPT2.GB6 (FMC or LMC Only)
(January 7, 2002)
Use in modified concrete overlay projects where only fly ash modified concrete or latex modified concrete overlay mixes are allowed. Include with **either 6-09.3(5).OPT2.GB6 or 6-09.3(5).OPT1.GB6**.

6-09.3(3).OPT3.GB6 (LMC Only)
(January 7, 2002)
Use in modified concrete overlay projects where only latex modified concrete overlay mixes are allowed. Include with **either 6-09.3(5).OPT2.GB6 or 6-09.3(5).OPT1.GB6**.

6-09.3(3).OPT8.BSP.GB6 (Rapid Set Latex Modified Concrete)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with **either 6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.3(3).OPT9.BSP.GB6 (Polyester Concrete)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(3).OPT10.BSP.GB6 (Deck Repair Concrete for Polyester Concrete Overlays)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-**

09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.

6-09.3(4).GR6 Storing and Handling

6-09.3(4).INST1.GR6 (Section 6-09.3(4) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(4).OPT1.BSP.GB6 (Storing and Handling of Polyester Concrete Materials)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(5).GR6 Scarifying Concrete Surface

6-09.3(5).INST1.GR6 (Section 6-09.3(5) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(5).OPT1.GB6 (Rotary Mill, Hydro-Demolisher, or Shot Blaster)
(January 7, 2002)
Include in modified concrete overlay projects where all three types of scarifying machines are allowed. Include with ***either 6-09.3(3).OPT1.GB6, 6-09.3(3).OPT2.GB6, or 6-09.3(3).OPT3.GB6***.

6-09.3(5).OPT2.GB6 (Hydro-Demolisher or Shot Blaster Only)
(January 7, 2002)

Include in modified concrete overlay projects where only hydro-demolisher or shot blaster scarifying machines are allowed. Include with ***either 6-09.3(3).OPT1.GB6, 6-09.3(3).OPT2.GB6, or 6-09.3(3).OPT3.GB6***.

6-09.3(5).OPT7.~~BSP.~~GB6 (Hydro-Demolisher Only)
(~~BSP September 9, 2002~~April 6, 2015)
Use in modified concrete overlay projects where only hydro-demolisher scarifying machines are allowed.

6-09.3(5).OPT8.BSP.GB6 (Shot Blaster Only)
(BSP September 9, 2002)
Use in modified concrete overlay projects where only shot blaster scarifying machines are allowed. Required for all polyester concrete overlay projects.

6-09.3(5).OPT9.BSP.GB6 (Scarification Depth for Polyester Concrete Overlay)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(5).OPT10.BSP.GB6 (Epoxy-coated St. Reinf. Bars for Bridge Deck Repair)
(BSP September 9, 2002)
Use in projects where epoxy-coated steel reinforcing bars are required for bridge deck repair. Required for all polyester concrete overlay projects.

6-09.3(6).GR6 Further Deck Preparation

6-09.3(6)B.GR6 Deck Repair Preparation

6-09.3(6)B.INST1.GR6 (Section 6-09.3(6)B is supplemented with the following)
Must use once preceding any of the following:

6-09.3(6)B.OPT1.~~BSP.~~GB6 (Forms For Full Depth Deck Repair)
(~~BSP August 4, 2008~~April 6, 2015)

Use in modified concrete overlay projects where the anticipated depth required for bridge deck repair following scarification of concrete surface may be full depth of the bridge deck. Include with ***6-09.5.OPT11.~~BSP.~~GB6.***

6-09.3(6)C.GR6 Placing Deck Repair Concrete

6-09.3(6)C.INST1.GR6 (Supplemental Instructions)
Must use once preceding any of the following:

6-09.3(6)C.OPT1.BSP.GB6 (Patching Concrete For Rapid Set Latex Modified Concrete)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.3(6)C.OPT2.BSP.GB6 (Placing Patching Concrete For Polyester Concrete Overlay)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(8).GR6 Quality Assurance

6-09.3(8).INST1.GR6 (Section 6-09.3(8) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(8).OPT1.BSP.GB6 (Rapid Set Latex Modified Concrete Overlay)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.3(8).OPT2.BSP.GB6 (Rapid Set Latex Modified Concrete Trial Overlay)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.3(8).OPT3.BSP.GB6 (Quality Assurance For Polyester Concrete Overlay)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(8).OPT4.BSP.GB6 (Polyester Concrete Trial Overlay)

(BSP January 27, 2003)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(9).GR6 Mixing Concrete for Concrete Overlay

6-09.3(9).INST1.GR6 (Section 6-09.3(9) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(9).OPT1.BSP.GB6 (Rapid Set Latex Modified Concrete)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.3(9).OPT2.BSP.GB6 (Mixing Polyester Concrete)
(BSP January 27, 2003)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(10).GR6 Overlay Profile and Screed Rails

6-09.3(10).INST1.GR6 (Section 6-09.3(10) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(10).OPT1.BSP.GB6 (Polyester Concrete Overlay Thickness)
(BSP January 27, 2003)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(11).GR6 Placing Concrete Overlay

6-09.3(11).INST1.GR6 (Section 6-09.3(11) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(11).OPT1.BSP.GB6 (Placing Rapid Set Latex Modified Concrete Overlay)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.3(11).OPT2.BSP.GB6 (Placing Polyester Concrete Overlay)
(BSP April 7, 2008)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6,**

6-09.3(10).OPT1.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.

6-09.3(12).GR6 Finishing Concrete Overlay

6-09.3(12).INST1.GR6 (Section 6-09.3(12) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(12).OPT1.BSP.GB6 (Rapid Set Latex Modified Concrete Overlay)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.3(12).OPT2.BSP.GB6 (Finishing Polyester Concrete Overlay)
(BSP August 1, 2005)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(13).GR6 Curing Concrete Overlay

6-09.3(13).INST1.GR6 (Section 6-09.3(13) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(13).OPT1.BSP.GB6 (Special Curing Requirements For Rapid Set Latex Modified Concrete)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or**

6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.

6-09.3(13).OPT2.BSP.GB6 (Curing Polyester Concrete)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(14).GR6 Checking For Bond

6-09.3(14).INST1.GR6 (Section 6-09.3(14) is supplemented with the following)
Must use once preceding any of the following:

6-09.3(14).OPT1.BSP.GB6 (Checking Polyester Concrete For Bond)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6.**

6-09.3(14).OPT2.~~BSP.~~GB6 (Responsibility for Repair of Unbonded Modified Concrete Overlay)
(~~BSP April 7, 2008~~April 6, 2015)

Use in projects where responsibility for the cost of repairing unbonded modified concrete overlay is assigned to the Contractor.

6-09.4.GR6 Measurement

6-09.4.INST1.GR6 (Section 6-09.4 is supplemented with the following) Must use once preceding any of the following:

6-09.4.OPT1.BSP.GB6 (Rapid Set Latex Modified Concrete) (BSP September 9, 2002) Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.5.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.4.OPT2.BSP.GB6 (Polyester Concrete Overlay) (BSP December 2, 2002) Use in projects where polyester concrete is required. Include with **6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.5.OPT7.BSP.GB6, 6-09.5.OPT8.BSP.GB6, and 6-09.5.OPT9.BSP.GB6**.

6-09.5.GR6 Payment

6-09.5.INST1.GR6 (The second bid item under Section 6-09.5 is supplemented with the following) Must use once preceding any of the following:

6-09.5.OPT1.BSP.GB6 (Rapid Set Latex Modified Concrete) (BSP September 9, 2002) Use in projects where rapid set latex modified concrete is required. Include with either **6-09.3(5).OPT1.GB6 or 6-09.3(5).OPT2.GB6. Include with 6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6, and 6-09.5.OPT6.BSP.GB6.**

6-09.5.INST2.GR6 (Section 6-09.5 is supplemented with the following)
Must use once preceding any of the following:

6-09.5.OPT6.BSP.GB6 (Rapid Set Latex Modified Concrete Trial Overlay)
(BSP September 9, 2002)
Use in projects where rapid set latex modified concrete is required. Include with *either* ***6-09.3(5).OPT1.GB6*** *or* ***6-09.3(5).OPT2.GB6***. Include with ***6-09.2.OPT7.BSP.GB6, 6-09.3(1)H.OPT1.BSP.GB6, 6-09.3(3).OPT8.BSP.GB6, 6-09.3(6)C.OPT1.BSP.GB6, 6-09.3(8).OPT1.BSP.GB6, 6-09.3(8).OPT2.BSP.GB6, 6-09.3(9).OPT1.BSP.GB6, 6-09.3(11).OPT1.BSP.GB6, 6-09.3(12).OPT1.BSP.GB6, 6-09.3(13).OPT1.BSP.GB6, 6-09.4.OPT1.BSP.GB6,*** *and* ***6-09.5.OPT1.BSP.GB6.***

6-09.5.OPT7.BSP.GB6 (Polyester Concrete Trial Overlay)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with ***6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT8.BSP.GB6,*** *and* ***6-09.5.OPT9.BSP.GB6***.

6-09.5.OPT8.BSP.GB6 (Force Account Grinding Polyester Conc. Overlay)
(BSP December 2, 2002)
Use in projects where polyester concrete is required. Include with ***6-09.2.OPT8.BSP.GB6, 6-***

09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6 *and* ***6-09.5.OPT9.BSP.GB6***.

6-09.5.OPT9.BSP.GB6	(Polyester Concrete Overlay) (BSP December 2, 2002) Use in projects where polyester concrete is required. Include with ***6-09.2.OPT8.BSP.GB6, 6-09.3(1).OPT1.BSP.GB6, 6-09.3(2).OPT1.BSP.GB6, 6-09.3(3).OPT9.BSP.GB6, 6-09.3(3).OPT10.BSP.GB6, 6-09.3(4).OPT1.BSP.GB6, 6-09.3(5).OPT8.BSP.GB6, 6-09.3(5).OPT9.BSP.GB6, 6-09.3(5).OPT10.BSP.GB6, 6-09.3(6)C.OPT2.BSP.GB6, 6-09.3(8).OPT3.BSP.GB6, 6-09.3(8).OPT4.BSP.GB6, 6-09.3(9).OPT2.BSP.GB6, 6-09.3(10).OPT1.BSP.GB6, 6-09.3(11).OPT2.BSP.GB6, 6-09.3(12).OPT2.BSP.GB6, 6-09.3(13).OPT2.BSP.GB6, 6-09.3(14).OPT1.BSP.GB6, 6-09.4.OPT2.BSP.GB6, 6-09.5.OPT7.BSP.GB6,*** *and* ***6-09.5.OPT8.BSP.GB6***.
6-09.5.OPT11.~~BSP.~~GB6	(Forms For Full Depth Deck Repair) (~~BSP April 7, 2008~~April 6, 2015) Use in projects where the anticipated depth required for bridge deck repair following scarification of concrete surface may be full depth of the bridge deck. Include with ***6-09.3(6)B.OPT1.~~BSP.~~GB6***.

6-10.GR6 Concrete Barrier

6-10.3.GR6 Construction Requirements

6-10.3(6).GR6 Placing Concrete Barrier

6-10.3(6).INST1.GR6 (Section 6-10.3(6) is supplemented with the following)
Must use once preceding any of the following:

6-10.3(6).OPT1.GR6 (Use Permanent Barrier as Temporary)
(March 13, 1995)
Use in projects when permanent barrier may be used as temporary barrier.

6-10.5.GR6 Payment

6-10.5.INST1.GR6 (Section 6-10.5 is supplemented with the following)
Must use once preceding any of the following:

6-10.5.OPT1.GR6 (Temporary barrier delineators)
(April 28, 1997)
Use in projects that require temporary barrier to be placed adjacent to a travelled lane.

6-10.5.OPT2.FB6 (Bridge Concrete Barrier)
(March 6, 2000)
Use in projects with concrete barrier on bridges only where the barrier is included as part of a separate bid item such as "Superstructure - ___", or "Roadway Deck - ___". The first fill-in specifies the barrier type (traffic barrier, traffic-pedestrian barrier, pedestrian barrier, etc.). The second fill-in specifies the bid item name.
(2 fill-ins)

6-12.GR6 Noise Barrier Walls

6-12.2.GR6 Materials

6-12.2.INST1.GR6 (Section 6-12.2 is supplemented with the following)
Must use once preceding any of the following:

6-12.2.OPT1.GB6 (Precast Concrete Noise Barrier Walls)
(April 1, 2013)
Use in projects with noise barrier walls of precast concrete panels. Include with ***6-12.3(6).OPT1.FB6 and all other applicable noise barrier wall GSP's***.

6-12.2.OPT2.FB6 (Masonry Noise Barrier Walls)
(January 2, 2012)
Use in projects with noise barrier walls of masonry block panels. The fill-in describes the surface texture and color

requirements for the field, cap, accent, and other CMU blocks used for the masonry wall. Include with ***6-12.3(7).OPT1.GB6 and all other applicable noise barrier wall GSP's***.
(1 fill-in)

6-12.2.OPT3.FB6 (Noise Barrier Wall Access Door)
(August 3, 2009)
Use in projects with noise barrier walls with access doors. The fill-in specifies the Federal Standard 595B color number, or the color name if no number, for the paint color of the door and door frame.
(1 fill-in)

6-12.3.GR6 Construction Requirements

6-12.3(1).GR6 Submittals

6-12.3(1).INST1.GR6 (Section 6-12.3(1) is supplemented with the following)
Must use once preceding any of the following:

6-12.3(1).OPT1.GB6 (Noise Barrier Wall Existing Groundline Field Survey)
(April 5, 2004)
Use in noise barrier wall projects where the Contractor is required to perform and submit a field survey of the existing noise barrier wall alignment. Include with ***1-05.4.OPT1.GR1, 6-12.5.OPT1.GB6, and all other applicable noise barrier wall GSP's***.

6-12.3(6).GR6 Precast Concrete Panel Fabrication and Erection

6-12.3(6).INST1.GR6 (Section 6-12.3(6) is supplemented with the following)
Must use once preceding any of the following:

6-12.3(6).OPT1.FB6 (Precast Concrete Panel Surface Finish Requirements)
(April 5, 2004)
Use in projects with noise barrier walls of precast concrete panels. The fill-ins specify the type or name of the formed finish on the traffic side and on the residential side of the precast concrete panels. Include with ***6-12.2.OPT1.GB6 and all other applicable noise barrier wall GSP's***.
(2 fill-ins)

6-12.3(7).GR6 Masonry Wall Construction

6-12.3(7).INST1.GR6 (Section 6-12.3(7) is supplemented with the following)
Must use once preceding any of the following:

6-12.3(7).OPT1.GB6 (Masonry Noise Barrier Wall Construction Requirements)
(April 6, 2009)
Use in projects with noise barrier walls of masonry block panels. Include with ***6-12.2.OPT2.FB6 and all other applicable noise barrier wall GSP's.***

6-12.5.GR6 Payment

6-12.5.INST1.GR6 (Section 6-12.5 is supplemented with the following)
Must use once preceding any of the following:

6-12.5.OPT1.GB6 (Payment for Noise Barrier Wall Groundline Field Survey)
(April 5, 2004)
Use in noise barrier wall projects where the Contractor is required to perform and submit a field survey of the existing noise barrier wall alignment. Include with ***1-05.4.OPT1.GR1, 6-12.3(1).OPT1.GB6, and all other applicable noise barrier wall GSP's***.

6-13.GR6 Structural Earth Walls

6-13.2.GR6 Materials

6-13.2.INST1.GR6 (Section 6-13.2 is supplemented with the following)
Must use once preceding any of the following:

6-13.2.OPT1.GB6 (Welded Wire Faced Structural Earth Wall Materials)
(April 1, 2013)
Use in projects with structural earth walls where welded wire faced walls are an acceptable alternative. Include with ***6-13.3.OPT1.GB6 and 6-13.3(2).OPT1.FB6***.

6-13.2.OPT2.GB6 (Precast Concrete Panel Faced Structural Earth Wall Materials)
(August 5, 2013)
Use in projects with structural earth walls where precast concrete panel faced walls are an acceptable alternative. Include with ***6-13.3.OPT2.GB6, 6-13.3(2).OPT1.FB6, 6-13.3(4).OPT1.GB6***.

6-13.2.OPT3.GB6 (Concrete Block Faced Structural Earth Wall Materials)
(~~August 5, 2013~~April 6, 2015)
Use in projects with structural earth walls where concrete block faced walls are an acceptable alternative. Include with ***6-13.3.OPT3.GB6, 6-13.3(2).OPT1.FB6, and 6-13.3(5).OPT2.GB6***.

~~6-13.2.OPT3(A).GB6 (Allan Block Concrete Block Faced~~

~~Structural Earth Wall Materials)~~
~~(January 4, 2010)~~
~~Use in projects with structural earth walls where concrete block faced walls are an acceptable alternative AND where wall geometric and aesthetic parameters for the project allow for a sloped wall face batter not steeper than 19V:1H. Include with ***6-13.2.OPT3.GB6, 6-13.3.OPT3.GB6, 6-13.3.OPT3(A).GB6, 6-13.3(2).OPT1.FB6, 6-13.3(2).OPT1(A).GB6, and 6-13.3(5).OPT2.GB6***.~~

6-13.3.GR6 Construction Requirements

6-13.3.INST1.GR6 (Section 6-13.3 is supplemented with the following)
Must use once preceding any of the following:

6-13.3.OPT1.GB6 (Welded Wire Faced Structural Earth Wall)
(April 4, 2011)
Use in projects with structural earth walls where welded wire faced walls are an acceptable alternative. Include with ***6-13.2.OPT1.GB6 and 6-13.3(2).OPT1.FB6***.

6-13.3.OPT2.GB6 (Precast Concrete Panel Faced Structural Earth Wall)
(August 5, 2013)
Use in projects with structural earth walls where precast concrete panel faced walls are an acceptable alternative. Include with ***6-13.2.OPT2.GB6, 6-13.3(2).OPT1.FB6, and 6-13.3(4).OPT1.GB6.***

6-13.3.OPT3.GB6 (Concrete Block Faced Structural Earth Wall)
(~~April 2, 2012~~April 6, 2015)
Use in projects with structural earth walls where concrete block faced walls are an acceptable alternative. Include with ***6-13.2.OPT3.GB6, 6-13.3(2).OPT1.FB6, and 6-13.3(5).OPT2.GB6***.

~~6-13.3.OPT3(A).GB6~~ ~~(Allan Block Concrete Block Faced Structural Earth Wall)~~
~~(January 7, 2013)~~
~~Use in projects with structural earth walls where concrete block faced walls are an acceptable alternative AND where wall geometric and aesthetic parameters for the project allow for a sloped wall face batter not steeper than 19V:1H. Include with ***6-13.2.OPT3.GB6, 6-13.2.OPT3(A).GB6.GB6, 6-13.3.OPT3.GB6, 6-13.3(2).OPT1.FB6, 6-13.3(2).OPT1(A).GB6, and 6-13.3(5).OPT2.GB6***.~~

6-13.3(2).GR6 Submittals

6-13.3(2).INST1.GR6 (Section 6-13.3(2) is supplemented with the following)

Must use once preceding any of the following:

6-13.3(2).OPT1.FB6 (Structural Earth Wall Geotechnical Design Parameters)
(January 3, 2011)
Use in projects with structural earth walls. The first fill-in identifies the wall by name or number, and the remaining fill-ins specify the values for various geotechnical design parameters as specified in the geotechnical report prepared for the project. The table may be repeated as necessary for additional walls with differing geotechnical design parameters.
(13 fill-ins)

~~6-13.3(2).OPT1(A).GB6 (Allan Block Concrete Block Faced Structural Earth Wall Design Submittal Requirements)~~
~~(January 4, 2010)~~
~~Use in projects with structural earth walls where concrete block faced walls are an acceptable alternative AND where wall geometric and aesthetic parameters for the project allow for a sloped wall face batter not steeper than 19V:1H. Include with ***6-13.2.OPT3.GB6, 6-13.2.OPT3(A).GB6, 6-13.3.OPT3.GB6, 6-13.3.OPT3(A).GB6, 6-13.3(2).OPT1.FB6, and 6-13.3(5).OPT2.GB6***.~~

6-13.3(4).GR6 Precast Concrete Facing Panel and Concrete Block Fabrication

6-13.3(4).INST1.GR6 (Section 6-13.3(4) is supplemented with the following)
Must use once preceding any of the following:

6-13.3(4).OPT1.GB6 (Specific Fabrication Requirements for Precast Concrete Panel Faced Structural Earth Walls)
(April 12, 2012)
Use in projects with structural earth walls where precast concrete panel faced walls are an acceptable alternative. Include with ***6-13.2.OPT2.GB6, 6-13.3.OPT2.GB6, 6-13.3(2).OPT1.FB6, and 6-13.3(5).OPT1.GB6***.

6-13.3(5).GR6 Precast Concrete Facing Panel and Concrete Block Erection

6-13.3(5).INST1.GR6 (Section 6-13.3(5) is supplemented with the following)
Must use once preceding any of the following:
6-13.3(5).OPT2.GB6 (Specific Erection Requirements for Precast Concrete Block Faced Structural Earth Walls)
(April 2, 2012)

Use in projects with structural earth walls where concrete block faced walls are an acceptable alternative. Include with ***6-13.2.OPT3.GB6 6-13.3.OPT3.GB6, and 6-13.3(2).OPT1.FB6***.

6-14.GR6 Geosynthetic Retaining Walls

6-14.2.GR6 Materials

6-14.2(9-33.2(2)).GR6 (Geosynthetic Properties For Retaining Walls and Reinforced Slopes
(Section 9-33.2(2) is supplemented with the following)
Must use once preceding any of the following:

6-14.2(9-33.2(2)).OPT1.FB6 (Geosynthetic Properties For Temporary Geosynthetic Retaining Walls)
(August 7, 2006)
Use in projects with temporary geosynthetic retaining walls. The first fill-in identifies the wall location. The second fill-in specifies the reinforcement layer vertical spacing. The third fill-in specifies the dimension from the top of wall to the reinforcement layer. The fourth fill-in specifies the geosynthetic tensile strength.
(4 fill-ins)

6-15.GR6 Soil Nail Walls

6-15.2.GR6 Materials

6-15.2.INST1.GR6 (Section 6-15.2 is supplemented with the following)
Must use once preceding any of the following:

6-15.2.OPT1.GB6 (Permanent Soil Nail Materials and Components)
(April 1, 2013)
Use in projects with soil nail retaining walls. Include with ***6-18.2.OPT1.GB6 and 6-15.3(8)A.OPT1.FB6***.

6-15.3.GR6 Construction Requirements

6-15.3(8).GR6 Soil Nail Testing And Acceptance

6-15.3(8)A.GR6 Verification Testing

6-15.3(8)A.INST1.GR6 (Section 6-15.3(8)A is supplemented with the following)
Must use once preceding any of the following:

6-15.3(8)A.OPT1.FB6 (Soil Nail Verification Test Locations)
(April 5, 2004)
Use in projects with soil nail retaining walls. The fill-ins specify the soil nail verification test locations and the number of successful tests

required at each location. Include with ***6-15.2.OPT1.GB6 and 6-18.2.OPT1.GB6***. (3 fill-ins)

6-17.GR6 Permanent Ground Anchors

6-17.1.GR6 Description

6-17.1.INST1.GR6 (Section 6-17.1 is supplemented with the following) Must use once preceding any of the following:

6-17.1.OPT1.GB6 (Rock Bolts and Rock Dowels) (January 7, 2013) Use in projects with rock bolts and/or rock dowels. Include with **6-17.2.OPT2.GB6, 6-17.3.OPT1.GB6, 6-17.3(8).OPT1.GB6, 6-17.4.OPT1.GB6 and 6-17.5.OPT1.GB6.**

6-17.2.GR6 Materials

6-17.2.INST1.GR6 (Section 6-17.2 is supplemented with the following) Must use once preceding any of the following:

6-17.2.OPT1.GB6 (Permanent Ground Anchor Materials and Components) (August 1, 2011) Use in projects with walls using permanent ground anchors.

6-17.2.OPT2.GB6 (Rock Bolt and Rock Dowel Materials) (January 7, 2013) Use in projects with rock bolts and/or rock dowels. Include with **6-17.1.OPT1.GB6, 6-17.3.OPT1.GB6, 6-17.3(8).OPT1.GB6, 6-17.4.OPT1.GB6 and 6-17.5.OPT1.GB6.**

6-17.3.GR6 Construction Requirements

6-17.3.INST1.GR6 (Section 6-17.3 is supplemented with the following) Must use once preceding any of the following:

6-17.3.OPT1.GB6 (Rock Bolt and Rock Dowel Construction Requirements) (January 7, 2013) Use in projects with rock bolts and/or rock dowels. Include with **6-17.1.OPT1.GB6, 6-17.2.OPT2.GB6, 6-17.3(8).OPT1.GB6, 6-17.4.OPT1.GB6 and 6-17.5.OPT1.GB6.**

6-17.3(8).GR6 Testing And Stressing

6-17.3(8).INST1.GR6 (Section 6-17.3(8) is supplemented with the following)

Must use once preceding any of the following:

6-17.3(8).OPT1.GB6 Rock Bolt and Rock Dowel Testing
(January 7, 2013)
Use in projects with rock bolts and/or rock dowels. Include with **6-17.1.OPT1.GB6, 6-17.2.OPT2.GB6, 6-17.3.OPT1.GB6, 6-17.4.OPT1.GB6 and 6-*17.5.OPT1.GB6.***

6-17.3(8)A.GR6 Verification Testing

6-17.3(8)A.INST1.GR6 (Section 6-17.3(8)A is supplemented with the following)
Must use once preceding any of the following:

6-17.3(8)A.OPT1.GB6 (August 1, 2011)
Use in projects with permanent ground anchors where the soil conditions require a verification testing program for the permanent ground anchors as recommended by the WSDOT Materials Laboratory Geotechnical Services Division. Include with ***6-17.3(8)B.OPT1.GB6 and 6-17.3(8)C.OPT1.GB6.***

6-17.3(8)B.GR6 Performance Testing

6-17.3(8)B.INST1.GR6 (The performance test schedule following the second paragraph of Section 6-17.3(8)B is revised to read)
Must use once preceding any of the following:

6-17.3(8)B.OPT1.GB6 (January 3, 2011)
Use in projects with permanent ground anchors where the soil conditions require a verification testing program for the permanent ground anchors, as recommended by the WSDOT Materials Laboratory Geotechnical Services Division. Include with ***6-17.3(8)A.OPT1.GB6 and 6-17.3(8)C.OPT1.GB6***.

6-17.3(8)C.GR6 Proof Testing

6-17.3(8)C.INST1.GR6 (The proof test schedule following the first paragraph of Section 6-17.3(8)C is revised to read)
Must use once preceding any of the following:

6-17.3(8)C.OPT1.GB6 (January 3, 2011)
Use in projects with permanent ground anchors where the soil conditions require a verification testing program for the permanent ground anchors, as recommended by the WSDOT Materials Laboratory Geotechnical Services Division. Include with ***6-17.3(8)A.OPT1.GB6 and 6-17.3(8)B.OPT1.GB6***.

6-17.4.GR6 Measurement

6-17.4.INST1.GR6 (Section 6-17.4 is supplemented with the following)
Must use once preceding any of the following:

6-17.4.OPT1.GB6 (Rock Bolts and Rock Dowels)
(January 4, 2010)
Use in projects with rock bolts and/or rock dowels. Include with **6-17.1.OPT1.GB6, 6-17.2.OPT2.GB6, 6-17.3.OPT1.GB6, 6-17.3(8).OPT1.GB6, and 6-17.5.OPT1.GB6.**

6-17.5.GR6 Payment

6-17.5.INST1.GR6 (Section 6-17.5 is supplemented with the following)
Must use once preceding any of the following:

6-17.5.OPT1.GB6 (Rock Bolts and Rock Dowels)
(January 4, 2010)
Use in projects with rock bolts and/or rock dowels. Include with **6-17.1.OPT1.GB6, 6-17.2.OPT2.GB6, 6-17.3.OPT1.GB6, 6-17.3(8).OPT1.GB6, and 6-17.4.OPT1.GB6.**

6-18.GR6 Shotcrete Facing

6-18.2.GR6 Materials

6-18.2.INST1.GR6 (Section 6-18.2 is supplemented with the following)
Must use once preceding any of the following:

6-18.2.OPT1.GB6 (Shotcrete Facing)
(August 1, 2005)
Use in projects with shotcrete facing. Include with ***6-15.2.OPT1.GB6 and 6-15.3(8)A.OPT1.FB6*** for all soil nail retaining wall projects. Include with ***6-18.2.OPT2.GB6, 6-18.2.OPT3.GB6, 6-18.3.OPT1.GB6, 6-18.4.OPT1.GB6 and 6-18.5.OPT1.GB6*** for all projects with shotcrete facing for rock/soil slope stabilization.

6-18.2.OPT2.GB6 (Coloration for Shotcrete Facing Finishing Alternative C)
(April 5, 2004)
Use in projects with shotcrete facing where tinting of the finish coating of shotcrete is required. Include with ***6-15.2.OPT1.GB6, 6-15.3(8)A.OPT1.FB6, and 6-18.2.OPT1.GB6*** for all soil nail retaining wall projects with such requirements. Include with ***6-18.2.OPT1.GB6, 6-18.2.OPT3.GB6, 6-18.3.OPT1.GB6, 6-18.4.OPT1.GB6 and 6-18.5.OPT1.GB6*** for all projects with shotcrete facing for rock/soil slope stabilization.

6-18.2.OPT3.GB6 (Fiber Reinforcement for Shotcrete Facing)

(April 5, 2010)
Use in projects with shotcrete facing where fiber reinforcement in the shotcrete is specified. Include with ***6-18.2.OPT1.GB6***. Include with ***6-18.2.OPT2.GB6, 6-18.3.OPT1.GB6, 6-18.4.OPT1.GB6 and 6-18.5.OPT1.GB6*** for all projects with shotcrete facing for rock/soil slope stabilization.

6-18.3.GR6 Construction Requirements

6-18.3.INST1.GR6 (Section 6-18.3 is supplemented with the following)
Must use once preceding any of the following:

6-18.3.OPT1.GB6 (Shotcrete Facing For Rock/Soil Slope Stabilization)
(April 5, 2010)
Use in projects with shotcrete facing for rock/soil slope stabilization. Include with ***6-18.2.OPT1.GB6, 6-18.2.OPT2.GB6, 6-18.2.OPT3.GB6, 6-18.4.OPT1.GB6 and 6-18.5.OPT1.GB6***.

6-18.4.GR6 Measurement

6-18.4.INST1.GR6 (Section 6-18.4 is supplemented with the following)
Must use once preceding any of the following:

6-18.4.OPT1.GB6 (Shotcrete Facing For Rock/Soil Slope Stabilization)
(April 5, 2010)
Use in projects with shotcrete facing for rock/soil slope stabilization. Include with ***6-18.2.OPT1.GB6, 6-18.2.OPT2.GB6, 6-18.2.OPT3.GB6, 6-18.3.OPT1.GB6 and 6-18.5.OPT1.GB6***.

6-18.5.GR6 Payment

6-18.5.INST1.GR6 (Section 6-18.5 is supplemented with the following)
Must use once preceding any of the following:

6-18.5.OPT1.GB6 (Shotcrete Facing For Rock/Soil Slope Stabilization)
(April 5, 2010)
Use in projects with shotcrete facing for rock/soil slope stabilization. Include with ***6-18.2.OPT1.GB6, 6-18.2.OPT2.GB6, 6-18.2.OPT3.GB6, 6-18.3.OPT1.GB6 and 6-18.4.OPT1.GB6***.

6-19.GR6 Shafts

6-19.2.GR6 Materials

6-19.2(9-36.2(2)).GR6 Synthetic Slurry
(Section 9-36.2(2) is supplemented with the following)
Must use once preceding any of the following:

6-19.2(9-36.2(2)).OPT1.GB6 (Fresh Water For Synthetic Slurry)

(January 2, 2012)
Use in projects with shafts constructed in salt water when the geotechnical report specifies that the use of fresh water for synthetic slurry is feasible and when the Contracting Agency restricts the water for synthetic slurry to fresh water only. Include with **6-19.4.OPT3.GB6 and 6-19.5.OPT2.GB6.**

6-19.3.GR6 Construction Requirements

6-19.3(2).GR6 Submittals

6-19.3(2).INST1.GR6 (Section 6-19.3(2) is supplemented with the following)
Must use once preceding any of the following:

6-19.3(2).OPT1.GB6 (CSL Testing By Contractor)
(January 2, 2012)
Use in projects where CSL testing is to be provided by the Contractor. Include with **6-19.3(9)A.OPT1.GB6, 6-19.3(9)C.OPT1.GB6, 6-19.4.OPT2.GB6 and 6-19.5.OPT1.GB6.**

6-19.3(3).GR6 Shaft Excavation

6-19.3(3).INST1.GR6 (Section 6-19.3(3) is supplemented with the following)
Must use once preceding any of the following:

6-19.3(3).OPT1.GB6 (Variations In Bearing Layer Elevations)
(January 2, 2012)
Use in projects where shaft embedment to a minimum penetration into a bearing layer is required, and where the bearing layer elevation cannot be accurately specified with certainty. Include with **6-19.3(5).OPT1.GB6 and 6-19.4.OPT1.GB6.**

6-19.3(3)B.GR6 Temporary and Permanent Shaft Casing

6-19.3(3)B.INST1.GR6 (Section 6-19.3(3)B is supplemented with the following)
Must use once preceding any of the following:

6-19.3(3)B.OPT1.FB6 (Required Casing)
(January 2, 2012)
Use in projects where permanent and/or temporary casing is required. The first fill-in identifies the bridge and pier number or the wall name and station limits. The second fill-in specifies the casing type as permanent or temporary. The third fill-in specifies the bottom elevation of the casing. The fourth fill-in specifies the top and bottom elevation limits for concurrent casing placement with excavation. The fifth fill-in specifies the maximum dimension that

excavation may precede the casing tip. The third, fourth and fifth fill-ins should be specified in the geotechnical report prepared for the project. (5 fill-ins)

6-19.3(3)B.OPT2.GB6 (Rotating/Oscillating Method Required)
(January 2, 2012)
Use in projects where the geotechnical report for the project recommends, and the ADSC/WSDOT Shaft Task Force concurs, that site conditions dictate the use of the rotating/oscillating method for shaft excavation.

6-19.3(3)B4.GR6 Temporary Telescoping Shaft Casing

6-19.3(3)B4.INST1.GR6 (The second paragraph of Section 6-19.3(3)B4 is revised to read as follows)
Must use once preceding any of the following:

6-19.3(3)B4.OPT1.GB6 (Temp. Telescoping Casing Not Allowed At End Piers)
(January 2, 2012)
Use in projects where design conditions exist where the option of temporary telescoping casing for shafts at bridge end piers is not appropriate for the overall design behavior of the overall bridge.

6-19.3(3)I.GR6 Required Use of Slurry in Shaft Excavation

6-19.3(3)I.INST1.GR6 (Section 6-19.3(3)I is supplemented with the following)
Must use once preceding any of the following:

6-19.3(3)I.OPT1.GB6 (Exception For Casing Sealed Against Influx Of Water Into Excavation)
(January 2, 2012)
Use in projects where the geotechnical conditions, as documented in the geotechnical report for the project, allow the possibility of performing shaft excavation in a cased hole beneath the water table level without the need for slurry to ensure the stability of the bottom of the excavation.

6-19.3(4).GR6 Slurry Installation Requirements

6-19.3(4)A.GR6 Slurry Technical Assistance

6-19.3(4)A.INST1.GR6 (Section 6-19.3(4)A is supplemented with the following)
Must use once preceding any of the following:

6-19.3(4)A.OPT1.FB6 (Slurry Manufacturer's Representative's

Presence Required At Specific Shaft Sites)
(January 2, 2012)
Use in projects where the geotechnical conditions vary enough from one shaft site to another to affect how the slurry is used at each shaft site. The fill-in identifies the specific shaft locations where the presence of the slurry manufacturer's representative is required.
(1 fill-in)

6-19.3(5).GR6 Assembly and Placement of Reinforcing Steel

6-19.3(5).INST1.GR6 (Section 6-19.3(5) is supplemented with the following)
Must use once preceding any of the following:

6-19.3(5).OPT1.GB6 (Variations In Bearing Layer Elevations)
(January 2, 2012)
Use in projects where shaft embedment to a minimum penetration into a bearing layer is required, and where the bearing layer elevation cannot be accurately specified with certainty. Include with **6-19.3(3).OPT1.GB6 and 6-19.4.OPT1.GB6.**

6-19.3(7).GR6 Placing Concrete

6-19.3(7)D.GR6 Requirements for Placing Concrete Underwater

6-19.3(7)D.INST1.GR6 (Section 6-19.3(7)D is supplemented with the following)
Must use once preceding any of the following:

6-19.3(7)D.OPT1.GB6 (Tremie Allowed As An Alternative To Concrete Pump)
(January 2, 2012)
Use in projects where the construction site is at a remote location where it may be difficult to make arrangements to have a concrete pump at the site.

6-19.3(9).GR6 Nondestructive Testing of Shafts (Crosshole Sonic Log Testing)

6-19.3(9)A.GR6 Schedule of CSL Testing

6-19.3(9)A.INST1.GR6 (The first paragraph of Section 6-19.3(9)A is revised to read as follows)
Must use once preceding any of the following:

6-19.3(9)A.OPT1.GB6 (CSL Testing By Contractor)
(January 2, 2012)
Use in projects where CSL testing is to be provided by the Contractor. Include with **6-**

19.3(2).OPT1.GB6, 6-19.3(9)C.OPT1.GB6, 6-19.4.OPT2.GB6 and 6-19.5.OPT1.GB6.

6-19.3(9)C.GR6 Engineer's Final Acceptance of Shafts

6-19.3(9)C.INST1.GR6 (Section 6-19.3(9)C is revised to read as follows)
Must use once preceding any of the following:

6-19.3(9)C.OPT1.GB6 (CSL Testing By Contractor)
(January 2, 2012)
Use in projects where CSL testing is to be provided by the Contractor. Include with **6-19.3(2).OPT1.GB6, 6-19.3(9)A.OPT1.GB6, 6-19.4.OPT2.GB6 and 6-19.5.OPT1.GB6.**

6-19.4.GR6 Measurement

6-19.4.INST1.GR6 (The ninth and tenth paragraphs of Section 6-19.4 are revised to read as follows)
Must use once preceding any of the following:

6-19.4.OPT1.GB6 (Variations In Bearing Layer Elevations)
(January 2, 2012)
Use in projects where shaft embedment to a minimum penetration into a bearing layer is required, and where the bearing layer elevation cannot be accurately specified with certainty. Include with **6-19.3(3).OPT1.GB6 and 6-19.3(5).OPT1.GB6.**

6-19.4.INST2.GR6 (Section 6-19.4 is supplemented with the following)
Must use once preceding any of the following:

6-19.4.OPT2.GB6 (CSL Testing By Contractor)
(January 2, 2012)
Use in projects where CSL testing is to be provided by the Contractor. Include with **6-19.3(2).OPT1.GB6, 6-19.3(9)A.OPT1.GB6, 6-19.3(9)C.OPT1.GB6 and 6-19.5.OPT1.GB6.**

6-19.4.OPT3.GB6 (Fresh Water For Synthetic Slurry)
(January 2, 2012)
Use in projects with shafts constructed in salt water when the geotechnical report specifies that the use of fresh water for synthetic slurry is feasible and when the Contracting Agency restricts the water for synthetic slurry to fresh water only. Include with **6-19.2(9-36.2(2)).OPT1.GB6 and 6-19.5.OPT2.GB6.**

6-19.5.GR6 Payment

6-19.5.INST1.GR6 (Section 6-19.5 is supplemented with the following)
Must use once preceding any of the following:

6-19.5.OPT1.GB6	(CSL Testing By Contractor) (January 2, 2012) Use in projects where CSL testing is to be provided by the Contractor. Include with **6-19.3(2).OPT1.GB6, 6-19.3(9)A.OPT1.GB6, 6-19.3(9)C.OPT1.GB6 and 6-19.4.OPT2.GB6.**
6-19.5.OPT2.GB6	(Fresh Water for Synthetic Slurry) (January 2, 2012) Use in projects with shafts constructed in salt water when the geotechnical report specifies that the use of fresh water for synthetic slurry is feasible and when the Contracting Agency restricts the water for synthetic slurry to fresh water only. Include with **6-19.2(9-36.2(2)).OPT1.GB6 and 6-19.4.OPT3.GB6.**

6-01.GR6
General Requirements for Structures

6-01.5.GR6
Work Access and Temporary Structures

6-01.5.INST1.GR6
Section 6-01.5 is re-titled and revised to read:

6-01.5.OPT1.FB6
(April 6, 2015)
Work Access
The Contractor shall construct work access to accommodate all work within the wetted perimeter, or vertically above the environmentally sensitive area, of *** $$1$$ ***, as shown in the plans or staked by the Engineer. The Contractor shall construct and remove the work access in accordance with all environmental regulations and permits, including those specified in Sections 1-07.5 and 1-07.6.

Submittals
The Contractor shall submit Type 2 Working Drawings of the work access, except that if the Contractor chooses an access alternative using a work trestle structure, the Working Drawings shall be Type 2E. The Contractor shall design the work access structure to withstand all applicable loads in accordance with accepted design codes. The Contractor shall specify the design code(s) in the design calculations and working drawings.

The Contractor shall include information with the work access submittal on the construction equipment that will use the work access. The Contractor shall specify the type and model of construction equipment to be used, and shall include equipment catalogue cuts with capacities and geometry. The Contractor shall include anticipated wheel or track loads, axle spacings, outrigger geometry and reactions, crane pick angles and reach, and other equipment details.

6-01.5.OPT1(A).FB6
(April 6, 2015)
Waterway Clearance Requirements
One span of the work access structure shall provide more than *** $$1$$ *** horizontal clearance between supporting piers. The bottom of the superstructure of the work access structure shall be at elevation *** $$2$$ *** or higher. All waterborne debris that accumulates against the work access structure shall be removed by the Contractor.

6-01.5.OPT1(B).GB6
(April 6, 2015)
Payment
Payment will be made in accordance with Section 1-09.3 for the following bid item:

"Work Access - ___", lump sum.

6-01.5.OPT2.FB6
(April 6, 2015)
Temporary Bridge
The Contractor shall design, furnish, erect, maintain, and remove a temporary bridge, including substructure, in accordance with this Special Provision and the details shown in the Plans unless otherwise accepted by the Engineer.

Geometric Requirements
The temporary bridge shall conform to the following geometric requirements:

1. The temporary bridge shall be an overall minimum length of *** $$1$$ ***.

2. The minimum width on the temporary bridge between barriers or railings shall be *** $$2$$ ***.

3. The temporary bridge superstructure shall provide a minimum vertical clearance of *** $$3$$ *** to *** $$4$$ ***.

Design Requirements
The temporary bridge shall conform to the following design requirements:

1. The temporary bridge, including the barriers or railings, shall be designed in accordance with the latest edition of the AASHTO LRFD Bridge Design Specifications. Barriers or railings shall be designed to TL-2, minimum, with a minimum height of 32-inches, except where the Plans require a higher test level and railing height. Seismic design shall conform to AASHTO LRFD Seismic Guide Specification Section 3.6.

2. The vehicular live load used for design shall be 75 percent of HL-93, minimum.

3. The driving surface of the temporary bridge shall be durable, skid resistant deck, with an initial skid number of at least 35 and maintaining a skid number of 26 minimum, in accordance with AASHTO T 242.

4. Notwithstanding the requirements of Section 1-06.1, the materials used by the Contractor to compose the temporary bridge may be salvaged steel, provided that the use of such salvaged steel shall be subject to inspection and approval by the Contractor’s engineer of record and acceptance by the Engineer. For salvaged steel materials where the grade of steel cannot be positively identified, the design stresses for the steel shall conform to Section 6-02.3(17)B3.

5. In addition to the criteria specified in Item 1, the temporary bridge substructure shall be designed in accordance with the WSDOT Geotechnical Design Manual (M46-03).

Submittals
The Contractor shall submit Type 3E Working Drawings of the temporary bridge including an erection plan and procedure conforming to Section 6-03.3(7)A.

Construction and Removal

The Contractor shall construct the temporary bridge in accordance with the working drawings and erection plan as accepted by the Engineer, environmental permit conditions specified in Section 1-07.5 as supplemented in these Special Provisions and as shown in the Plans, and in accordance with the details shown in the Plans. The Contractor shall maintain the temporary bridge, including the driving surface, for the life of the temporary bridge in this project.

All welding, repair welding, and welding inspection, of steel components of the temporary bridge shall conform to the Section 6-03.3(25) and 6-03.3(25)A requirements specified for steel bridges.

After the temporary bridge is no longer needed the Contractor shall remove the temporary bridge.

Payment

Payment will be made in accordance with Section 1-09.3 for the following bid item:

"Temporary Bridge___", lump sum.

6-01.7.GR6
Navigable Streams

6-01.7.INST1.GR6

Section 6-01.7 is supplemented with the following:

6-01.7.OPT1.FB6

(June 26, 2000)

Navigation Lighting System

Description

This work consists of furnishing and installing a complete navigation lighting system, as shown in the Plans.

Materials

The navigation lights shall be the make and model shown in the Plans. All other materials shall conform to Section 9-29.

Payment

Payment will be made in accordance with Section 1-04.1 for the following bid item:

"Navigation Lighting System ***$$1$$***", lump sum.

6-01.7.OPT2.FB6

(June 26, 2000)

Temporary Navigation Lights

Description

This work consists of furnishing, installing, and maintaining temporary navigation lights as required by the United States Coast Guard, and removing them at the completion of the Contract.

Construction Requirements

The navigation lights shall be battery powered and shall remain the property of the Contractor at the completion of the Contract unless otherwise specified. The Contractor shall maintain the temporary navigation lights for the duration of the Contract.

Payment

All costs in connection with furnishing, installing, maintaining, and removing the temporary navigation lights as specified, and as shown in the Plans, shall be included in the *** $$1$$. ***

6-02.GR6
Concrete Structures

6-02.2.GR6
Materials

6-02.2.INST1.GR6
Section 6-02.2 is supplemented with the following:

6-02.2.OPT1.GR6
(April 1, 2013)
Resin Bonded Anchors
The resin bonded anchor system shall include the nut, washer, and threaded anchor rod which is installed into hardened concrete with a resin bonding material.

Resin bonding material used in overhead and horizontal application shall be specifically recommended by the resin manufacturer for those applications.

Resin bonding material used in submerged liquid environment shall be specifically recommended by the resin manufacturer for this application.

The resin bonded anchor system shall conform to the following requirements:

1. Threaded Anchor Rod and Nuts
   Threaded anchor rods shall conform to ASTM A 193 Grade B7 or ASTM A 449, except as otherwise noted, and be fully threaded. Threaded anchor rods for stainless steel resin bonded anchor systems shall conform to ASTM F 593 and shall be Type 304 unless otherwise specified.

   Nuts shall conform to ASTM A 563, Grade DH, except as otherwise noted. Nuts for stainless steel resin bonded anchor systems shall conform to ASTM F 594 and shall be Type 304 unless otherwise specified.

   Washers shall conform to ASTM F 436, and shall meet the same requirements as the supplied anchor rod, except as otherwise noted. Washers for stainless steel resin bonded anchor systems shall conform to ASTM A 240 and the geometric requirements of ASME B18.21.1 and shall be Type 304 Stainless Steel unless otherwise specified.

   Nuts and threaded anchor rods, except those manufactured of stainless steel, shall be galvanized in accordance with AASHTO M 232. Galvanized threaded anchor rods shall be tested for embrittlement after galvanizing, in accordance with Section 9-29.6(5).

   Threaded anchor rods used with resin capsules shall have the tip of the rod chiseled in accordance with the resin capsule manufacturer's recommendations. Galvanized threaded rods shall have the tip chiseled prior to galvanizing.

2. Resin Bonding Material
   Resin bonding material shall be a two component epoxy resin conforming to Type IV ASTM C 881 or be one of the following:

a. Vinyl ester resin.

b. Polyester resin.

c. Methacrylate resin.

3. Ultimate Anchor Tensile Capacity
Resin bonded anchors shall be tested in accordance with ASTM E 488 to have the following minimum ultimate tensile load capacity when installed in concrete having a maximum compressive strength of 6000 pounds per square inch (psi) at the embedment specified below:

Anchor Diameter (inch)	**Tensile Capacity (lbs.)**	**Embedment (inch)**
3/8	7,800	3-3/8
1/2	12,400	4-1/2
5/8	19,000	5-5/8
3/4	27,200	6-3/4
7/8	32,000	7-7/8
1	41,000	9
1-1/4	70,000	11-1/4

The Contractor shall submit items 1 and 2 below to the Engineer for all resin bonded anchor systems. If the resin bonded anchor system and anchor diameter are not listed in the current WSDOT Qualified Products List, the Contractor shall also submit item 3 below to the Engineer.

For resin bonded anchor systems that are installed in a submerged liquid environment the Contractor shall submit items 1, 2, and 4 below. If the resin bonded anchor system and anchor diameter are not listed in the current WSDOT Qualified Products List, the Contractor shall also submit item 3 below to the Engineer.

1 The resin manufacturer's written installation procedure for the anchors.

2. The manufacturer's certificate of compliance for the threaded anchor rod certifying that the anchor rod meets these requirements.

3. Test results by an independent laboratory certifying that the threaded anchor rod system meets the ultimate anchor tensile load capacity specified in the above table. The tests shall be performed in accordance with ASTM E 488.

4. For threaded anchors intended to be installed in submerged liquid environments the Contractor shall submit tests performed by an independent laboratory within the past 24 months which certifies that anchors installed in a submerged environment meet the strength requirements specified in the above table.

6-02.2.OPT2.GB6
(December 2, 2002)
Epoxy Bonding Agent For Surfaces And For Steel Reinforcing Bar Dowels

Epoxy bonding agent for surfaces shall be Type II, as specified in Section 9-26.1. Epoxy bonding agent for steel reinforcing bar dowels shall be either Type I or Type IV, as specified in Section 9-26.1. The grade and class of epoxy bonding agent shall be as recommended by the resin manufacturer and approved by the Engineer.

6-02.2.OPT3.GB6
(December 2, 2002)
Epoxy Mortar

Epoxy mortar shall be composed of one part of epoxy bonding agent, Type III, as specified in Section 9-26.1, and two parts of clean, fine grained sand, by volume. The grade and class of epoxy bonding agent shall be as recommended by the resin manufacturer and approved by the Engineer.

6-02.2.OPT4.GB6
(June 26, 2000)
Epoxy Crack Sealing Materials

Epoxy sealing paste shall be a thixotropic compound.

Epoxy injection resin shall be a moisture-insensitive, two-component material capable of restoring the structural integrity of a structure by structurally bonding cracks, delaminations and hollow planes. Resin formulations shall be hydrophilic with variable viscosity to allow full depth penetration in cracks having a width of 6 mils and greater.

Epoxy injection resin, when mixed with the hardener in accordance with the manufacturer's written instructions, shall cure to a non-shrink solid material. The material shall have a normal curing time of less than 24 hours.

Epoxy injection resin shall have the following physical properties:

Solids Content, by weight (minimum)	98	percent
Viscosity (maximum) at 77F (Brookfield)	700	cps
Compressive Yield Strength (minimum)	12,000	psi
Minimum Flexural Strength (ASTM D 790)	10,000	psi
Bond Strength (minimum)	500	psi

The Contractor shall submit a sample of the material of the epoxy sealing paste and epoxy injection resin to the Engineer together with sufficient directions and technical data for its use. The Contractor shall not begin epoxy crack sealing operations until receiving the Engineer's approval of the materials selected for use, with verification from the WSDOT Materials Laboratory that the materials meet the specified requirements.

The Contractor shall submit to the Engineer a copy of the Materials Safety Data Sheet (MSDS) for each type of epoxy sealing paste and epoxy injection resin.

6-02.2.OPT5.GB6
(January 7, 2008)
Materials for Concrete Surfaces with Exposed Aggregate Finish

Concrete for members and surfaces specified to receive an exposed aggregate finish shall be Class EA. Concrete Class EA shall conform to the following requirements:

28 day compressive strength	3,600	psi (minimum)
Cement	610	pounds per cubic yard
Fine Aggregate Class 1	880	pounds per cubic yard
Coarse Aggregate Grading No. 67	2,160	pounds per cubic yard
Water (maximum)	270	pounds per cubic yard
Water/Cement Ratio (maximum)	0.44	

A Type A water reducing admixture conforming to Section 9-23.6 shall be used in accordance with Section 6-02.3(3). Air content shall conform to Section 6-02.3(2)A.

Mixing water shall be the minimum required for satisfactory placement and shall not exceed the specified amount.

Aggregate weights are based on a specific gravity of 2.67. Adjustments in the mix design will be made by the Engineer as necessary to correct for actual bulk specific gravity of the aggregates, moisture content of the aggregates, and to ensure proper consistency, workability, and correct cement content per cubic yard of concrete.

The retardant coating for Method 1 shall be selected from the approved products listed in the WSDOT Qualified Products List, latest edition, and shall exhibit the following properties:

1. Retards the set of the surface mortar of the concrete without preventing the concrete to reach the specified 28 day compressive strength.

2. Leaves the aggregate with its original color and luster, and firmly embedded in the concrete matrix.

3. Allows the removal of the surface mortar in accordance with the methods specified in Section 6-02.3(14) as supplemented in these Special Provisions, without the use of acidic washing compounds.

4. Allows for uniform removal of the surface mortar.

If the Contractor proposes use of a retardant coating for Method 1 that is not listed in the current WSDOT QPL, the Contractor shall submit a one quart product sample from a current lot to the Engineer along with supporting product information, MSDS, and a Manufacturer's Certificate of Compliance, in accordance with Section 1-06.3, stating that the product conforms to the above performance requirements. The Contracting Agency will require up to 14 calendar days after receipt of the product sample and product information to complete the evaluation.

6-02.2.OPT6.GB6
(April 2, 2007)
The sealer for surfaces of exposed aggregate concrete shall be a clear, non gloss, penetrating sealer of either a silane, siloxane, or silicone based formulation.

6-02.2.OPT7.GB6
(April 7, 2008)
Fractured Basalt Finish
The fractured basalt finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

    If sent via US Postal Service:

        Washington State Department of Transportation
        State Bridge and Structures Architect
        P. O. Box 47340
        Olympia, WA 98504-7340

    If sent via FedEx:

        Washington State Department of Transportation
        State Bridge and Structures Architect
        7345 Linderson Way SW
        Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT8.GB6
(April 7, 2008)
Fractured Fin Finish
The fractured fin finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

If sent via US Postal Service:

Washington State Department of Transportation
State Bridge and Structures Architect
P. O. Box 47340
Olympia, WA 98504-7340

If sent via FedEx:

Washington State Department of Transportation
State Bridge and Structures Architect
7345 Linderson Way SW
Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT9.GB6
(April 7, 2008)
Fractured Granite Finish

The fractured granite finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products list (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

If sent via US Postal Service:

Washington State Department of Transportation
State Bridge and Structures Architect
P. O. Box 47340
Olympia, WA 98504-7340

If sent via FedEx:

Washington State Department of Transportation
State Bridge and Structures Architect
7345 Linderson Way SW
Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT10.GB6
(April 7, 2008)
Variable Depth Random Board Finish and 3/4 Inch Random Board Finish

The variable depth random board finish and the 3/4 inch random board finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

   If sent via US Postal Service:

   Washington State Department of Transportation
   State Bridge and Structures Architect
   P. O. Box 47340
   Olympia, WA 98504-7340

   If sent via FedEx:

   Washington State Department of Transportation
   State Bridge and Structures Architect
   7345 Linderson Way SW
   Tumwater, WA 98501-6504

The variable depth finish shall utilize an elastomeric form liner, while the ¾ inch depth finish shall use either an elastomeric or a plastic form liner.

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT11.GB6
(April 7, 2008)
Ribbed Finish

The ribbed finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

   If sent via US Postal Service:

Washington State Department of Transportation
State Bridge and Structures Architect
P. O. Box 47340
Olympia, WA 98504-7340

If sent via FedEx:

Washington State Department of Transportation
State Bridge and Structures Architect
7345 Linderson Way SW
Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT12.GB6
(April 7, 2008)
Striated Finish

The striated finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

If sent via US Postal Service:

Washington State Department of Transportation
State Bridge and Structures Architect
P. O. Box 47340
Olympia, WA 98504-7340

If sent via FedEx:

Washington State Department of Transportation
State Bridge and Structures Architect
7345 Linderson Way SW
Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT13.GB6
(April 7, 2008)
Ashlar Stone Finish

The ashlar stone finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

   If sent via US Postal Service:

   Washington State Department of Transportation
   State Bridge and Structures Architect
   P. O. Box 47340
   Olympia, WA 98504-7340

   If sent via FedEx:

   Washington State Department of Transportation
   State Bridge and Structures Architect
   7345 Linderson Way SW
   Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT14.GB6
(April 7, 2008)
Block Finish
The block finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

   If sent via US Postal Service:

   Washington State Department of Transportation
   State Bridge and Structures Architect
   P. O. Box 47340
   Olympia, WA 98504-7340

   If sent via FedEx:

   Washington State Department of Transportation

State Bridge and Structures Architect
7345 Linderson Way SW
Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT15.GB6
(April 7, 2008)
Split Face Finish

The split face finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

If sent via US Postal Service:

Washington State Department of Transportation
State Bridge and Structures Architect
P. O. Box 47340
Olympia, WA 98504-7340

If sent via FedEx:

Washington State Department of Transportation
State Bridge and Structures Architect
7345 Linderson Way SW
Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT16.GB6
(April 7, 2008)
River Rock Finish

The river rock finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

   If sent via US Postal Service:

   Washington State Department of Transportation
   State Bridge and Structures Architect
   P. O. Box 47340
   Olympia, WA 98504-7340

   If sent via FedEx:

   Washington State Department of Transportation
   State Bridge and Structures Architect
   7345 Linderson Way SW
   Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT17.GB6
(April 5, 2010)
Cascadian Stone Finish

The cascadian stone finish shall be accomplished by the use of either a form liner selected from the approved products listed in the WSDOT Qualified Products List (QPL), latest edition, or a form liner approved by the Engineer as an equal product. For approval of form liners not listed in the current WSDOT QPL, the Contractor shall submit four copies of the request, along with catalogue cuts and other descriptive supporting information, as follows:

1. Two sets to the Project Engineer

2. Two sets, accompanied by a 2 foot square physical sample of the form liner, to the State Bridge and Structures Architect, addressed as follows:

   If sent via US Postal Service:

   Washington State Department of Transportation
   State Bridge and Structures Architect
   P. O. Box 47340
   Olympia, WA 98504-7340

   If sent via FedEx:

   Washington State Department of Transportation
   State Bridge and Structures Architect
   7345 Linderson Way SW
   Tumwater, WA 98501-6504

The height of the form liner shall be equal to or greater than the height of the formed surface. Only elastomeric form liners are allowed to have horizontal splices.

6-02.2.OPT22.GB6
(April 1, 2013)
Modular Expansion Joint System

Structural steel shall conform to ASTM A 36, ASTM A 572 Grade 50, or ASTM A 588. Aluminum components shall not be used.

Stainless steel shall conform to ASTM A 240 Type 304.

Bolts and other hardware shall conform to the requirements of ASTM A 325 Type 1 or 2 and shall be galvanized in accordance with AASHTO M 232 and Section 9-06.5(3) of the Standard Specifications.

PTFE shall be 100% virgin teflon, woven PTFE fabric, or dimpled PTFE conforming to the requirements of Section 18.8 of the AASHTO LRFD Bridge Construction Specifications, current edition and latest interims.

Expansion joint strip seals shall conform to the following:

Property	Test Method	Range of Values
Hardness, Durometer A	ASTM D 2240	55 -70
Tensile Strength	ASTM D 412	2000 psi minimum
Elongation at break	ASTM D 412	250%
Compression Set, at 72 hr. at 212F	ASTM D 395	40%

The maximum size of each expansion joint strip seal shall be 3 inches. Box-type seals or seals utilizing double webs will not be acceptable. Seals shall be continuous without splices.

6-02.2.OPT26.GB6
(April 6, 2015)
Rapid Cure Silicone Sealant

Rapid cure silicone sealant shall be Dow Corning 902 RCS Joint Sealant.

The Contractor shall deliver the joint sealant to the job site in the sealant manufacturer's original sealed container. Each container shall be marked with the sealant manufacturer's name and lot or batch number. Each lot or batch shall be accompanied by the manufacturer's Materials Safety Data Sheet (MSDS), and Manufacturer’s Certificate of Compliance, identifying the lot or batch number, and certifying that the materials conform to the properties stated on the product data sheet.

The backer rod shall be closed cell expanded polyethylene foam as recommended by the sealant manufacturer. The diameter of the backer rod shall be as recommended by the sealant manufacturer for the expansion joint opening at the time of installation.

6-02.2.OPT27.GB6
(April 6, 2015)
Polyester Concrete

Polyester Resin Binder

The resin shall be an unsaturated isophthalic polyester-styrene co-polymer.

Prior to adding the initiator, the resin shall conform to the following requirements:

Viscosity:	75 to 200 cps (20 rpm at 77F, RVT No. 1 spindle)	ASTM D 2196
Specific Gravity:	1.05 to 1.10 at 77F	ASTM D 1475
Styrene Content:	45% to 50% by weight of polyester styrene resin	ASTM D2369

The hardened resin shall conform to the following requirements:

Elongation:	35% minimum w/ thickness 0.25" ± 0.04"	ASTM D 638
Tensile Strength:	2,500 psi minimum w/ thickness 0.25" ± 0.04"	ASTM D 638
Conditioning	18 hours/77F/50% + 5 hours/158F	ASTM D 618
Silane Coupler:	1.0% minimum (by weight of polyester-styrene resin)	

The silane coupler shall be an organosilane ester, gammamethacryloxypropyltrimethoxysilane. The promoter/hardeners shall be compatible with suitable methyl ethyl ketone peroxide (MEKP) and cumene hydroperoxide (CHP) initiators. MEKP and CHP initiators shall be used as recommended by the manufacturer.

Polyester resin binder will be accepted based on submittal to the Engineer of a Manufacturer's Certificate of Compliance.

High Molecular Weight Methacrylate (HMWM) Resin
In addition to the viscosity and density properties, and the promoter/initiator system, specified in Section 6-09.2, the HMWM resin for polyester concrete shall conform to the following requirements:

Flash Point:	180F minimum	ASTM D 3278
Tack-Free Time:	400 minutes maximum	California Test 551

Prior to adding initiator, the HMWM resin shall have a maximum volatile content of 30 percent, when tested in conformance with ASTM D 2369.

HMWM resin will be accepted based on submittal to the Engineer of a Manufacturer's Certificate of Compliance.

Aggregate
The aggregate shall be from a WSDOT approved pit site and shall be thoroughly washed and kiln dried.

The aggregate shall conform to Section 9-03.1(5)B for either 1/2-inch or 3/8-inch maximum nominal aggregate size.

The combined aggregate shall have a maximum of 45 percent crushed particles. Fine aggregate shall conform to Section 9-03.13.

Aggregate absorption shall not exceed 1.0 percent. The moisture content of the aggregate shall not exceed one half of the aggregate absorption at the time of mixing with the polyester resin binder. The aggregate temperature shall be between 45F and 100F at the time of mixing.

Sand for Abrasive Finish
The sand for abrasive finish shall conform to Section 6-09.2, and the aggregate moisture content requirements specified above.

6-02.2.OPT28.GB6
(April 6, 2015)
Elastomeric Concrete
Elastomeric concrete shall be one of the following three products:

BASF/Watson Bowman Acme Wabo Crete II

D. S. Brown Delcrete

R. J. Watson Poly-Tron

The elastomeric concrete aggregate shall be as specified, gradated, and packaged by the elastomeric concrete manufacturer.

The primer shall be as recommended by the elastomeric concrete manufacturer.

The Contractor shall deliver the elastomeric concrete components to the job site in the elastomeric concrete manufacturer's original sealed containers. Each container shall be marked with the sealant manufacturer's name and lot or batch number. Each lot or batch shall be accompanied by the manufacturer's Materials Safety Data Sheet (MSDS), and Manufacturer’s Certificate of Compliance, identifying the elastomeric concrete manufacturer and the lot or batch number, and certifying that the materials conform to the properties stated in the product data sheet.

6-02.2.OPT33.GB6
(April 7, 2008)
Fabric Pad Bearing
Unless other materials are specified in the Plans, fabric pad bearing assembly components shall conform to the following requirements for those components shown and specified in the Plans:

Steel Plates and Bars
Steel plates and bars (keeper bars, sole plates, backing plates, and masonry plates) shall conform to ASTM A 36 and the dimensions shall conform to the details shown in the Plans. The backing plate and masonry plate surfaces in contact with the pre-formed fabric pad, and the surface within the recess of the backing plate, shall have an average surface roughness of 250 microinches or less. The surface of the sole plate in contact with the stainless steel sheet shall have an average surface roughness of 125 microinches or less. All other steel plate and bar

surfaces in contact with other fabric pad bearing components shall have an average surface roughness of 500 microinches or less.

Pre-formed Fabric Pad
Pre-formed fabric pads shall be composed of multiple layers of duck, impregnated and bound with high quality oil resistant synthetic rubber, compressed into resilient pads of uniform thickness. The duck shall be of highest quality cotton or cotton-polyester 50-50 blend, and shall weigh a minimum of eight ounces per square yard. The cotton warp and the filling yarn shall be 2-ply. The cotton-polyester warp and fill shall be single yarn, with a minimum breaking strength by grab method of 150 pounds per inch width (piw) warp, and 140 piw fill. The filling count of the duck shall be 40$\pm$ 2 threads per inch and the warp count shall be 50 $\pm$ 1 threads per inch. The number of plies shall be sufficient to produce the specified thickness, after compression and vulcanization.

The finished pads shall withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 psi without any sign of failure after the load is removed. Failure is defined as any breakdown of the component materials or laminations.

The pre-formed fabric pad shall have a shore A hardness of 90$\pm$5.

Polytetraflouroethylene (PTFE) Sheet
PTFE shall be 100 percent virgin (unfilled) PTFE, fiberglass fiber filled PTFE, or dimpled PTFE conforming to Section 18.8.2 of the AASHTO LRFD Bridge Construction Specifications, current edition and latest interims, and the following requirements:

1. PTFE sheet shall be composed of 100 percent virgin (unfilled) polytetrafluoroethylene resin, except where filled PTFE is specified in the Plans.

2. Filled PTFE, when specified in the Plans, shall be composed of PTFE resin uniformly blended with 15 percent maximum fiberglass fiber.

3. The substrate shall limit the flow (elongation) of the confined PTFE to not more than 0.009 inch under a pressure of 2,000 psi for 15 minutes at 78F for a two inch by three inch test sample.

4. Unfilled PTFE shall have a hardness of 50 to 65 Durometer D, at 78F, in accordance with ASTM D 2240.

Stainless Steel Sheet
Stainless steel sheet shall be no less than 14 gage meeting ASTM A 240 Type 304L specifications. Stainless steel in contact with the PTFE shall be polished to a Number 8 mirror finish.

Welded Shear Connectors
Welded shear connectors shall conform to Section 9-06.15.

Bolts, Nuts and Washers

Bolts, nuts and washers shall conform to Section 9-06.5(3), and shall be galvanized after fabrication in accordance with AASHTO M 232.

Anchor Bolts, Nuts and Washers

Anchor bolts, nuts and washers shall conform to Section 9-06.5(4). The top 1'-0", minimum, of the exposed end of the anchor bolts, and the associated nuts and washers, shall be galvanized after fabrication in accordance with AASHTO M 232.

Concrete Inserts

Concrete inserts shall be as specified in the Plans.

Silicone Grease and Epoxy Gel

Silicone grease shall conform to US Navy QPL AS8660-2.

Epoxy gel shall be Type I, Grade 3, Class A, B, or C, conforming to Section 9-26.1.

Submittals of Test Reports, Certifications, and Samples

The Contractor shall submit to the Engineer the following test reports, certifications, and samples for review, testing, and approval, prior to installing the fabric pad bearings:

1. Manufacturer's certificate of compliance for the PTFE, pre-formed fabric pad duck, silicone grease, and epoxy gel.

2. Certified mill test reports for all steel and stainless steel in the bearing assemblies.

3. Certified test reports confirming that the pre-formed fabric pads meet the specified requirements of proof load.

4. Samples of the pre-formed fabric pads, size six inches by six inches by one inch, and PTFE sheet, size six inches by six inches by 1/8 inch, from the production material.

The Engineer will require 15 calendar days to review and test the submitted certificates, test reports, and samples. If all or a portion of the submittal fail to meet the specified requirements, the Contractor shall correct the deficiencies and resubmit to the Engineer. An additional 15 calendar days may be required by the Engineer for review of each resubmittal.

6-02.2.OPT38.BSP.GB6
(BSP April 7, 2008)
High-Load Elastomeric Bearing Pad Assembly

High-load elastomeric bearing pads shall meet all Level I and Level II acceptance criteria as specified in AASHTO M 251.

The Contractor shall perform a Long Duration Compression Load test on high-load elastomeric bearing pads randomly selected from each size and material batch of the production bearings. The Contractor shall test one bearing per lot, minimum, where one lot is defined as ten percent of the total number of production bearings in each size and material batch. The Long Duration Compression Load test shall be as specified in

Sections 18.2.5.6 and 18.2.5.7 of the AASHTO LRFD Bridge Construction Specifications, current edition and latest interims. The Contractor shall submit the test results to the Engineer for approval.

If one of the test bearings fails, all of the bearings of that lot shall be rejected, unless the Contractor elects to test each bearing of the lot, at no additional expense to the Contracting Agency. In lieu of this procedure, the Engineer may require the Contractor to test all bearings of the lot.

Steel bars, plates, and shapes, shall conform to ASTM A 36.

Silicone grease shall conform to US Navy QPL AS8660-2.

Epoxy gel shall conform to Section 9-26.1, Type I, Grade 3, Class A, B, or C.

Bolts shall conform to Section 9-06.5(3).

6-02.2.OPT39.BSP.GB6
(BSP January 7, 2013)
Cylindrical Bearing

Unless other materials are specified in the Plans, cylindrical bearing assembly components shall conform to the following requirements for those components shown and specified in the Plans:

Steel Plates and Bars

Steel plates and bars (base plates, bearing plates, guide bars, masonry plates, and sole plates) shall conform to ASTM A 36, and the dimensions shall comply with the details as shown in the Plans. The surface of the steel plates and bars in contact with stainless steel shall have an average surface roughness of 125 microinches or less. The surface within the recess of steel plates and bars retaining PTFE shall have an average surface roughness of 250 microinches or less. All other steel plate and bar surfaces in contact with other cylindrical bearing assembly components shall have an average surface roughness of 500 microinches or less.

Polytetrafluoroethylene (PTFE)

PTFE shall be 100 percent virgin PTFE, woven PTFE fabric, or dimpled PTFE conforming to Section 18.8.2 of the AASHTO LRFD Bridge Construction Specifications, current edition and latest interims.

Stainless Steel

Stainless steel sheet shall conform to ASTM A 240 Type 304L. Stainless steel in contact with PTFE shall be polished to a Number 8 mirror finish.

Stainless steel countersunk screws shall be hexagon socket type conforming to ANSI B 18.3 and shall conform to ASTM F 593 Type 304L.

Silicone Grease and Epoxy Gel

Silicone grease shall conform to US Navy QPL AS8660-2.

Epoxy gel shall be Type I, Grade 3, Class A, B, or C, conforming to Section 9-26.1.

Bolts, Nuts and Washers

Bolts, nuts and washers shall conform to Section 9-06.5(3) and shall be galvanized after fabrication in accordance with AASHTO M 232.

Anchor Bolt Assembly

Anchor bolts shall conform to ASTM F 1554 Grade 105, including supplemental requirements S2, S3, and S5. Nuts shall conform to ASTM A 563 Grade DH. Washers shall conform to ASTM F 436. Bars shall conform to ASTM A 36. Pipe shall conform to ASTM A 53 Grade B Type E or S, black. The upper portion of the anchor bolts, and associated nuts and washers, to six inches minimum below the concrete surface, shall be galvanized after fabrication in accordance with AASHTO M 232.

Resin Filler

Resin filler shall conform to Section 6-02.2 as supplemented in these Special Provisions.

Submittals of Acceptance Test Reports and Certificates

The Contractor shall submit the following production samples, and test reports and certificates, to the Engineer for review, testing, and approval:

1. Manufacturer's certificate of compliance for the PTFE, resin filler, and silicone grease, in accordance with Section 1-06.3.

2. A six inch by six inch by 1/8 inch sample of PTFE taken from the lot of production material.

3. Certified mill test reports for all steel and stainless steel materials incorporated in the bearings.

The Contractor shall not ship the bearings from the fabricator's facility until receiving the Engineer's written approval of all production samples, and test reports and certificates.

6-02.2.OPT40.BSP.GB6

(BSP January 7, 2013)

Disc Bearing

Unless other materials are specified in the Plans, disc bearing assembly components shall conform to the following requirements for those components shown and specified in the Plans:

Steel Plates and Bars

Steel plates and bars (sliding plates, bearing plates, guide bars, masonry plates, and sole plates) shall conform to ASTM A 36, and the dimensions shall comply with the details as shown in the Plans. The surface of the steel plates and bars in contact with stainless steel shall have an average surface roughness of 125 microinches or less. The surface of steel plates in contact with the polyether urethane disc, and the surface within the recess of steel plates and bars retaining PTFE, shall have an average surface roughness of 250 microinches or less. All other steel plate and bar surfaces in contact with other disc bearing assembly components shall have an average surface roughness of 500 microinches or less.

Polyether Urethane

Polyether urethane shall conform to Section 18.3.2.8 and Table 18.3.2.8-1 of the AASHTO LRFD Bridge Construction Specifications, current edition and latest interims.

Polytetrafluoroethylene (PTFE)

PTFE shall be 100 percent virgin PTFE, woven PTFE fabric, or dimpled PTFE conforming to Section 18.8.2 of the AASHTO LRFD Bridge Construction Specifications, current edition and latest interims.

Stainless Steel

Stainless steel sheet shall conform to ASTM A 240 Type 304L. Stainless steel in contact with PTFE shall be polished to a Number 8 mirror finish.

Stainless steel countersunk screws shall be hexagon socket type conforming to ANSI B 18.3 and shall conform to ASTM F 593 Type 304L.

Silicone Grease and Epoxy Gel

Silicone grease shall conform to US Navy QPL AS8660-2.

Epoxy gel shall be Type I, Grade 3, Class A, B, or C, conforming to Section 9-26.1.

Bolts, Nuts and Washers

Bolts, nuts and washers shall conform to Section 9-06.5(3) and shall be galvanized after fabrication in accordance with AASHTO M 232.

Anchor Bolt Assembly

Anchor bolts shall conform to ASTM F 1554 Grade 105, including supplemental requirements S2, S3, and S5. Nuts shall conform to ASTM A 563 Grade DH. Washers shall conform to ASTM F 436. Bars shall conform to ASTM A 36. Pipe shall conform to ASTM A 53 Grade B Type E or S, black. The upper portion of the anchor bolts, and associated nuts and washers, to six inches minimum below the concrete surface, shall be galvanized after fabrication in accordance with AASHTO M 232

Resin Filler

Resin filler shall conform to Section 6-02.2 as supplemented in these Special Provisions.

Submittals of Acceptance Test Reports and Certificates

The Contractor shall submit the following production samples, and test reports and certificates, to the Engineer for review, testing, and approval:

1. Manufacturer’s certificate of compliance for the polyether urethane, PTFE, resin filler, and silicone grease, in accordance with Section 1-06.3.

2. A six inch by six inch by 1/8 inch sample of PTFE taken from the lot of production material.

3. Certified mill test reports for all steel and stainless steel materials incorporated in the bearings.

The Contractor shall not ship the bearings from the fabricator's facility until receiving the Engineer's written approval of all production samples, and test reports and certificates.

6-02.2.OPT41.BSP.GB6
(BSP January 7, 2013)
Spherical Bearing

Unless other materials are specified in the Plans, spherical bearing assembly components shall conform to the following requirements for those components shown and specified in the Plans:

Steel Plates and Bars

Steel plates and bars (base plates, bearing plates, guide bars, keeper bars and plates, masonry plates, and sole plates) shall conform to ASTM A 36, and the dimensions shall comply with the details as shown in the Plans. The surface of the steel plates and bars in contact with stainless steel shall have an average surface roughness of 125 microinches or less. The surface within the recess of steel plates and bars retaining PTFE shall have an average surface roughness of 250 microinches or less. All other steel plate and bar surfaces in contact with other spherical bearing assembly components shall have an average surface roughness of 500 microinches or less.

Polytetrafluoroethylene (PTFE)

PTFE shall be 100 percent virgin PTFE, woven PTFE fabric, or dimpled PTFE conforming to Section 18.8.2 of the AASHTO LRFD Bridge Construction Specifications, current edition and latest interims.

Stainless Steel

Stainless steel sheet shall conform to ASTM A 240 Type 304L. Stainless steel in contact with PTFE shall be polished to a Number 8 mirror finish.

Stainless steel countersunk screws shall be hexagon socket type conforming to ANSI B 18.3 and shall conform to ASTM F 593 Type 304L.

Silicone Grease and Epoxy Gel

Silicone grease shall conform to US Navy QPL AS8660-2.

Epoxy gel shall be Type I, Grade 3, Class A, B, or C, conforming to Section 9-26.1.

Bolts, Nuts and Washers

Bolts, nuts and washers shall conform to Section 9-06.5(3) and shall be galvanized after fabrication in accordance with AASHTO M 232.

Anchor Bolt Assembly

Anchor bolts shall conform to ASTM F 1554 Grade 105, including supplemental requirements S2, S3, and S5. Nuts shall conform to ASTM A 563 Grade DH. Washers shall conform to ASTM F 436. Bars shall conform to ASTM A 36. Pipe shall conform to ASTM A 53 Grade B Type E or S, black. The upper portion of the anchor bolts, and associated nuts and washers, to six inches minimum below the concrete surface, shall be galvanized after fabrication in accordance with AASHTO M 232

Resin Filler

Resin filler shall conform to Section 6-02.2 as supplemented in these Special Provisions.

Submittals of Acceptance Test Reports and Certificates

The Contractor shall submit the following production samples, and test reports and certificates, to the Engineer for review, testing, and approval:

1. Manufacturer's certificate of compliance for the PTFE, resin filler, and silicone grease, in accordance with Section 1-06.3.

2. A six inch by six inch by 1/8 inch sample of PTFE taken from the lot of production material.

3. Certified mill test reports for all steel and stainless steel materials incorporated in the bearings.

The Contractor shall not ship the bearings from the fabricator's facility until receiving the Engineer's written approval of all production samples, and test reports and certificates.

6-02.2.OPT46.GB6

Bridge Supported Utilities

6-02.2.OPT46(A).GB6

(June 26, 2000)

Inserts shall be of the type and model specified in the Plans. Inserts shall be galvanized in accordance with AASHTO M 111.

6-02.2.OPT46(B).GB6

(April 30, 2001)

Hanger rods, and associated nuts and washers, shall conform to Section 9-06.5(1), and shall be galvanized in accordance with AASHTO M 232.

Steel bars and plates shall conform to ASTM A 36 and shall be galvanized in accordance with AASHTO M 111.

6-02.2.OPT46(C).GB6

(June 26, 2000)

Horizontal strut bolts, and associated nuts and washers, shall conform to Section 9-06.5(3), and shall be galvanized in accordance with AASHTO M 232.

Pre-formed fabric pads shall be composed of multiple layers of duck, impregnated and bound with high quality oil resistant synthetic rubber, compressed into resilient pads of uniform thickness. The duck shall be of highest quality cotton or cotton-polyester 50-50 blend, and shall weigh a minimum of eight ounces per square yard. The cotton warp and the filling yarn shall be 2-ply. The cotton-polyester warp and fill shall be single yarn, with a minimum breaking strength by grab method of 150 pounds per inch per width (piw) warp, and 140 piw fill. The filling count of the duck shall be 40± 2 threads per inch and the warp count shall be 50 ± 1 threads per inch. The number of plies shall be sufficient to produce the specified thickness, after compression and vulcanizing.

The finished pads shall withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 psi without any sign of failure after the load is removed. Failure is defined as any breakdown of the component materials or laminations.

Pre-formed fabric pads shall have a shore A hardness of 90±5.

Pre-formed fabric pads for bridge utility supports will be accepted based on the manufacturer's certificate of compliance that the material furnished conforms to these specifications. The Contractor shall submit the manufacturer's certificate of compliance to the Engineer in accordance with Section 1-06.3.

6-02.2.OPT46(D).GB6
(June 26, 2000)
Pipe rolls or pipe saddles shall be of the type and model specified in the Plans.

6-02.2.OPT46(E).GB6
(April 30, 2001)
Anchor straps shall conform to ASTM A 36 and shall be galvanized after fabrication in accordance with AASHTO M 111.

Anchor bolts, and associated nuts and washers, shall conform to Section 9-06.5(3), and shall be galvanized in accordance with AASHTO M 232.

6-02.2.OPT47.GB6
(April 30, 2001)
Bridge Grate Inlet
Steel in grates, angles, and anchors for bridge grate inlets shall conform to Section 9-05.16.

Pipe straps shall conform to ASTM A 36, and shall be galvanized after fabrication in accordance with AASHTO M 111.

Anchor bolts and associated nuts and washers shall conform to Section 9-06.5(1) and shall be galvanized after fabrication in accordance with AASHTO M 232.

Drain pipe stub shall conform to the Section 9-05.1(2) requirements for zinc coated (galvanized) corrugated steel drain pipe.

Elastomeric expansion joint seal glands shall be selected from the approved products listed in the WSDOT Qualified Products List, latest edition, and sized as appropriate for the bridge grate inlet expansion joint shown in the Plans.

6-02.2.OPT48.GB6
(April 30, 2001)
Bridge Drain Risers
Spacer bars and riser bars for the drain riser assembly shall conform to ASTM A 36.

6-02.2.OPT49.GB6
(August 1, 2011)
Bridge Deck Repair Material

Bridge deck repair material shall be either an ultra-low viscosity, two-part liquid, polyurethane-hybrid polymer concrete, or a pre-packaged cement based repair mortar, as produced by the products specified below:

Ultra-Low Viscosity, Two-Part Liquid, Polyurethane-Hybrid Polymer Concrete

The ultra-low viscosity, two-part liquid, polyurethane-hybrid polymer concrete shall be the following product:

URE-KOTE PF-60
Liquid Concrete, Inc.
P. O. Box 16782
Seattle, WA 98116
(800) 349-1922
FAX: (877) 349-1922
www.liquidconcrete.com

Pre-Packaged Cement Based Repair Mortar

Pre-packaged cement based repair mortar shall be a pre-packaged bridge deck repair mix capable of achieving a cube compressive strength of 3,000 psi in six hours or less. The maximum water soluble chloride ion (Cl-) content, expressed as a percentage by dry mass of cement in the pre-packaged bridge deck repair mix, shall be 0.08, in accordance with ASTM C 1218.

The pre-packaged cement based repair mortar mix shall be one of the following products:

Rapid Set DOT Mix
CTS Cement Manufacturing Company
11065 Knott Avenue Suite A
Cypress, CA 90630
(800) 929-3030
FAX: (714) 379-8270
www.ctscement.com

Set 45
BASF Building Systems
889 Valley Park Drive
Shakopee, MN 55379
(800) 433-9517
FAX: (952) 496-6062
www.buildingsystems.basf.com

MBT Thoroc 10-60 Rapid Mortar
BASF Building Systems
889 Valley Park Drive
Shakopee, MN 55379
(800) 433-9517
FAX: (952) 496-6062
www.buildingsystems.basf.com

Alternatively, the Contractor may propose use of a bridge deck repair material other than those specified above. If the Contractor proposes use of a bridge deck repair material not listed above, the Contractor shall submit a Request for Approval of Material (RAM) for the product to the Engineer, accompanied by samples from the lot or lots of pre-packaged mix. The Contractor shall furnish such samples as required by the Engineer, and the Contracting Agency will require up to 14 calendar days to test and evaluate the submittal for compressive strength and chloride ion content.

6-02.2.OPT55.GB6
(April 6, 2015)
Permeon Surface Treatment

The surface aging treatment (Permeon Treatment) shall be one of the following products:

"Permeon Simulated Desert Varnish" as produced by:

Soil Tech
6420 S Cameron Drive Suite 207
Las Vegas, NV 89118
www.soil-tech.com
(702) 873-2023
FAX: (702) 873-0915

"Natina Concrete Formula" as produced by:

Natina Products, LLC
1577 First Street
Coachella, CA 92236
www.natinaproducts.com
(877) 762-8462
FAX: (866) 420-1708

"Naturock" as produced by:

Livingston Construction, Inc.
P. O. Box 262
Doty, WA 98539
(360) 754-8235

"CR2020" as produced by:

Custom Rock
2020 W Seventh Street
St. Paul, MN 55116
www.customrock.com
(651) 699-1345
FAX: (651) 699-1830

6-02.2.OPT56.BSP.GB6
(BSP June 26, 2000)
Resin Filler

Resin filler shall be a two component, resin and catalyst, liquid thermoset material.

The properties of the resin and catalyst shall be:

1. The components shall be supplied in separate containers.

2. The viscosity of the resin-catalyst mixture shall be 35,000 ± 5,000 cP at 75F immediately after mixing.

3. The flash point shall be 100F minimum.

4. After mixing, the resin-catalyst mixture shall be pourable for a minimum of eight minutes at 60F and shall harden in fifteen minutes maximum. Heating of the mixture after placing to a maximum temperature of 250F is permissible to obtain a full cure.

The properties of the cured resin shall be:

1. The fully cured compressive strength shall be 12,000 psi minimum.

2. The maximum allowable shrinkage shall be 2 percent. To control shrinkage, an inert filler may be used in the resin provided that the viscosity requirements are met.

3. The hardness shall be between 40 and 55 in accordance with ASTM D 2583.

A resin material known to meet the specified requirements herein is used in the wire rope industry for resin socketing.

The Contractor shall submit a Manufacturer's Certificate of Compliance in accordance with Section 1-06.3 to the Engineer for approval prior to using the resin filler.

6-02.2.OPT57.BSP.FB6
(BSP June 26, 2000)
Compression Molded Pad

The compression molded pad shall be of the size and shape shown in the Plans.

The molded bearing pad shall be composed of a compression molded resilient pad of uniform thickness composed of milled rubber and fiber. The rubber shall be natural or synthetic blends. The fiber shall be randomly dispersed to an average content of 40 percent by volume and the maximum fiber length shall be 1-1/2 inches.

The finished pads shall withstand compression loads perpendicular to the plane of the pad of not less than 8,000 psi without any sign of failure after the load is removed. Failure is defined as any breakdown of the component materials or separation of the component materials.

The durometer hardness (shore A) of the finished pads shall be 87 ±5.

The flexibility of the material shall be such that a sample 1/4 inch thick from the same lot as producing the pads shall show no cracks when bent around a 3/4 inch mandrel.

A sample from the lot producing the pads shall exhibit no more than 10 percent change in hardness after heat aging at 158F for 70 hours.

The manufacturer shall certify to the Engineer in writing prior to installation of the pads, that both the flexibility and change in hardness requirements are met.

6-02.2.OPT58.GB6
(April 6, 2015)
Core Drilled Bridge Deck Drain

Bridge deck drain pipe sleeve shall be any smooth wall, non-perforated, PVC pipe of the diameter and minimum wall thickness specified in the Plans.

Epoxy bonding agent shall be Type II conforming to Section 9-26.1. The grade and class of the epoxy bonding agent shall be as recommended by the bonding agent manufacturer and approved by the Engineer.

6-02.2.OPT60.GB6
(April 6, 2015)
Seismic Retrofit Materials

Components fabricated and constructed for seismic retrofit work shall conform to the following requirements:

6-02.2.OPT60(B).GB6
(April 6, 2015)

Steel pipe shall conform to ASTM A 53, Grade B, Type E or S, galvanized. The pipe shall be Schedule 40, except as otherwise specified in the Plans.

PVC pipe shall be any smooth wall, non-perforated, PVC pipe of the diameter and minimum wall thickness or Schedule specified in the Plans.

6-02.2.OPT60(C).GB6
(April 6, 2015)

Steel bars, plates and shapes shall conform to ASTM A 36 except that structural shapes may conform to ASTM A 992.

Epoxy bonding agent, where shown in the Plans for bonding steel components to concrete, shall be Type II as specified in Section 9-26.1. The grade and class of epoxy bonding agent shall be as recommended by the bonding agent manufacturer.

All steel components and assemblies for seismic restrainers, except as otherwise specified, shall be galvanized after fabrication in accordance with AASHTO M 111.

Bolts, nuts, and washers shall conform to Section 9-06.5(3), and shall be galvanized after fabrication in accordance with AASHTO M 232.

Resin bonded anchors shall conform to Section 6-02.2 as supplemented in these Special Provisions. Additionally, the threaded anchor rods for seismic retrofit elements shall conform to either ASTM A 193 Grade B7 or ASTM F 1554 Grade

105, and shall conform to the appropriate supplemental requirements for grade and manufacturer's identification, and charpy impact testing (15-foot-pounds minimum at 40F). Results of the charpy impact testing for the production lot(s) including the anchor rods furnished for seismic retrofit components and assemblies shall be submitted to the Engineer along with the Manufacturer's Certificate of Compliance.

6-02.2.OPT60(D).GB6

(April 6, 2015)

High-strength steel rods for longitudinal seismic restrainer assemblies shall conform to ASTM F 1554 Grade 105, including Supplemental Requirements S2, S3, and S5. Nuts, and couplers if required, shall conform to ASTM A 563 Grade DH. Washers shall conform to ASTM F 436.

High-strength steel rods and associated couplers, nuts and washers shall be galvanized after fabrication in accordance with AASHTO M 232.

6-02.2.OPT60(E).GB6

(April 6, 2015)

Pre-formed fabric pads shall be composed of multiple layers of duck impregnated and bound with high quality oil resistant synthetic rubber compressed into resilient pads. The pre-formed fabric pads shall conform to the latest edition of MIL-C-882 and the following requirements. The number of plies shall be as required to produce the specified thickness, after compression and vulcanizing. Pre-formed fabric pads shall have a shore A hardness of 90 ± 5 in accordance with ASTM D 2240.

Pre-formed fabric pads for seismic restrainers will be accepted based on the Manufacturer's Certificate of Compliance that the material furnished conforms to these specifications.

6-02.2.OPT60(F).GB6

(April 6, 2015)

Column Jacketing Materials

All metal components shall conform to ASTM A 36, and shall be painted in accordance with Section 6-07.3(9), and Section 6-03.3(30) as supplemented in these Special Provisions. Metal surfaces in contact with grout shall be considered in contact with concrete for the purposes of Section 6-07.3(9).

Grout shall conform to the requirements of Section 9-20.3(4) and the following requirements:

> The grout shall be a pumpable mix capable of filling the annulus between the concrete column and steel column jacket assembly. The grout shall be free of lumps and undispersed cement, and shall not show any visible signs of separation of water and cement during pumping operations.

Aggregate conforming to Section 9-03.1(5) with a maximum aggregate size of 3/8 inch may be used to extend the grout. Mortar shall conform to Section 9-20.4(2).

Epoxy bonding agent for filling grout voids shall be Type II, as specified in Section 9-26.1. The grade and class of epoxy bonding agent shall be as recommended by the bonding agent manufacturer and approved by the Engineer.

6-02.2.OPT61.BSP.GB6
(BSP April 5, 2010)
Precast Prestressed Concrete Stay-In-Place Panels
Concrete shall have an initial strength at strand release, and a 28 day minimum compressive strength, as specified in the Plans.

Prestressing reinforcement shall conform to Section 9-07.10, except that the diameter shall be as specified in the Plans.

Grout shall conform to Section 9-20.3(2).

Leveling bolts shall conform to Section 9-06.5(1), and shall be galvanized after fabrication in accordance with AASHTO M 232.

Backer rod shall be closed cell expanded polyethylene foam.

6-02.3.GR6
Construction Requirements

6-02.3.INST1.GR6
Section 6-02.3 is supplemented with the following:

6-02.3.OPT1.GB6
(August 1, 2011)
Epoxy Crack Sealing
The materials being used may be dermatetic. The Contractor’s contact with and use of the materials shall conform to the requirements specified in the MSDS for each material, and all personnel shall be provided with appropriate clothing and protective garments.

All materials shall be stored and protected from ignition sources as recommended by the material manufacturer.

The cracks shall be cleaned of efflorescence, deteriorated concrete and other surface debris, by vacuuming, flushing, routing, sawing or other means as required.

Entry ports shall consist of tubes, tees or other valve devices as recommended by the resin manufacturer. The ports shall be placed at intervals along each crack in accordance with the manufacturer's written instructions for the resin being used. The holes for the entry ports shall be drilled with a hollow bit with an attached vacuum chuck to prevent concrete dust from becoming embedded in the crack.

The exposed crack surfaces and the areas around the entry ports shall be sealed with epoxy sealing paste and cured in accordance with the resin manufacturer's written instructions, to attain a seal capable of withstanding the applied injection pressures.

The Contractor shall furnish the services of a factory trained technical representative to perform the epoxy crack sealing injection.

Injection shall be accomplished with a pressure or injection machine compatible with the resin selected for use and shall begin at the lowest port and continue until there is evidence of the resin at the entry port directly above and adjacent to the port being pumped. When material travel is indicated, the nozzle shall be moved to the port that shows resin. The previously pumped port shall be sealed. Injection shall continue until the crack is completely filled. On wide cracks where resin travel between ports will be rapid, two or more ports may be pumped simultaneously. On exceptionally large cracks, a formulation (dependent upon crack width, ambient temperature, modulus requirements and other variables) of epoxy resin and fine sands shall be used as approved by the Engineer.

After all ports have been pumped and the crack is full, the epoxy resin shall be cured without disturbance in accordance with the resin manufacturer's written instructions as necessary to ensure development of the full bond capacity of the material.

After the epoxy has cured completely, the epoxy sealing paste and port stems shall be ground flush with the original surface of the concrete.

At the discretion of the Engineer, cores shall be taken after the repair is completed to confirm penetration and bonding. The number and locations of such cores will be as specified by the Engineer. These cores shall be submitted to the Engineer for testing in the WSDOT Materials Laboratory.

6-02.3.OPT2.GB6
Bridge Supported Utilities

6-02.3.OPT2(A).GB6
(June 26, 2000)
The Contractor shall furnish and install inserts for the bridge utility supports as shown in the Plans. The Contractor shall verify that the hanger rods freely hang plumb in their inserts, and shall make adjustments to the inserts as necessary and as approved by the Engineer prior to utility installation.

6-02.3.OPT2(B).GB6
(June 26, 2000)
The Contractor shall furnish and install the bridge utility supports, and the utility pipe or conduit pipe, as shown in the Plans.

6-02.3.OPT2(C).FB6
(June 26, 2000)
The Utility Company will furnish material for and install *** $$1$$ ***. The Contractor shall install *** $$2$$ *** furnished by the *** $$3$$ ***.

The Contractor shall notify the utility company a sufficient time in advance and shall cooperate with the utility company in order that the utility furnished items may be installed in the structure.

6-02.3.OPT3.GR6
(April 3, 2006)
Submittals
Prior to beginning any concrete work, the Contractor shall submit a plan, for the Engineer's review and approval, outlining the procedures to be used to prevent high pH stormwater or dewatering water from entering surface waters. The plan shall include how the pH of the water will be maintained between pH 6.5 and pH 8.5 prior to being

discharged from the project or entering surface waters. The plan shall conform to the requirements of Section 8-01.

6-02.3.OPT8.GB6
Seismic Retrofit

6-02.3.OPT8(A).GB6
(April 6, 2015)
Plans of Existing Bridge

Plans of the existing bridge(s) included in the seismic retrofit work are available at the Project Engineer's Office for the prospective bidder's inspection.

6-02.3.OPT8(B).GB6
(April 6, 2015)
Seismic Retrofit Demolition Plan

The Contractor shall submit Type 2 Working Drawings showing the method of removing the specified portions of the existing bridges required by the seismic retrofit work. The Working Drawings shall show the sequence of demolition and removal, the type of equipment to be used in all demolition and removal operations, and details of the methods and equipment used for containment, collection, and disposal of all debris. The Working Drawings shall show all stages of demolition.

6-02.3.OPT8(C).GB6
(April 6, 2015)
Column Jacket Installation Plan

The Contractor shall submit Type 2E Working Drawings describing the column jacket installation plan. The submittal shall include at a minimum, the following:

1. Step by step installation procedure.

2. The methods of cleaning and preparing the existing column surfaces prior to installing the column jacket assembly.

3. The methods of containing, collecting, and disposing of the debris generated by cleaning and preparing the existing column surfaces.

4. The methods of containing, collecting, and disposing of all excess grout generated during the grouting process.

5. The locations of grout injection valves, and the methods and materials used to remove them following use, and to fill the void following removal.

6. The method of sealing the gap between the existing column surface and the column jacket assembly prior to grouting.

7. The method and materials used to clamp and brace the column jacket assembly in place during field assembly and grouting.

8. The proposed grout mix with manufacturer's data sheets.

9. The equipment used to pump the grout and monitor the grout pressure and the quantity of grout injected.

10. The method, materials, and equipment used to fill grout voids within the column jacket assembly, and to finish the exposed surface flush after repair.

11. The method, materials, and equipment used to field repair all damaged primer coatings, and to field apply the intermediate and finish coats of paint.

6-02.3.OPT8(D).GB6
(April 6, 2015)
Column Jacket Shop Drawings

The Contractor shall submit column jacket shop drawings as Type 2 Working Drawings. The shop drawings shall include, at a minimum, the following:

1. Plan, elevation, and sections of the jacket system and all components, with all dimensions and tolerances.

2. Field measurements of the existing column(s).

3. All material designations.

4. Location of horizontal and vertical splices.

5. Location of spacers and method of attachment.

6. Welds and welding procedures.

6-02.3.OPT8(E).GB6
(April 6, 2015)
Field Measuring Existing Bridge Columns

The Contractor shall field measure the dimensions (diameter, or width and thickness, as appropriate for column shape) of the existing bridge columns receiving column jackets prior to preparing column jacket assembly shop drawings. The following locations shall be field measured as a minimum for each column:

1. Top of footing or footing pedestal.

2. Bottom of crossbeam.

3. Mid-height of column.

The Contractor shall field measure the column height from top of footing or footing pedestal to bottom of crossbeam for each column.

The Contractor shall tabulate these field measured dimensions and submit them to the Engineer along with the column jacket assembly shop drawings.

Where site conditions, such as traffic control requirements or deeply buried foundations, create difficulties for field measuring buried portions of the bridge columns, the Contractor may request a waiver of the pre-fabrication field measuring requirements for specific columns. If the Engineer approves the Contractor's request for a waiver of the pre-fabrication field measuring requirement for specific columns, the Contractor shall:

1. Field measure the diameter, or width and thickness, as appropriate for the column shape, of the above ground portion of the column receiving the waiver.

2. Fabricate the column jacket to a length exceeding the column height (2'-0" or ten percent of the estimated column height, whichever is greater) based on the original plans and other available site data. The shop drawing details shall specify the column jacket fabrication length, and the assumed column height based on the available information.

3. Submit the method, template, and equipment used to field cut the top of the column jacket assembly at installation.

The Contractor shall submit the request for a waiver of the pre-fabrication field measuring requirement prior to preparing column jacket assembly shop drawings, and shall not submit shop drawings until receiving the Engineer's approval of the waiver request and completing all field measurements still required.

6-02.3.OPT8(F).FB6

(April 6, 2015)

The column(s) at the Bridge and Pier location(s) specified below has (have) received a waiver of the pre-fabrication field measuring requirement, and no separate waiver request from the Contractor is required for this (these) specific column(s):

*** $$1$$ ***

However, the Contractor shall conform to all other requirements specified above for columns receiving a waiver of the pre-fabrication field measuring requirement.

6-02.3.OPT8(G).FB6

(April 6, 2015)

Field Measuring for Seismic Retrofit Components

The Contractor shall field measure dimensions of existing items and members of Bridge No(s). *** $$1$$ *** prior to preparing shop drawings for fabricated steel components and assemblies.

The Contractor shall field measure dimensions of the following items:

*** $$2$$ ***

The Contractor shall tabulate these field measured dimensions and submit them to the Engineer along with the shop drawing submittals for the corresponding steel components and assemblies.

6-02.3.OPT8(H).GB6
(April 6, 2015)
Removing Portions of Existing Concrete
The Contractor shall remove portions of existing concrete required by the seismic retrofit work in accordance with Section 2-02.3(2)A2 and as shown in the Plans.

The Contractor shall dispose of all materials removed by the demolition operations in accordance with Section 2-02.3.

The Contractor shall roughen, clean, and saturate the existing concrete surfaces bonding to the fresh concrete in accordance with Section 6-02.3(12).

6-02.3.OPT8(J).GB6
(April 6, 2015)
Drilling Holes and Setting Steel Reinforcing Bars, and Placing Concrete
The Contractor shall drill holes for, and set, steel reinforcing bars into the existing concrete as shown in the Plans in accordance with Section 6-02.3(24)C as supplemented in these Special Provisions.

6-02.3.OPT8(K).GB6
(April 6, 2015)
Installing and Tensioning High-Strength Steel Bar Reinforcement
The Contractor shall furnish and install high-strength steel bars as shown in the Plans. The hole through existing concrete shall be core drilled. The concrete surface in contact with the high-strength steel bar bearing plate shall be coated with epoxy bonding agent just prior to stressing the high-strength steel bar. After stressing, the high-strength steel bar shall be grouted in accordance with Section 6-02.3(26)H.

6-02.3.OPT8(L).GB6
(April 6, 2015)
Longitudinal Seismic Restrainers
The Contractor shall submit Type 1 Working Drawings consisting of shop drawings of the steel components of the longitudinal seismic restrainer assemblies in accordance with Section 6-03.3(7).

The Contractor shall core drill holes through the pier diaphragm for the high-strength steel bar as shown in the Plans. The Contractor shall set the PVC pipe in place with epoxy bonding agent as shown in the Plans.

Holes for the resin bonded anchors for the longitudinal seismic restrainer anchorages shall be located and drilled in accordance with Section 6-02.3(18) as supplemented in these Special Provisions, and as follows:

1. The bottom layer of steel reinforcing bars in the slab in the vicinity of the longitudinal seismic restrainer anchorage as shown in the Plans shall be located and marked on the concrete surface.

2. Using the anchorage assembly as a template, the Contractor shall align and slightly shift the anchorage assembly as required so that the holes avoid the existing steel reinforcing bars.

3. The Contractor shall drill holes for the resin bonded anchors with the anchorage assembly in position as a template.

4. If, after shifting the anchorage assembly, conflicts still exist between hole locations and existing steel reinforcing bars, the Contractor may, with the Engineer's approval, core drill holes at the conflict locations.

The surface of the concrete in contact with the anchorage assembly shall be coated with Type II epoxy bonding agent conforming to Section 9-26.2, with the grade and class as recommended by the epoxy bonding agent manufacturer. The longitudinal seismic restrainer anchorage assembly shall be set in place within the set time specified in the manufacturer's data sheet for the epoxy bonding agent.

All longitudinal seismic restrainers at a pier shall be installed so that the free end (the end with the gap as shown in the Plans) shall be on the same side of the pier.

6-02.3.OPT8(M).GB6
(April 6, 2015)
Column Jacketing
The steel column jacket assembly for each column shown in the Plans shall be fabricated in accordance with the shop drawings.

The Contractor shall excavate and shore as required to expose the column surface below ground to the top of the existing footing or footing pedestal. Dirt, debris and any surface attachments shall be removed from the surface of the column in accordance with the Contractor's column jacket installation plan.

For specific columns for which the Engineer approves a waiver of the pre-fabrication field measuring of the column height dimension, the Contractor shall field measure the column height upon completion of the excavation. The Contractor shall field cut the top of the column jacket assembly using the method, template, and equipment as specified in the pre-fabrication field measuring waiver request submittal.

The Contractor shall position the steel column jacket around the existing column using spacers to center the assembly. The spacers may be welded to the inside of the jacket and, if used, shall be placed and attached as shown in the shop drawings.

Field welded complete penetration groove welds of the column jacket assemblies shall be inspected in accordance with Section 6-03.3(25)A. Field weld inspection shall be performed by a certified welding inspector (CWI). The Contractor shall not begin welding until receiving approval of the joint fit-up from the CWI. The CWI shall randomly monitor the intermediate stages of welding. The CWI's daily reports and nondestructive testing reports indicating compliance with contract requirements shall be submitted as a Type 1 Working Drawing upon completion of the last column jacket in the Contract.

The Contractor shall install external grout injection valves for use in filling the cavity with grout. The valves shall be spaced such that the grout will uniformly fill the gap between the jacket assembly and the column surface. The grout pump shall be equipped with a pressure gauge to monitor grout pressures. The grouting equipment shall be sized to enable the grout to be pumped in one continuous operation. The mixer shall be capable of continuously agitating the grout.

The production grout compressive strength shall be measured using four inch diameter by eight inch cylinders, cast and cured in accordance with Section 6-02.3(5)H. The cylinders shall attain a 7-day minimum compressive strength of 4,000 psi.

The gap between the column jacket assembly and the existing column surface at the base of the assembly shall be sealed in accordance with the column jacket installation plan.

The grouting operation shall conform to Section 6-02.3(6)A.

The grouting operation shall begin from the base of the assembly and from the base of each successive lift. The Contractor shall pump grout into the assembly while maintaining a uniform level grout head around the column.

The Contractor shall limit the height of each lift of grout to minimize undulations and displacements of the surface of the column jacket assembly during grouting. For column jacket assemblies of circular (constant radius) cross section, the height of each lift of grout shall be limited to 20 feet maximum, except as otherwise approved by the Engineer. For column jacket assemblies with cross sections of all other shapes, the height of each lift of grout shall be limited to 8 feet maximum, except as otherwise approved by the Engineer.

The Contractor may restrain the column jacket assembly within the specified tolerances during grouting operations by using a bracing system in accordance with the column jacket installation plan. Except as otherwise shown in the Plans, restraints for the bracing system shall not pass through the column. Except when a bracing system is used, placement of the next grout lift shall not begin until the previous grout lift has hardened.

The Contractor shall contain and collect all grout outside the column jacket assembly.

When the assembly is completely grouted to the top, the Contractor shall place mortar conforming to Section 9-20.4(2) over the top of the grout at the top of the assembly, and shall slope the mortar to drain.

All clamps, valves, injection ports, lifting ears, and other attachments shall be removed not less than 24 hours after completing grouting operations at the column. The Contractor shall fill all voids with mortar conforming to Section 9-20.4(2), and shall finish them flush with the exterior surface of the column jacket assembly. The Contractor shall not remove the attachments by flame cutting.

Seven calendar days after completing the grouting of a column jacket assembly, the Engineer will inspect the assembly for voids between the steel casing and the grout. The Contractor shall completely fill all voids detected by the Engineer by injecting epoxy bonding agent into the lowest point of each void and venting at the highest point. The exposed epoxy bonding agent shall be finished flush with the exterior surface of the column jacket assembly.

After inspection for voids and epoxy injection of voids is complete, steel surfaces with damaged primer coat shall be repaired with field primer in accordance with Section 6-07.3(9). The primer repair shall be followed by application of the intermediate and finish field coats of paint to all exposed steel surfaces in accordance with Section 6-07.3(9) and Section 6-03.3(30) as supplemented in these Special Provisions.

Backfill shall not be placed against the column jacket assembly until the finish coat of paint is completely cured, based on the cure duration recommended by the paint manufacturer. The Contractor shall fill and compact the excavation with native backfill, except as otherwise specified in the Plans, in accordance with Section 2-09.3(1)E.

6-02.3.OPT9.GB6
(April 6, 2015)
Polyester Concrete

Manufacturer's Technical Representative

The Contractor shall have the services of a qualified polyester concrete manufacturer's technical representative physically present at the job site. The manufacturer's technical representative shall assist the Contractor in training the Contractor's personnel and providing technical assistance in preparing the header blockout surface, applying primer, and mixing, placing, and curing the polyester concrete.

Mix Design

Polyester concrete shall be composed of the following three components – polyester resin binder, high molecular weight methacrylate (HMWM) resin, and aggregate, in accordance with Section 6-02.2 as supplemented in these Special Provisions.

The Contractor shall prepare and submit a Type 1 Working Drawing consisting of the polyester concrete design mix and mixing procedure. The mix design shall include a recommended initiator percentage for the expected application temperature, and the recommended amount of polyester resin binder as a percentage of the dry weight of aggregate. The amount of peroxide initiator used shall result in a polyester concrete set time between 30 and 120 minutes during placement as determined by California Test 551, Part 2, "Method of Test For Determination of Set Time of Concrete Overlay and Patching Materials", by Gilmore Needles. Accelerators or inhibitors may be required as recommended by the polyester resin binder supplier.

Delivery and Storage of Materials

All materials shall be delivered in their original containers bearing the manufacturer's label, specifying date of manufacturing, batch number, trade name brand, and quantity. Each shipment of polyester resin binder and HMWM resin shall be accompanied by a Materials Safety Data Sheet (MSDS).

The material shall be stored in accordance with the manufacturer's recommendations.

Sufficient material to perform the entire polyester concrete application shall be in storage at the site prior to any field preparation.

Equipment and Containment

The Contractor shall submit a Type 1 Working Drawing consisting of all equipment for cleaning the concrete and steel surfaces, and mixing and applying the polyester concrete.

The HMWM resin, and abrasive blasting materials, shall be contained and restricted to the surface receiving the polyester concrete only, and shall not escape to the surrounding environment. The Contractor shall submit a Type 1 Working Drawing consisting of the method and materials used to collect and contain the HMWM resin, and abrasive blasting materials.

Surface Preparation

The concrete and steel surfaces shall be prepared by removing all material which may act as a bond breaker between the surface and the polyester concrete. Surface cleaning shall be by abrasive blasting. Precautions shall be taken to ensure that no dust or debris leaves the bridge deck and that all traffic is protected from rebound and dust.

If the concrete or steel surfaces become contaminated, the contaminated areas shall be recleaned by abrasive blasting.

Application of Prime Coat

Application of the HMWM prime coat and the polyester concrete shall not begin if rain is forecast within 12-hours of completion of the Work. The area receiving the prime coat shall be dry and had no rain within the past 12 hours. Immediately prior to applying the prime coat, the surfaces shall be swept clean by compressed air to remove accumulated dust and any other loose material.

The concrete bridge deck surface shall be between 50F and 85F when applying the prime coat.

The Contractor shall apply one coat of promoted/initiated wax-free HMWM resin to the prepared concrete and steel surfaces immediately before placing the polymer concrete. The promoted/initiated resin shall be worked into the concrete in a manner to assure complete coverage of the area receiving polyester concrete. A one pint sample of each batch of promoted/initiated HMWM resin shall be retained and submitted to the Engineer at the time of primer application.

The prime coat shall cure for 30 minutes minimum before beginning placement of the polyester concrete. Placement of the polymer concrete shall not proceed until the Engineer verifies that the HMWM resin was properly promoted and initiated, as evidenced by the HMWM batch sample.

If the primed surface becomes contaminated, the contaminated area shall be cleaned by abrasive blasting and reprimed.

Mixing Equipment for Polyester Concrete

Polyester concrete shall be mixed in mechanically operated mixers in accordance with the mix design as approved by the Engineer. The mixer size shall be limited to a nine cubic yard maximum capacity, unless otherwise approved by the Engineer.

The aggregate and resin volumes shall be recorded for each batch along with the date of each recording. A printout of the recordings shall be furnished to the Engineer at the end of each work shift.

The Contractor shall prevent any cleaning chemicals from reaching the polyester mix during the mixing operations.

Mixing Components

The polyester resin binder in the polyester modified concrete shall be approximately 12 percent by weight of the dry aggregate. The Contractor shall specify the exact percentage in the mix design Working Drawing submittal.

The polyester resin binder shall be initiated and thoroughly blended just prior to mixing the aggregate and binder. The polyester concrete shall be thoroughly mixed prior to placing.

Polyester Concrete Placement

The polyester concrete shall be placed within two hours of placing the prime coat.

Polyester concrete shall be placed within 15 minutes following initiation. Polyester concrete that is not placed within this time shall be discarded.

The surface temperature of the area receiving the polyester concrete shall be the same as specified above for the HMWM prime coat.

The polyester concrete shall be consolidated in accordance with the manufacturer's recommendations.

Finished Polyester Concrete Surface

The finished surface of the polyester concrete shall smooth and uniform as to crown and grade in accordance with Section 6-02.3(10)D3.

Finishing equipment used shall strike off the polyester concrete to the established grade and cross section.

The polyester concrete shall receive an abrasive sand finish. The sand finish shall be applied by hand immediately after strike-off and before gelling occurs. Sand shall be broadcast onto the surface to affect a uniform coverage of a minimum of 0.8 pounds per square yard.

Curing

The polyester concrete shall be cured in accordance with the manufacturer's recommendations. The Contractor shall measure the compressive strength of the cured polyester concrete with a rebound hammer in accordance with ASTM C 805. The readings of the rebound hammer used shall be correlated to the compressive strength of the polyester concrete product in accordance with ASTM C 805 Section 5.4, and the Contractor shall submit a Type 1 Working Drawing of this correlation.

Traffic and equipment shall not be permitted on the polyester concrete until it achieves a compressive strength of 2500 psi based on the rebound hammer readings and the correlation chart for the rebound hammer used.

6-02.3.OPT10.GB6
(April 6, 2015)
Elastomeric Concrete

Elastomeric concrete shall be composed of the following three components – two-component polyurethane resin binder, and aggregate, in accordance with Section 6-02.2 as supplemented in these Special Provisions.

Manufacturer's Technical Representative

The Contractor shall have the services of a qualified elastomeric concrete manufacturer's technical representative physically present at the job site. The manufacturer's technical representative shall assist the Contractor in training the Contractor's personnel and providing technical assistance in preparing the header blockout surface, applying primer, and mixing, placing, and curing the elastomeric concrete.

Delivery and Storage of Materials

All materials shall be delivered in their original containers bearing the manufacturer's label, specifying date of manufacturing, batch number, trade name brand, and quantity. Each shipment of polyurethane resin binder shall be accompanied by a Materials Safety Data Sheet (MSDS).

The materials shall be stored in accordance with the manufacturer's recommendations.

Sufficient material to perform the entire elastomeric concrete application shall be in storage at the site prior to any field preparation.

Equipment and Containment

The Contractor shall submit a Type 1 Working Drawing consisting of all equipment for cleaning the concrete and steel surfaces, and mixing and applying the elastomeric concrete.

The abrasive blasting materials, shall be contained and restricted to the surface receiving the elastomeric concrete only, and shall not escape to the surrounding environment. The Contractor shall submit a Type 1 Working Drawing consisting of the method and materials used to collect and contain the abrasive blasting materials.

Surface Preparation

The concrete and steel surfaces shall be prepared by removing all material which may act as a bond breaker between the surface and the elastomeric concrete, including the removal of all loose, deteriorated, or otherwise unsound concrete. Steel surfaces shall be cleaned and prepared to an SSPC SP-10 surface condition. Surface cleaning shall be by abrasive blasting.

Precautions shall be taken to ensure that no dust or debris leaves the bridge deck and that all traffic is protected from rebound and dust.

If the concrete or steel surfaces become contaminated, the contaminated areas shall be recleaned by abrasive blasting.

Freshly placed concrete shall be cured for a minimum of 14 calendar days before application of primer and elastomeric concrete.

Application of Prime Coat

Application of the prime coat and the elastomeric concrete shall not begin if rain is forecast within 12-hours of completion of the Work. The area receiving the prime coat shall be dry and had no rain within the past 12 hours. Immediately prior to applying the prime coat, the surfaces shall be swept clean by compressed air to remove accumulated dust and any other loose material.

The concrete bridge deck surface shall be between 50F and 85F when applying the prime coat.

The Contractor shall apply primer in accordance with the elastomeric concrete manufacturer's recommendations, and shall limit the extent of primer application to that surface area that can be covered by a layer of elastomeric concrete before primer cure.

If the primed surface becomes contaminated, the contaminated area shall be cleaned by abrasive blasting and reprimed.

Mixing Components

The Contractor shall mix the elastomeric concrete components and the resultant mixture in accordance with the equipment and procedure recommended by the elastomeric concrete manufacturer.

Elastomeric Concrete Placement

The elastomeric concrete shall be placed on the liquid prime coat within the time limits specified by the manufacturer. Elastomeric concrete shall be placed in layers not to exceed the maximum depth recommended by the elastomeric concrete manufacturer. At locations deep enough to require placement of multiple layers of elastomeric concrete, each layer shall be cured, and the top of the previous layer roughened, as recommended by the elastomeric concrete manufacturer before placement of the next layer.

Elastomeric concrete shall be placed within five minutes of initiation.

The surface temperature of the area receiving the elastomeric concrete shall be the same as specified above for the prime coat.

Finished Elastomeric Concrete Surface

The finished surface of the elastomeric concrete shall be smooth and uniform as to crown and grade in accordance with conform to the requirements of Section 6-02.3(10)D3.

Finishing tools or equipment used shall strike off the elastomeric concrete to the established grade and cross section.

The finished surface of elastomeric concrete shall receive an abrasive sand finish. The sand finish shall be applied by hand immediately after strike-off and before gelling occurs. Sand shall be broadcast onto the surface to affect a uniform coverage of a minimum of 0.8 pounds per square yard.

Curing

The elastomeric concrete shall be cured in accordance with the manufacturer's recommendations. The Contractor shall measure the compressive strength of the cured elastomeric concrete with a rebound hammer in accordance with ASTM C 805. The readings of the rebound hammer used shall be correlated to the compressive strength of the elastomeric concrete product in accordance with ASTM C 805 Section 5.4, and the Contractor shall submit a Type 1 Working Drawing of this correlation.

Traffic and equipment shall not be permitted on the elastomeric concrete until it achieves a compressive strength of 2500 psi based on the rebound hammer readings and the correlation chart for the rebound hammer used.

6-02.3(2).GR6

Proportioning Materials

6-02.3(2).INST1.GR6

Section 6-02.3(2) is supplemented with the following:

6-02.3(2).OPT1.GB6

(April 6, 2015)

Expansion Joint Header Concrete

Expansion joint header concrete shall have a minimum compressive strength of 4,000 psi at 28 days. The concrete shall achieve a minimum compressive strength of 2,500 psi based on early break cylinders prior to allowing traffic to pass across the expansion joint.

Type III cement conforming to Section 9-01.2(1) may be used.

The nominal maximum size aggregate shall be 1-1/2 inch.

Section 6-02.3(3) notwithstanding, non-chloride accelerating admixtures conforming to the following specifications may be used:

Admixture	**Specifications**
Accelerating	Section 9-23.6(4)
Water Reducing/Accelerating	Section 9-23.6(6)

6-02.3(5).GR6

Acceptance of Concrete

6-02.3(5)A.GR6

General

6-02.3(5)A.INST1.GR6
Section 6-02.3(5)A is supplemented with the following:

6-02.3(5)A.OPT1.GB6
(June 26, 2000)
Concrete Class EA
Concrete Class EA made in accordance with the Contracting Agency-provided mix will be accepted based on conformance to the requirements specified in Section 6-02.2, as supplemented in these Special Provisions, for proportioning, temperature, and 28 day compressive strength.

6-02.3(6).GR6
Placing Concrete

6-02.3(6)B.GR6
Placing Concrete in Foundation Seals

6-02.3(6)B.INST1.GR6
Section 6-02.3(6)B is supplemented with the following:

6-02.3(6)B.OPT1.GB6
(June 26, 2000)
If, in the opinion of the Engineer, water conditions at the time of construction do not require seals for footing construction, the Engineer may specify that the seals be omitted. In such a case the Contractor shall lower and construct the footing, as shown in the Plans, at the elevation shown in the Plans for the bottom of seal. The height of the pier shaft or columns shall be adjusted accordingly.

No adjustment will be allowed in the unit contract prices for concrete, steel reinforcing bar, and excavation by reason of any increase or decrease in quantities involved due to the deletion of seals.

6-02.3(6)B.OPT2.GB6
(June 26, 2000)
If, in the opinion of the Engineer, water conditions at the time of construction do not require seals for construction, the Engineer may specify that the seals be omitted. In such a case, the Contractor shall excavate only to the bottom of footing elevation and shall construct the footing as shown in the Plans.

No adjustment will be allowed in the unit contract prices for concrete, steel reinforcing bar, and excavation by reason of any increase or decrease in quantities involved due to the deletion of seals.

6-02.3(10).GR6
Bridge Decks and Bridge Approach Slabs

6-02.3(10)D.GR6
Concrete Placement, Finishing, and Texturing

6-02.3(10)D.INST1.GR6
Section 6-02.3(10)D is supplemented with the following:

6-02.3(10)D.OPT1.GB6
(August 4, 2008)
Repairing Slab Left Exposed After Removing Existing Curb or Sidewalk
The concrete exposed by the removal of the existing curb or sidewalk shall be removed to a depth of 1-inch below finished grade or to the top of the existing roadway deck steel reinforcing bars, whichever is less. The Contractor shall not remove concrete below the top of the existing steel reinforcing bars. The Contractor shall not damage the bond between the existing steel reinforcing bars and the concrete.

After roughening, cleaning and wetting the surface in accordance with Section 6-02.3(12), the Contractor shall place concrete over the surface to the finish grade of the adjacent concrete roadway deck using a modified Class 4000 concrete mix. The maximum aggregate size in the modified Class 4000 concrete mix shall be 3/8 inch. The finished portion of the deck shall have the same texture, slope and grade as that of the existing deck.

6-02.3(10)D.OPT2.GB6
(August 4, 2008
Repairing Slab Left Exposed After Removing Existing Curb and Railbase
After roughening and cleaning the concrete exposed by the removal of the existing curb and railbase, that portion of the exposed surface not covered by the new traffic barrier shall be coated with epoxy mortar and finished to have the same texture, slope and grade as that of the existing deck.

6-02.3(10)D.OPT3.GB6
(August 3, 2009)
Bridge Drain Risers
The Contractor shall submit the method of removing the bridge drain grate nipple extrusion, the method of grinding the existing curb as necessary for bridge drain riser installation, and the method of cleaning the existing drain casting surfaces in contact with the drain risers, to the Engineer for approval. The shop drawings and weld procedures for the drain riser assemblies shall be submitted to the Engineer in accordance with Sections 6-03.3(7) and 6-03.3(25).

The existing bridge drain grate bolt, debris from removing the nipple extrusion and cleaning the drain casting contact surfaces, and all debris in the bridge drain cavity, shall be disposed of in accordance with Section 2-02.3.

After cleaning the bridge drain casting contact surfaces, the Contractor shall install the spacer bars and riser bars of the bridge drain riser assembly as shown in the Plans.

All exposed surfaces of the spacer bars and riser bars following installation shall be painted with two coats of paint conforming to Section 9-08.1(2)F. Each coat shall have a minimum dry film thickness of two mils.

6-02.3(10)D.OPT3(A).GB6
(August 4, 2008)
A minimum of four slotted holes, each 2 inches long and 3/4 inches high, shall be provided on each bridge drain riser. The slotted holes shall be located at the bottom of the riser, two on the traffic side of the assembly and one each on the short ends of the assembly. Risers shall be installed to be flush with the proposed roadway profile and shall maintain uniform contact with the existing drain. This portion of work shall be completed prior to the installation of the membrane waterproofing.

The membrane waterproofing shall extend to the bottom of and all around the bridge drain riser, except that the Contractor shall ensure that the slotted holes of the bridge drain riser assembly remain open and unplugged by the membrane waterproofing. Water seeping under the overlay shall be allowed to drain through the slotted holes and into the bridge drains.

After all the items of work on this project have been completed, the Contractor shall clean and flush all the bridge drains.

6-02.3(10)D.OPT5.GB6
(January 4, 2010)
Plugging Existing Bridge Drain
The Contractor shall submit the method and materials used to plug the existing bridge drains specified in the Plans to be plugged, to the Engineer for approval. The submittal shall include the following:

1. Material used to plug the drain outlet, and method of securing the plug in position.

2. The type of concrete material used to fill the drain cavity.

3. The method used to remove the exposed drainpipe, if removal is specified in the Plans.

All cut, damaged, and exposed metal surfaces to remain, including the drain outlet plug if metal components are used, shall be painted with two coats of paint conforming to Section 9-08.1(2)F. Each coat shall have a minimum dry film thickness of two mils.

When the removal of exposed drainpipe is specified in the Plans, the Contractor shall remove the embedded anchors a minimum of one inch beneath the existing concrete surface. The void left by removal of the embedded anchors shall be coated with epoxy bonding agent and filled with mortar conforming to Section 9-20.4(2). The epoxy bonding agent shall be Type II conforming to Section 9-26.1 with the grade and class as recommended by the epoxy bonding agent manufacturer and as approved by the Engineer. The mortar shall consist of cement and fine aggregate mixed in the proportions to match the color of the existing concrete surface as near as practicable.

All materials removed from the bridge drains specified in the Plans to be plugged shall be disposed of as specified in Section 2-02.3.

6-02.3(10)D.OPT6.GB6
(August 1, 2011)
Bridge Deck Repair

Quality Assurance

The Contractor shall have the services of a manufacturer's technical representative of the bridge deck repair material manufacturer available at the job site to assist in assuring the proper preparation and use of the bridge deck repair material in the bridge deck repair. The manufacturer's technical representative shall be present at the site at all times while the Contractor is preparing and placing the bridge deck repair material. The manufacturer's technical representative shall be an employee of the bridge deck repair material manufacturer. Recommendations made by the manufacturer's technical representative and approved by the Engineer, shall be followed by the Contractor.

Bridge Deck Preparation

The Contractor, with the Engineer, shall inspect the exposed concrete bridge deck in accordance with Section 6-09.3(6) to establish the extent of bridge deck repair.

All loose and unsound concrete within the repair area shall be removed with jackhammers or chipping hammers no more forceful than the nominal 30 pounds class, or other mechanical means approved by the Engineer, and operated at angles less than 45 degrees as measured from the surface of the deck to the tool. If unsound concrete exists around the existing steel reinforcing bars, or if the bond between concrete and steel reinforcing bar is broken, the Contractor shall remove the concrete to provide a 3/4 inch minimum clearance to the bar. The Contractor shall take care to prevent damage to the existing steel reinforcing bars and concrete to remain.

After removing sufficient concrete to establish the limits of the repair area, the Contractor shall make neat vertical saw cuts and maintain square edges at the boundaries of the repair area. The saw cut depth shall not exceed 3/4 inch or the concrete cover over the top steel reinforcing bars, whichever is less.

The exposed steel reinforcing bars and concrete in the repair area shall be sandblasted and blown clean just prior to placing the bridge deck repair material.

Ultra-Low Viscosity, Two-Part Liquid, Polyurethane-Hybrid Polymer Concrete

The ultra-low viscosity, two-part liquid, polyurethane-hybrid polymer concrete shall be mixed in accordance with the manufacturer's recommendations.

Aggregate shall conform to the gradation limit requirements recommended by the manufacturer. The aggregate and the ultra-low viscosity, two-part liquid, polyurethane-hybrid polymer concrete shall be applied to the repair areas in accordance with the sequence and procedure recommended by the manufacturer.

All repairs shall be float finished flush with the surrounding surface within a tolerance of 1/8 inch of a straight edge placed across the full width and breadth of the repair area.

Pre-Packaged Cement Based Repair Mortar

The pre-packaged cement based repair mortar shall be thoroughly mixed in a batch mixer which mixes materials uniformly throughout the batch, and is of the type and size approved by the Engineer. The mixer shall have a minimum rated capacity of four cubic feet. The batches shall be charged into the mixer such that some water enters before the pre-packaged material. The Contractor shall place all water required for the mix in the drum by the end of the first quarter of the required mixing time of one minute minimum. The volume of water used, including the moisture content of the aggregate extenders, shall not exceed the volume recommended by the pre-packaged cement based repair mortar manufacturer by more than one percent. If the Contractor uses water in excess of the specified maximum limit, the mix will be subject to rejection by the Engineer.

The Contractor may propose shorter mixing times with special mixing equipment by submitting mixing test results to the Engineer for approval. If the Contractor uses heated water, the Engineer may require revising the order of charging to prevent flash setting of the mix.

If the pre-packaged cement based repair mortar does not include aggregate, the Contractor shall extend the mix with aggregate conforming to Section 9-20.2(3). The amount of aggregate used to extend the mix shall be between 50 percent and 100 percent of the maximum volume, by weight, recommended by the pre-packaged cement based repair mortar manufacturer.

All repairs shall be float finished flush with the surrounding surface within a tolerance of 1/8 inch of a straight edge placed across the full width and breadth of the repair area.

Cure

All bridge deck repair areas shall be cured in accordance with the bridge deck repair material manufacturer's recommendations as approved by the Engineer until the bridge deck repair material has attained the specified strength. During curing, all vehicular and foot traffic shall be prohibited on the repaired area.

For those bridge decks receiving a waterproofing membrane and HMA overlay, all deck repair shall be completed prior to placement of the waterproofing membrane.

6-02.3(10)D.OPT12.GB6
(April 6, 2015)
Core Drilled Bridge Deck Drain
The Contractor shall core drill drain holes through the bridge deck of the bridges and in the locations shown in the Plans. The Contractor shall grind the concrete bridge deck to provide a taper at the top of the cored hole if shown in the Plans. The Contractor shall contain, collect and dispose of the concrete cores and debris in accordance with Section 2-02.3.

The Contractor shall coat the surfaces of the cored holes with epoxy bonding agent, and shall set a bridge deck drain pipe sleeve in place as shown in the Plans. The Contractor shall ensure that the void between the cored hole surface and the outside of the pipe sleeve is completely filled with epoxy bonding agent. The Contractor shall take appropriate measures to prevent the epoxy bonding agent from escaping from the void and shall secure the pipe sleeve in position until the epoxy bonding agent is cured.

6-02.3(10)F.GR6
Bridge Approach Slab Orientation and Anchors

6-02.3(10)F.INST1.GR6
Section 6-02.3(10)F is supplemented with the following:

6-02.3(10)F.OPT2.GB6
(August 4, 2008)
The pavement end of the bridge approach slab shall be constructed parallel to the pavement seat.

6-02.3(10)F.OPT3.FB6
(August 4, 2008)
The pavement end of the bridge approach slab shall be constructed parallel to the pavement seat for bridge(s) No. *** $$1$$ ***. The pavement end of the bridge approach slab shall be constructed normal to the roadway center line for bridge(s) No. *** $$2$$ ***.

6-02.3(13).GR6
Expansion Joints

6-02.3(13).INST1.GR6
Section 6-02.3(13) is supplemented with the following:

6-02.3(13).OPT3.FB6
(August 2, 2010)
Modular Expansion Joint System
The Contractor shall design, fabricate, inspect, test, and install a modular, multiple seal expansion joint system in accordance with the geometry and movements shown and specified in the Plans. The modular expansion joint system shall extend continuously across the full width of the bridge deck and up into the traffic barriers as shown in the Plans.

Acceptable Manufacturers

Only manufacturers whose modular expansion joint systems have met the requirements specified in the **Fatigue Resistance Characterization Requirements** subsection of this Special Provision will be permitted to supply modular expansion joint systems. Any testing required to establish the fatigue resistance of all details of a specific proprietary system shall be completed prior to the contract award date. All fatigue testing shall be conducted in accordance with the **Fatigue Testing of Metallic Structural Components and Connections, Durability Testing of Elastomeric Support Bearings** and **Fatigue Testing Laboratory** subsections of this Special Provision. Testing shall be completed on any revised details or material substitutions of a previously prequalified system prior to the contract award date.

The following manufacturers are known to have prequalified modular expansion joint system details by completing fatigue testing in accordance with these requirements:

1. The D.S. Brown Company
   P.O. Box 158
   300 E. Cherry Street
   North Baltimore, Ohio 45872-0158
   Tel. (419) 257-3561
   Fax (419) 257-2200

2. Watson Bowman ACME Corporation
   95 Pineview Drive
   Amherst, New York 14228-2166
   Tel. (716) 691-7566
   Fax (716) 691-9239

Manufacturer Qualification Submittal

The expansion joint manufacturer shall have at least three years of experience in designing and manufacturing modular expansion joint systems. The Contractor shall provide written certification of the manufacturer's experience to the Engineer. This certification shall include the location of each bridge, installation date, governmental agency/owner, and the name, address, and telephone number of each owner's/agency's representative.

The Contractor shall submit the name of the selected expansion joint system manufacturer to the Engineer within 10 days of contract award. Once the name of the manufacturer has been submitted to the Engineer, the Contractor shall not select an alternative expansion joint system manufacturer unless the manufacturer demonstrates an inability to meet the requirements of this Special Provision.

Shop Drawings and Design Calculations Submittals

The Contractor shall submit shop drawings and design calculations delineating the expansion joint system to the Engineer for approval prior to fabrication of the joint, in accordance with Sections 6-01.9 and 6-03.3(7) and as noted herein. The Professional Engineer responsible for preparing and stamping the submittal shall be an employee of the expansion joint system manufacturer, and shall hold a valid license in the branch of Civil or Structural Engineering, either in the State of Washington or another state. These submittals shall include, but shall not be limited to, the following:

1. Plan, elevation, and section of the joint system for each movement rating and bridge deck width. All dimensions and tolerances shall be specified.

2. Sections showing all materials composing the expansion joint system with complete details of all individual components including all bolted and welded splices and connections.

3. All ASTM, AASHTO, or other material designations.

4. Installation plan including sequence, lifting mechanisms and locations, details of temporary anchorage during setting, temperature adjustment devices, opening dimensions relative to temperature, installation details at curbs, and seal installation details.

5. Plan for achieving watertightness including details related to performing the watertightness test required in the **Installation** subsection of this Special Provision.

6. Details and material designations pertinent to the corrosion protection system.

7. Requirements and details related to the temporary support of the joint system for shipping, handling, and job site storage.

8. Design calculations for all structural elements including all springs and bearings. The design calculations shall include fatigue design for all structural elements, connections, and splices.

9. Welding procedures in compliance with the current AASHTO/AWS D1.5 Bridge Welding Code.

10. A written maintenance and part replacement plan to facilitate replacement of parts subject to wear. This plan shall include a list of parts, instructions for maintenance inspection, acceptable wear tolerances, methods for determining wear, procedures for replacing worn parts, and procedures for replacing seals.

11. Any required modifications to blockout reinforcing steel to accommodate the expansion joint system.

Documentation, Certifications, and Test Reports Submittals
At the time of shop plan submittal, the Contractor shall submit to the Engineer for approval the following documentation:

1. Documentation that the manufacturer is certified through the AISC Quality Certification Program under the category *Simple Steel Bridge Structures*.

2. Documentation that welding inspection personnel are qualified and certified as welding inspectors under AWS QC1, Standard for Qualification and Certification of Welding Inspectors.

3. Documentation that personnel performing nondestructive testing (NDT) are qualified and certified as NDT Level II under the American Society for Nondestructive Testing (ASNT) Recommended Practice SNT-TC-1a.

The Contractor shall submit to the Engineer for approval prior to fabrication the following test reports and certificates of compliance:

1. Manufacturer's certificate of compliance for all polytetrafluorethylene (PTFE) sheeting, PTFE fabric, and elastomer.

2. Certified mill test reports for all steel and stainless steel in the expansion joint system assemblies.

3. Certified test reports confirming that the springs and bearings meet the design load requirements.

Upon completion of installation, the Contractor shall submit to the Engineer certification stating that each expansion joint system was installed in accordance with the approved shop plan installation procedure. This certification shall conform to the requirements specified in the **Installation** subsection of this Special Provision.

Method for Temporary Bridging of Construction Loads Submittal
The Contractor shall submit to the Engineer for approval a temporary bridging method for each expansion joint system over which construction traffic is anticipated to cross following its installation. This submittal shall conform to the requirements specified in the **Installation** subsection of this Special Provision.

Quality Assurance Inspection Documentation Submittal
The Contractor shall submit to the Engineer documentation of a Quality Assurance Inspection program performed by an independent inspection agency provided by the manufacturer. The name of the independent inspection agency, details of the proposed quality assurance inspection program including inspection frequency, and all applicable reporting forms shall be submitted to the Engineer for approval prior to the start of fabrication.

Warranty Submittal
Modular expansion joint assembly warranties and guarantees provided by the manufacturer shall be submitted to the Engineer in accordance with Section 1-05.10.

General Design Requirements
The expansion joint system shall be designed and detailed with adequate access to all internal components in order to assure the feasibility of inspection and maintenance activities.

The expansion joint system shall be designed and detailed to minimize concrete cracking above the support boxes. Measures taken shall include, but not be limited to, assuring adequate support box top plate thickness, specifying any additional bridge deck steel reinforcement required, and providing adequate concrete cover.

The expansion joint system and bridge deck steel reinforcement shall be detailed to assure that adequate concrete consolidation can be achieved underneath all support boxes.

The expansion joint seals shall not protrude above the top of the expansion joint system under any service condition. Split extrusions may be used at curb upturns.

The elastomeric or urethane springs and bearings shall be designed to be removable and replaceable. The removal and reinstallation of each strip seal shall be easily accomplished from above the joint with a 1-1/4 inch minimum gap width. These operations shall be viable with a one lane partial closure of the bridge deck.

The expansion joint system shall be designed and detailed to be watertight.

The expansion joint system shall be designed and detailed to accommodate all movements specified in the Plans.

The expansion joint shall be designed and detailed to mitigate the potential for fatigue damage wherever centerbeam field splices are required. Consideration shall be given to reducing support box spacing and optimizing splice location between adjacent support boxes in order to minimize fatigue stress range at field splices.

Design Axle Loads and Impact Factors

The centerbeams, support bars, bearings, connections, and other structural components shall be designed for the simultaneous application of vertical and horizontal loads from a tandem axle. The tandem axle shall consist of a pair of axles spaced four feet apart with vertical and horizontal loads as specified below. The transverse spacing of the wheels shall be six feet. The distribution of the wheel load among centerbeams shall be as specified in the **Distribution of Wheel Loads** subsection of this Special Provision.

The vertical load range for fatigue design shall be a 32.0 kip tandem. This tandem shall be taken as two 16.0 kip axles spaced four feet apart. Only one of these tandem axles must be considered in the design, unless the joint opening exceeds four feet. The load range shall be increased by the dynamic load allowance (Impact Factor) of 75%. Load factors shall be applied in accordance with Table 3.4.1-1 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims.

The vertical load for strength design shall be a 50.0 kip tandem. This tandem shall be taken as two 25.0 kip axles spaced four feet apart. Only one of these tandem axles must be considered in the design, unless the joint opening exceeds four feet. This load shall be increased by the dynamic load allowance

(Impact Factor) of 75%. Load factors shall be applied in accordance with Table 3.4.1-1 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims.

The horizontal load range for fatigue design shall be *** $$1$$ *** percent of the amplified vertical load range (LL+IM) specified above. For modular expansion joint systems installed on vertical grades in excess of five percent, the horizontal component of the amplified vertical load range (LL+IM) specified above shall be added to this horizontal load range.

The horizontal load for strength design shall be 20 percent of the amplified vertical load (LL+IM) specified above. For modular expansion joint systems installed on vertical grades in excess of five percent, the horizontal component of the amplified vertical load (LL+IM) specified above shall be added to this horizontal load.

Distribution of Wheel Loads
The following table specifies the centerbeam distribution factor as a function of centerbeam top flange width. This factor is the percentage of the design vertical axle load and the design horizontal axle load which shall be applied to an individual centerbeam for the design of that centerbeam and its associated support bars. Distribution factors shall be interpolated for centerbeam top flange widths between those explicitly denoted in the table. In no case shall the distribution factor be taken as less than 50%. The remainder of the load shall be divided equally and applied to the two adjacent centerbeams or edge beams.

Width of Centerbeam Top Flange	Distribution Factor
2.5 inches	50%
3.0 inches	60%
4.0 inches	70%
4.75 inches	80%

Fatigue Limit State Design Requirements
Modular expansion joint system structural members, bolted and welded splices and connections, and attachments shall be designed to resist the Fatigue Limit State load combination specified in Table 3.4.1-1 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims. The vertical and horizontal load ranges specified in the **Design Axle Loads and Impact Factors** subsection of this Special Provision shall be applied simultaneously. These loads shall be distributed as specified in the **Distribution of Wheel Loads** subsection of this Special Provision.

The nominal stress ranges, Δf, at all fatigue critical details shall be obtained from a structural analysis of the expansion joint system applying the design vertical and horizontal load ranges specified in the **Design Axle Loads and Impact Factors** subsection of this Special Provision and distributed as specified in the **Distribution of Wheel Loads** subsection of this Special Provision. The expansion joint system shall be analyzed with a minimum gap opening corresponding to the midrange configuration (at least half of the maximum gap opening). The design axle load shall be applied as two wheel loads, each having a transverse width of 20 inches.

For each detail under consideration, the wheel loads shall be positioned transversely on a centerbeam to achieve the maximum nominal stress range at that detail. The vertical and horizontal wheel loads shall be applied as line loads to the top of the centerbeams at their centerlines. The design stress range in the centerbeam-to-support bar connection shall be calculated as specified below. The design nominal stress ranges, Δf, shall be used for fatigue design as specified at the end of this subsection.

Welded or Bolted Single-Support-Bar Systems
The nominal stress range, Δf, in the centerbeam at a welded or bolted stirrup shall be the sum of the longitudinal bending stress ranges at the critical section resulting from vertical and horizontal loading. The effects of stresses in any load-bearing attachments such as the stirrup or yoke shall not be considered when calculating the longitudinal stress range in the centerbeam. For bolted single-support-bar systems, stress ranges shall be calculated using the net section.

The nominal stress range, Δf, in the stirrup or yoke shall be calculated without considering the effects of stresses in the centerbeam. The stress range shall be calculated by assuming a load range in the stirrup equal to 30% of the total vertical reaction force between the centerbeam and the support bar. The effects of horizontal loads may be neglected in the design of the stirrup.

Welded Multiple-Support-Bar Systems
Three locations have been identified as initiation sites for fatigue cracking at a centerbeam-to-support bar welded connection. The types of cracking associated with these three locations are described below. The corresponding equations may be used to calculate the nominal stress range, Δf. For the support bar, either the reduced moment at the critical cross section or the moment at the centerline of the connection may be used in these equations.

Centerbeam Weld Toe Cracking
Centerbeam weld toe cracking is driven by a combination of longitudinal bending stress range, S_{RB}, in the centerbeam, and vertical stress range, S_{RZ}, at the top of the connection weld.

The longitudinal bending stress range, S_{RB}, at the bottom of the centerbeam shall be calculated as:

$$S_{RB} \equiv M_{Vcb} / S_{Xcb} + M_{Hcb} / S_{Ycb}$$

The vertical stress range, S_{RZ}, at the top of the connection weld shall be calculated as:

$$S_{RZ} \equiv R_H \cdot d_{cb} / S_{Wtop} + R_V / A_{Wtop}$$

Support Bar Weld Toe Cracking
Support bar weld toe cracking is driven by a combination of longitudinal bending stress range, S_{RB}, in the support bar and vertical stress range, S_{RZ}, at the bottom of the connection weld.

The longitudinal bending stress range, S_{RB}, at the top of the support bar shall be calculated as:

$$S_{RB} \equiv M_{Vsb} / S_{Xsb} + 0.5 \cdot R_H \cdot (d_{cb} + h_W + 0.5 \cdot d_{sb}) / S_{Xsb}$$

The vertical stress range, S_{RZ}, at the bottom of the connection weld shall be calculated as:

$$S_{RZ} \equiv R_H \cdot (d_{cb} + h_W) / S_{wbot} + R_V / A_{Wbot}$$

Weld Throat Cracking
Weld throat cracking is driven by a vertical stress range at the weld throat.

The vertical stress range, S_{RZ}, at mid-height of the connection weld shall be calculated as:

$$S_{RZ} \equiv R_V / A_{wmid} + R_H \cdot (d_{cb} + 0.5 \cdot h_W) / S_{Wmid}$$

In the above equations:

R_V ≡ vertical reaction at the connection weld
R_H ≡ horizontal reaction at the connection weld
M_{Vcb} ≡ bending moment in the centerbeam due to applied vertical forces
M_{Hcb} ≡ bending moment in the centerbeam due to applied horizontal forces
M_{Vsb} ≡ bending moment in the support bar due to applied vertical forces
S_{Xcb} ≡ section modulus at bottom of the centerbeam about horizontal axis
S_{Ycb} ≡ section modulus of the centerbeam about vertical axis
S_{Xsb} ≡ section modulus at top of the support bar about horizontal axis
A_{Wtop} ≡ area of the weld at the top of the connection
A_{Wmid} ≡ area of the weld at the middle of the connection
A_{Wbot} ≡ area of the weld at the bottom of the connection
S_{Wtop} ≡ section modulus of the weld at the top of the connection
S_{Wmid} ≡ section modulus of the weld at the middle of the connection
S_{Wbot} ≡ section modulus of the weld at the bottom of the connection
h_W ≡ height of the weld
d_{cb} ≡ depth of the centerbeam
d_{sb} ≡ depth of the support bar

The nominal stress range, Δf, at welded multiple-support-bar connection details shall be calculated for each case above as follows:

$$\Delta f \equiv (S^2_{RB} + S^2_{RZ})^{1/2}$$

where

S_{RB} ≡ longitudinal stress range in the centerbeam or support bar, as calculated for each specific case above.
S_{RZ} ≡ vertical stress range in the centerbeam-to-support bar connection weld, as calculated for each specific case above.

To assure an infinite fatigue life, all modular expansion joint system structural members, connections (bolted and welded), splices, and attachments shall satisfy the following:

$$\Delta f \leq F_{TH} / 2$$

where:

Δf ≡ the nominal stress range as specified at the beginning of this subsection.
F_{TH} ≡ constant amplitude fatigue threshold (CAFL) as specified in the **Fatigue Resistance Characterization Requirements** subsection of this Special Provision.

Fatigue Resistance Characterization Requirements

The fatigue resistance of all details shall be characterized in terms of the detail categories specified in Table 6.6.1.2.5-1 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims. Many details composing modular expansion joint systems may clearly correspond to specific structural details depicted in Figure 6.6.1.2.3-1 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims. In these cases, the applicable fatigue categories specified in Table 6.6.1.2.3-1 may be used for design. In cases where the Engineer establishes that a detail does not clearly correspond to a structural detail depicted in Figure 6.6.1.2.3-1, fatigue testing of specimens exhibiting that detail shall be conducted, in accordance with the **Fatigue Testing of Metallic Structural Components and Connections, Durability Testing of Elastomeric Support Bearings, Fatigue Testing Laboratory** and **Fatigue Testing Reference** subsections of this Special Provision, to establish the appropriate constant amplitude fatigue limit (CAFL) for that detail.

Strength I Limit State Design Requirements

Modular expansion joint system structural steel members, connections (bolted and welded), splices, and attachments shall be designed to resist the Strength I Limit State load combination specified in Table 3.4.1-1 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims. The vertical and horizontal loads specified in **Design Axle Loads and Impact Factors** subsection of this Special Provision shall be applied simultaneously. These loads shall be distributed as specified in the **Distribution of Wheel Loads** subsection of this Special Provision.

Design Reference

Provisions contained in **Design Axle Loads and Impact Factors, Distribution of Wheel Loads, Fatigue Limit State Design Requirements, Fatigue Resistance of Details,** and **Strength I Limit State Design Requirements** subsections of this Special Provision have been developed from research summarized in National Cooperative Highway Research

Program Report 402 "Fatigue Design of Modular Bridge Expansion Joints", National Academy Press, Washington DC, 1997.

Fatigue Testing of Metallic Structural Components and Connections

Methodology

This test procedure is acceptable for, and specifically applicable to, establishing the fatigue resistance of the centerbeam-to-support bar connection in modular expansion joint systems. It is applicable to single-support-bar and multiple-support-bar systems having either welded or bolted centerbeam-to-support bar connections. The same methodology may be applied to establish the fatigue resistance of other modular expansion joint metallic structural component details, including centerbeam splices.

Each fatigue test generates a discrete datum. Each datum comprises an applied constant amplitude nominal stress range, S_r, and the corresponding number of cycles, N, associated with either a predetermined extent of crack propagation, defined as failure, or with termination of the test, defined as runout. Ten data shall be acquired for each connection detail. All data shall be in the very long life range, corresponding as closely to the constant amplitude fatigue limit (CAFL) as practical. Specifically, the number of cycles, N, associated with each datum, shall be no less than one order of magnitude less than N_{min} corresponding to the detail category specific CAFL specified in the **Interpretation of Fatigue Test Data** subsection of this Special Provision. For example, to characterize a detail as Detail Category C, the tested number of cycles, N, shall exceed 4.4 x 10^5 for each datum.

The constant amplitude nominal stress range shall be calculated at the anticipated initiation location of an incipient crack. Nominal stresses shall be calculated using conventional equations for analyzing bending and axial load. These equations are essentially the same as those used in strength design. The stress concentration effects of a weld, bolt hole, or other local features are not explicitly embodied in the conventional nominal stress equations.

The appropriate AASHTO detail category applicable to fatigue design shall be established by comparing acquired test data to fatigue resistance graphs representing the AASHTO detail categories. The constant amplitude fatigue limit (CAFL) applicable to fatigue design corresponds to the AASHTO detail category fatigue resistance graph representing a lower bound of the experimentally acquired data.

When testing is conducted exclusively in the infinite life regime and more stringent test data scatter requirements are satisfied, a unique CAFL (different from those CAFL corresponding to specific detail categories specified by AASHTO) may be established for fatigue design.

Specimens

Specimens selected for testing shall be full-scale centerbeam and support bar assemblies or subassemblies representative of those installed in field applications. A subassembly is defined as a specimen having the same physical and geometric properties as an assembly but having a reduced number of centerbeams.

Each specimen shall consist of three continuous centerbeam spans over four equally spaced support bars. Centerbeam spans between adjacent support bar centerlines shall be a minimum of 3'-0" and a maximum of 4'-6". Support bar spans shall be a minimum of 3'-0" and a maximum of 3'-8". The centerbeam-to-support bar connection being tested shall be located at the midspan of each support bar.

Any welded or bolted attachments used to secure equidistant springs to a support bar, centerbeam, or stirrup shall be fabricated as an integral part of the specimen. A rigid load path to the test fixture shall be provided to resist any horizontal forces or displacements which would normally be resisted through these attachments in a field installation. Any miscellaneous welded or bolted attachments, including welded attachments used to secure the expansion joint strip seals to the centerbeams, shall also be fabricated as integral parts of the specimen.

Support bars of subassembly specimens that are components of single-support-bar swivel-joist type modular expansion joint systems shall be oriented perpendicular to the longitudinal axis of the centerbeam.

Prior to testing, each specimen shall be visually inspected for any defects, loose fasteners or other aberrations which could plausibly affect the tested fatigue resistance. Defects and flaws shall be defined in accordance with the appropriate governing specification (ASTM A-6, AWS D1.5, etc.). Data acquired from specimens containing such anomalies shall not be excluded from consideration except as permitted in the **Finite Life Regime Testing** subsection of this Special Provision. Any observed anomaly shall also be reported with its corresponding data in the tabular format stipulated in the **Data Reporting for Fatigue Tests** subsection of this Special Provision.

Instrumentation

Each specimen shall be sufficiently instrumented to measure the static nominal strain range within that specimen for a specific applied load range. Best results can generally be obtained when the applied load range for the static calibration tests does not pass through zero load. Strain measurements shall be made at locations sufficiently distant from local effects, such as weld toes or bolt holes, which could significantly influence acquired test data.

As a minimum, eight strain gages shall be installed on the centerbeam top flange in the vicinity of each centerbeam-to-support bar connection. These gages shall be installed in pairs on each side of the connection at distances of one and two times the depth of the centerbeam from the centerline of the connection. Each pair of strain gages shall be located symmetrically about the centerline of the centerbeam. As a minimum, two strain gages shall also be installed on the support bar bottom flange in the vicinity of each centerbeam-to-support bar connection. One of these strain gages shall be installed on each side of the connection at a distance equal to the depth of the support bar from the centerline of the connection. These strain gages shall be installed along the centerline of the support bar.

Test Fixtures

Test fixtures shall have the capability to adequately support and secure the specimen throughout the duration of the test. The fixture shall be designed and fabricated to such tolerances as required to assure that additional stresses will not be generated in the specimen as a consequence of fixture misalignment. Mismatches resulting from specimen fabrication errors shall be accommodated by shimming or other such means precluding the application of force to the specimen.

Typical elastomeric bearings and springs used to transfer vertical loads from the support bars to the support boxes may be replaced with steel bearings in the test fixture. This modification will enable fatigue testing at higher load ranges and different frequencies than those encountered during normal service conditions.

Load shall be applied through two 10 inch long patches. Each patch shall typically comprise a steel plate and a hard rubber bearing pad placed in contact with the bottom flange of the centerbeam. Each patch shall be located at midspan of each outer span.

In order to assure adequate seating of the specimen to the test fixture, a minimum of 10 kips shall be applied at each patch location. This requirement is waived for tests of single support bar systems conducted using load reversal. Once this load has been applied, all strain measuring devices shall be rebalanced to zero strain while the preload is maintained. An additional load approximately equivalent to the calculated load range shall be applied. Strain ranges shall be measured for the load range from 10 kips to the peak load. Each static calibration test shall be repeated three times while still maintaining a minimum 10 kips load at each load patch. The measured strain ranges from each repetition should vary by no more than 25% from the mean value. If the stress ranges are not repeatable, appropriate modifications shall be made to the test fixture.

Static Calibration Test

Prior to any fatigue resistance testing, a static calibration test shall be performed in order to validate the structural analysis model. The static calibration test shall be performed after attainment of stress range repeatability as described in the **Test Fixtures** subsection of this Special Provision. The structural analysis model shall be considered validated when calculated strain ranges are within ±25% of the measured strain ranges at every strain gage location.

For the purpose of reporting nominal fatigue resistance stress ranges at specific details, stress ranges determined through structural analysis of the model shall be preferred over stress ranges acquired directly from test measurements.

Fatigue Test Procedure

A minimum of ten data points shall be required to establish the fatigue resistance of each detail. The centerbeam-to-support bar connection shall be considered as a single detail.

Several data points may be obtained from a single specimen by repairing the cracked sections of that specimen and resuming testing. Such repairs shall have minimal effect on the stress ranges at unfailed details still being tested. Data points derived from tests in which a repaired detail cracks again shall be discarded.

All data shall be in the very long life range, corresponding as closely to the constant amplitude fatigue limit as practical, but in no case less than 200,000 cycles. Either finite life regime or infinite life regime testing may be conducted. For infinite life regime testing, the number of cycles, N, associated with each of the ten data shall be at least twice the number of cycles, Nmin, designated in the table in the **Interpretation of Fatigue Test Data** subsection of this Special Provision.

Loads shall be applied using hydraulic actuators or other similar loading devices. The magnitude of the vertical load range, ΔP_v, shall be maintained and continuously monitored throughout the duration of the test. Vertical and horizontal load ranges shall be applied to the specimen simultaneously. The horizontal load range shall always be equal to 20% of the vertical load range, ΔP_v. This horizontal-to-vertical load ratio may be maintained by inclining the specimen 11.3 degrees with respect to the horizontal plane and applying load through vertically oriented actuators.

For multiple support bar systems, the loading mechanism shall be either exclusively tension or exclusively compression and shall be applied at a constant amplitude at any desired frequency. The applied load range shall be in a direction such that the reaction force between the centerbeam and support bar is always tensile. The load range shall not pass through zero load. Minimum preload shall be maintained throughout the duration of the test.

Single support bar systems may be loaded using the same procedures as those for multiple support bar systems. If premature stirrup failure occurs, an applied load range of 70% compression and 30% tension may be used.

The load ranges used in the test shall not be so large as to alter the observed failure mode from that which would be observed under service conditions. Under no circumstance shall imposed stress exceed the yield stress of the material in any portion of the specimen. Each specimen shall be tested using at least two different load (stress) ranges.

If infinite life regime testing is conducted, the first load range should be chosen so that the applied stress range is just above the postulated CAFL. The load range in the subsequent test shall be decreased if failure resulted and increased if the test resulted in a runout. A suggested increment in load is such that the stress range is increased or decreased by 2 ksi. The applicable CAFL shall be selected from those CAFL values corresponding to the AASHTO fatigue categories. The selected CAFL is the one just below the lowest stress range that resulted in cracking.

Fatigue Test Failure Criteria

Welded Centerbeam-to-Support Bar Connections

Centerbeam weld toe cracking originates at or near the centerbeam weld toe, propagates up into the centerbeam at some angle, and grows back over the connection. These cracks typically grow at an angle of about 45 degrees. A specimen shall be considered as failed due to this type of cracking when the crack has grown on any vertical face a length from the point of origin equal to half of the centerbeam depth.

Support bar weld toe cracking originates at or near the support bar weld toe, propagates down into the support bar, and grows back under the connection at some angle, typically about 45 degrees. A specimen shall be considered as failed due to this type of cracking when the crack has grown on any vertical support bar face a length from the point of origin equal to half of the depth of the support bar.

Weld throat cracking originates in the weld throat and typically grows in a plane parallel to the longitudinal axis of the support bar at about mid-depth of the weld throat. A specimen shall be considered as failed due to this type of cracking when a complete fracture of the weld throat has occurred. These cracks have been observed to turn down into the support bar, but only after significant growth. In such instances, the criteria for support bar weld toe cracking shall be applied.

Welded Stirrup Connections

A specimen shall be considered as failed when cracks result in the complete fracture of any stirrup leg or when cracks originating at or near a stirrup weld have grown into any face of the centerbeam a length from the stirrup weld toe equal to half of the centerbeam depth.

Bolted Centerbeam-to-Support Bar Connections

A specimen shall be considered as failed when:

1. Fatigue cracks which have grown out of a bolt hole have resulted in the complete fracture of the tension flange of the centerbeam.

2. Fatigue cracks which have grown out of a bolt hole have extended into any face of the centerbeam web a distance equivalent to half of the centerbeam depth less the centerbeam flange thickness.

3. Any portion of a stirrup fractures completely.

4. Any single bolt fractures completely.

Alternate Criteria for Termination of a Finite Life Regime Fatigue Test
A test may also be terminated when, for a given stress range, the specimen has survived the number of cycles required to plot the data above either a particular fatigue resistance curve or the maximum permitted in the **Finite Life Regime Testing** subsection of this Special Provision. For example, if the applied stress range is 17 ksi and the desired fatigue resistance curve is Category C, then based upon the equation presented in the **Interpretation of Fatigue Test Data** subsection of this Special Provision, the test may be terminated after application of about 900,000 cycles provided that the specimen has not failed based on the above described criteria.

Nominal Stress Range Calculation

Welded Centerbeam-to-Support Bar Systems
The nominal stress range for centerbeam weld toe cracking shall be calculated by taking the square root of the sum of the squares of the longitudinal bending stress range in the centerbeam and the vertical stress range at the top of the weld.

The nominal stress range for support bar weld toe cracking shall be calculated by taking the square root of the sum of the squares of the longitudinal bending stress range in the support bar and the vertical stress range at the bottom of the weld.

The nominal stress range for weld throat cracking shall be the calculated vertical stress range in the throat of the weld.

The nominal stress range in the centerbeam at a welded stirrup shall be calculated as the summation of the longitudinal bending stress ranges at the critical section resulting from vertical and horizontal loading. The entire load range shall be used in the calculation, even if the loading is partly in compression. The effects of stresses in any load-bearing attachments such as the stirrup or yoke shall not be considered when calculating the nominal stress range in the centerbeam.

The load range in the stirrup itself shall be taken as 30% of the total vertical load range carried through the connection. The effect of horizontal forces may be neglected.

Bolted Centerbeam-to-Support Bar Systems
The nominal stress range in the centerbeam shall be taken as the summation of the longitudinal bending stress ranges in the centerbeam resulting from vertical and horizontal loading. Nominal stress ranges shall be calculated using the net section. The effects of stresses in the stirrup shall not be considered when calculating the nominal stress range in the centerbeam.

The nominal load range in the bolt group and the stirrup assembly shall be taken as 30% of the total vertical load range carried through the connection. The effect of horizontal forces may be neglected.

Interpretation of Fatigue Test Data

The experimentally acquired data and graphs representing the fatigue resistance of the detail categories delineated in Section 6.6 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims, shall be juxtaposed on a log-log scale. The equation representing the finite life fatigue resistance of these AASHTO detail categories is:

$$N \equiv A / S^3_{r,eff}$$

where:

N ≡ number of cycles to failure.

$S_{r,eff}$ ≡ nominal effective stress range representing fatigue resistance.

A ≡ constant defined in Table 6.6.1.2.5-1 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims.

The minimum number of cycles associated with infinite fatigue life, N_{min}, and the corresponding constant amplitude fatigue limit (CAFL) for each AASHTO detail category is designated in the table below.

Detail Category	N_{min} (infinite fatigue life)	CAFL(ksi)
A	1.8×10^6 cycles	24
B	3.0×10^6 cycles	16
B'	3.5×10^6 cycles	12
C	4.4×10^6 cycles	10
C'	2.5×10^6 cycles	12
D	6.4×10^6 cycles	7.0
E	1.2×10^7 cycles	4.5
E'	2.2×10^7 cycles	2.6

Finite Life Regime Testing

The number of cycles, N, to either failure or runout, associated with each of the ten data need not exceed N_{min}, designated in the table in the **Interpretation of Fatigue Test Data** subsection of this Special Provision.

The detail category applicable to fatigue design shall be that corresponding to the highest of the AASHTO detail category fatigue resistance graphs representing a lower bound of all ten experimentally acquired data.

If all but one datum falls above a selected AASHTO S-N curve, that one datum may be discarded and replaced by three new data obtained through additional testing. The additional testing shall be conducted using the same stress range as that of the discarded datum. The three additional data shall be plotted along with the remaining nine data. The applicable detail category shall be that corresponding to the highest of the AASHTO detail category fatigue resistance graphs representing a lower bound of all twelve data, except as limited in the previous table. For any detail, only one datum may be discarded and subsequently replaced with three additional data for any set of ten original data.

The maximum fatigue resistance of any detail shall not exceed that associated with the fatigue category prescribed in the table below.

Type of Detail	Maximum Permitted Category
Welded Multiple Centerbeam-to-Support Bar Connections	C
Weld Stirrup Attachments for Single Support Bar Systems	B
Bolted Stirrup Attachments for Single Support Bar Systems	D
Groove Welded Centerbeam Splices[1]	C
Miscellaneous Welded Connections[2]	C
Miscellaneous Bolted Connections	D

Footnotes:
1. Groove welded full penetration splices may be increased to Category B if weld integrity is verified using non-destructive testing (NDT).
2. Miscellaneous connections include attachments for equidistant devices.

The fatigue resistance for stirrups welded to a centerbeam flange shall not be taken greater than that defined using the fatigue details defined in Section 6.6 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims. The applicable fatigue detail for the centerbeam flange and for the stirrup shall be either a "Longitudinally Loaded Groove-Welded Attachment" or a "Longitudinally Loaded Fillet-Welded Attachment", depending upon the type of connection used.

Infinite Life Regime Testing
The applicable constant amplitude fatigue limit (CAFL) for fatigue design may be selected as the highest CAFL of the AASHTO detail categories representing a lower bound to the experimentally acquired data. The CAFL of the AASHTO detail categories are designated in the table in the **Interpretation of Fatigue Test Data** subsection of this Special Provision.

A unique CAFL (different from the CAFL categories delineated in Section 6.6 of the AASHTO LRFD Bridge Design Specifications, current edition and latest interims) may be established if all ten data are within 4 ksi of that unique CAFL.

Data Reporting for Fatigue Tests
Fatigue test results and observations shall be reported in the typical S-N format (logarithm (S) vs. logarithm (N)) with the log of the stress range plotted as the ordinate (y-axis). Additionally, the data shall be reported in tabular format. The table shall contain the following information:

1. Nominal stress range at the specific detail, $S_{r,eff.}$

2. Applied load range for each patch.

3. Number of cycles at initial observation of cracking (for reporting purposes only, not included as S-N data).

4. Number of cycles at failure or termination of the test, N, and the reason for stopping the test (failure or termination).

5. Type of crack as described in the **Fatigue Test Failure Criteria** subsection of this Special Provision. A detailed description of the fatigue crack shall be provided if the observed crack does not resemble any of the crack types described in the **Fatigue Test Failure Criteria** subsection of this Special Provision.

The following information shall also be reported:

1. Expansion joint system type and manufacturer.

2. Drawings depicting shape, size, and dimensions of the specimen.

3. Drawings depicting fixture details, including specimen orientation.

4. Section properties and dimensions of the centerbeam and support bar.

5. Centerbeam-to-support bar connection details:

    a. Weld procedure specifications for welded expansion joint systems.

    b. Bolt size, material specifications, location, and method of tightening for bolted expansion joint systems.

Durability Testing of Elastomeric Support Bearings

This subsection provides guidelines for durability testing of the elastomeric support bearings typically used in modular expansion joint systems. It is not applicable to compression springs, equidistant springs, or other elastomeric components.

Tests shall be performed dynamically on individual bearings. Fatigue life is evaluated by applying a displacement range to each specimen rather than a load or stress range.

Specimens shall comprise full scale bearing components representative of those installed in field applications. PTFE sliding surfaces or materials typically bonded to the elastomeric support bearings shall be fabricated as an integral part of the specimen.

Prior to testing, each specimen shall be visually inspected for any flaws or defects that could plausibly affect fatigue resistance. Any flaws or details shall be defined and recorded. Data obtained from specimens containing such anomalies shall not be excluded from the data set. Observed anomalies shall also be reported with the test data.

Test fixtures shall have the capability to adequately support and secure the specimen throughout the duration of the test. The fixture shall be designed and fabricated to such tolerances as required to assure that additional stresses will not be generated in the specimen as a consequence of fixture misalignment.

Loads shall be applied through hydraulic actuators or other similar loading devices. Fatigue testing shall be performed using displacement control. Displacement and load ranges shall be continuously monitored throughout the duration of the fatigue test to assure that desired displacement range and minimum preload are maintained.

Load shall be applied to the specimen through flat steel plates that are smooth and free of surface corrosion. These plates shall be sufficiently thick to assure even load distribution to the specimen.

Dynamic Stiffness Test

Testing shall be conducted on each specimen to be subjected to fatigue testing in order to establish its dynamic stiffness for at least three different loading frequencies. The maximum of these loading frequencies shall be equal to the service load frequency corresponding to a vehicle traveling at 60 mph. The loading frequency, f, shall be calculated as:

$$f \equiv 0.5 \cdot V / (g + b)$$

where

$V \equiv$ vehicle speed (60 mph at service load)
$g \equiv$ centerbeam gap (assume mid-range configuration)
$b \equiv$ centerbeam width

The load range applied during the dynamic stiffness test shall be that obtained from structural analysis using fatigue wheel load and wheel load distribution factors as specified in the **Design Axle Loads and Impact Factors** and **Distribution of Wheel Loads** subsections of this Special Provision.

Each dynamic stiffness test shall be performed three times. Data from individual tests shall be compared to assure consistency of test results.

Bearing Fatigue Test

A minimum of three fatigue tests shall be required to establish the durability of each type of bearing.

The fatigue test shall be conducted using displacement control. The displacement (strain) range shall be applied using a sine or other smooth waveform at any frequency less than or equal to the service load frequency calculated in the **Dynamic Stiffness Test** subsection of this Special Provision. The magnitude of the applied displacement amplitude, Δ, shall be calculated as:

$$\Delta \equiv R_V / K$$

where

$R_v \equiv$ vertical reaction force at the support bearing as obtained from structural analysis

$K \equiv$ dynamic stiffness of the support bearing as determined in the **Dynamic Stiffness Test** subsection of this Special Provision

A minimum precompression strain shall be maintained in the specimen throughout the duration of the test. This precompression strain shall be approximately equal to that present in a support bearing in a field installation. The magnitude of the applied cyclic strain shall be at least equal to the precompression strain.

The minimum and maximum dynamic load shall be recorded at the beginning of the test. The minimum and maximum dynamic load shall be monitored and periodically recorded throughout the duration of the test.

At the end of each applied displacement cycle, the displacement shall be held at the precompression level for no less than one half of the period of loading in order to facilitate heat dissipation. Artificial air flow devices (electrical fans) may be used to assist heat dissipation. Excessive heat generation will adversely affect the tested fatigue life.

A specimen shall be accepted as having passed the fatigue test criteria after withstanding 2 million cycles of loading without failure.

The following criteria shall constitute failure:

1. The elastomeric material exhibits excessive deterioration or cracking.

2. The measured minimum dynamic load falls to 30% of the initial dynamic load recorded at test initiation.

3. The measured dynamic load range decreases to half of the initial dynamic load range recorded at test initiation.

Data Reporting for Bearing Fatigue Test

Data shall be reported in tabular format and shall contain the following information for each specimen tested:

1. Minimum (precompression) strain, maximum strain, displacement, and load at test initiation.

2. Type of loading impulse (sine wave, ramp, etc.).

3. Number of cycles at initial observation of distress leading to failure (for reporting purposes only, not to be included in the data).

4. Number of cycles at failure.

5. A description of the mode of failure.

The following data shall also be reported for each specimen tested:

1. Bearing type and manufacturer.

2. Drawings depicting shape, size, and dimensions of the specimen including any PTFE sliding surfaces or materials bonded to the specimen.

3. Drawings depicting fixture details, including specimen orientation.

Fatigue Testing Laboratory
Fatigue testing shall be performed by an independent testing laboratory. The following individuals have stated that they have access to facilities capable of performing the fatigue testing:

1. Prof. Charles W. Roeder
   Department of Civil Engineering
   233B More Hall
   University of Washington
   Seattle, WA
   Tel: (206) 543-6199
   Fax: (206) 543-1543

2. Dr. John W. Fisher
   ATLSS Research Center
   Lehigh University
   117 ATLSS Drive
   Bethlehem, PA 18015-4793
   Tel: (215) 758-3535
   Fax: (215) 758-5553

3. Robert J. Conner/Mark D. Bowman
   Bowen Laboratory
   Purdue University
   1040 S. River Road
   West Lafayette, IN 47907-2101
   Tel: (765) 496-8272
   Fax: (765) 494-9886

Fatigue Testing Reference
Provisions contained in the **Fatigue Testing of Metallic Structural Components and Connections** and **Durability Testing of Elastomeric**

Support Bearings subsections of this Special Provision have been developed from research summarized in National Cooperative Highway Research Program Report 402 "Fatigue Design of Modular Bridge Expansion Joints", National Academy Press, Washington DC, 1997.

General Fabrication Requirements

The expansion joint systems shall be fabricated consistent with the details, dimensions, material specifications, and procedures delineated in the approved shop plans. All fabrication procedures shall be in conformance with the Standard Specifications and the Special Provisions.

All expansion joint systems shall be fabricated by the same manufacturer.

Metallic attachments used to secure elastomeric seals to the centerbeams, if welded to the centerbeams and edge beams, shall be welded continuously along both their top and bottom edges.

PTFE Sliding Surfaces

All PTFE shall be bonded under controlled conditions and in strict accordance with written instructions provided by the PTFE manufacturer.

All PTFE surfaces shall be smooth and free of bubbles after completion of bonding operations.

Stainless Steel Sliding Surfaces

All stainless steel sliding surfaces in contact with PTFE shall be polished to a Number 8 mirror finish.

Each stainless steel sheet shall be welded to the steel backing plate in accordance with current AWS specifications. The stainless steel sheet shall be clamped to provide full contact with the steel backing plate during welding. The welds shall not protrude above the sliding surface of the stainless steel sheet.

Corrosion Protection

All steel surfaces, except those surfaces beneath stainless steel sheet, those to be bonded to PTFE, or those in direct contact with strip seals, shall be protected against corrosion by one of the following methods:

1. Zinc metallized in accordance with Section 6-07.3 as supplemented in these Special Provisions.

2. Hot-dip galvanized in accordance with AASHTO M 111.

3. Painted in accordance with Section 6-03.3(30) as supplemented in these Special Provisions. The color of the final coat shall be Washington Gray. The surfaces embedded in concrete shall be painted only with a shop coat of inorganic zinc silicate paint.

Inspection

Each expansion joint system shall be subjected to and shall pass three levels of inspection in order to be accepted. These three levels are Quality Control

Inspection, Quality Assurance Inspection, and Final Inspection. The manufacturer shall provide both Quality Control Inspection and Quality Assurance Inspection. The Contractor shall provide access to the Engineer for the Final Inspection.

Quality Control Inspection
Quality control inspection shall be provided by the manufacturer on a full time basis during the fabrication process of all major components to assure that the materials and workmanship meet or exceed the minimum requirements of the contract. Quality control inspection shall be performed by an entity having a line of responsibility distinctly different from that of the manufacturer's fabrication department.

Quality Assurance Inspection
Quality assurance inspection shall be performed by an independent inspection agency provided by the manufacturer. Quality assurance inspection is not required to be full time inspection, but shall be performed during all phases of the manufacturing process.

Final Inspection
Final inspection of each expansion joint system will be performed by the Engineer at the job site immediately prior to installation. The Contractor shall provide an accessible work area for this inspection. During final inspection, the Engineer will inspect each expansion joint system for proper alignment, complete bond between expansion joint strip seals and steel components, and proper steel stud placement.

There shall be no bends or kinks in the steel components, except as required to follow bridge deck grades and as specifically detailed on the approved shop plans. Straightening of unintended bends or kinks will not be permitted. Any expansion joint system exhibiting bends or kinks, other than those shown on the approved shop plans, shall be removed from the job site and replaced with a new expansion joint system at the expense of the Contractor. Expansion joint strip seals not fully bonded to the steel shall be fully bonded at the expense of the Contractor.

Studs will be visually inspected and will be struck lightly with a hammer. Any stud which does not have a complete end weld or does not emit tintinnabulation when struck lightly with a hammer shall be replaced. Any stud located more than one inch, in any direction, from the location specified on the shop plans shall be carefully removed and a new stud shall be welded in the proper location. All stud replacements shall be at the expense of the Contractor.

Acceptance
Each expansion joint system shall pass all three levels of inspection delineated in the **Inspection** subsection of this Special Provision to qualify for acceptance. Any expansion joint system which fails any one of the three levels of inspection shall be replaced or repaired at no expense to the Contracting Agency and to the satisfaction of the Engineer. Any proposed remedial procedures shall be submitted to the Engineer for approval before implementation.

The Contractor shall ascertain that the manufacturer has met the fatigue resistance characterization and prequalification requirements of the **Acceptable Manufacturers** and all **Submittals** subsections of this Special Provision applicable to the specific expansion joint system being installed. The Contractor shall be responsible for any additional costs and/or time delays associated with selection of an alternative expansion joint system incurred as a result of noncompliance with these requirements, including the failure of the manufacturer to retest revised details or material substitutions of a previously prequalified system.

Shipping and Handling

The expansion joint system shall be delivered to the job site and stored in accordance with the manufacturer's approved shop plans.

Lifting mechanisms, temperature adjustment devices, and temporary anchorages shall not be welded to the centerbeams or edge beams.

Damage to the expansion joint system during shipping or handling shall be just cause for rejection of the expansion joint system.

Damage to the corrosion protection system shall be repaired to the satisfaction of the Engineer.

Installation

A qualified installation technician shall be present at the job site to assure proper installation of each expansion joint system. This technician shall be a full time employee of the manufacturer of the specific expansion joint system being installed. The Contractor shall comply with all recommendations made by the expansion joint manufacturer's installation technician as approved by the Engineer. Each expansion joint system manufacturer's installation technician shall certify to the Engineer that the approved installation procedures were followed. All certifications to the Engineer shall be in writing and shall be signed and dated by the manufacturer's installation technician.

Each expansion joint system shall be installed in strict accordance with the manufacturer's approved shop plans as stipulated in the **Shop Drawings and Design Calculations Submittal** subsection of this Special Provision and the recommendations of the manufacturer's installation technician. All centerbeam welded field splices shall be performed by a certified welder under the direct supervision of the manufacturer’s qualified installation technician as specified above. The weld procedure shall have been submitted by the manufacturer and approved in accordance with the **Shop Drawings and Design Calculations Submittal** subsection of this Special Provision. The welder shall have been trained and certified for performing those approved specific welds in accordance with the current AASHTO/AWS D1.5 Bridge Welding Code.

Each permanently installed expansion joint system shall match exactly the finished bridge deck profile and grades.

The Contractor shall exercise care at all times to protect each expansion joint system from damage. The Contractor shall protect concrete blockouts and supporting systems from damage and construction traffic prior to installation of the expansion joint systems. After installation, construction loads shall not be allowed on the expansion joint systems. The Contractor shall submit to the Engineer for approval a proposed method of bridging over each expansion joint system to accommodate any construction traffic.

Each expansion joint system shall be set to a gap width corresponding to the ambient temperature at the time of setting. This information is specified in the Plans and shall also be specified on the approved shop plans. Any mechanical devices supplied by the joint system manufacturer, for the purpose of setting the expansion joint system to the proper gap width, will remain the property of the manufacturer. When no longer required, the devices shall be returned to the manufacturer.

All forms and debris that may impede movement of the expansion joint systems shall be removed.

Each expansion joint system shall be tested for watertightness after installation. The Contractor shall flood each completely installed expansion joint system with water to a minimum depth of three inches for a duration of at least one hour. If leakage is observed, the expansion joint system shall be repaired to the satisfaction of the Engineer at the Contractor's expense. The repair procedure shall be prepared by the expansion joint system manufacturer and shall be submitted to the Engineer for approval. After repairs are completed, the expansion joint shall be retested for leakage.

6-02.3(13).OPT7.GB6
Expansion Joint Modification

6-02.3(13).OPT7(A).GB6
(April 6, 2015)
Plans of Existing Bridge Expansion Joint
Plans of the existing bridge(s), including expansion joint details, are available at the Project Engineer’s Office for the prospective bidder’s inspection.

6-02.3(13).OPT7(B).GB6
(April 6, 2015)
Expansion Joint Demolition Plan
The Contractor shall submit Type 2 Working Drawings showing the method of removing the specified portions of the existing bridge expansion joints. The Working Drawings shall show the sequence of demolition and removal, the type of equipment to be used in all demolition and removal operations, and details of the methods and equipment used for containment, collection, and disposal of all debris. The Working Drawings shall show all stages of demolition.

6-02.3(13).OPT7(C).GB6
(April 6, 2015)
Joint Preparation and Installation Procedure
The Contractor shall submit a Type 1 Working Drawing consisting of the sealant manufacturer's recommended joint preparation and installation procedure.

6-02.3(13).OPT7(D).FB6
(April 6, 2015)
Field Measuring Existing Bridge Expansion Joints
The Contractor shall field measure the following dimensions of the existing bridge expansion joints of Bridge No(s). *** $$1$$ ***:

1. Length along the roadway surface and the horizontal and vertical surfaces of the concrete curb.

2. Opening width at both curb lines and at the centerline of the roadway surface.

The Contractor shall submit a Type 1 Working Drawing consisting of the field measured dimensions.

6-02.3(13).OPT7(E).FB6
(April 6, 2015)
Removing Portions of Existing Bridge Expansion Joints
The Contractor shall remove all concrete, expansion joint materials, overlay, dirt and debris at the bridge expansion joints of Bridge No(s). *** $$1$$ *** within the blockout dimensions shown in the Plans.

Concrete removal shall conform to Section 2-02.3(2)A2 and the following restriction on power driven tools:

1. Jack hammers no heavier than the nominal 30 pound class.

2. Chipping hammers no heavier than the nominal 15 pound class.

No other power driven equipment shall be used to remove concrete in the vicinity of the bridge expansion joints. The power driven tools shall be operated at angles less than 45 degrees as measured from the surface of the deck to the tool.

The Contractor shall dispose of all materials removed from the bridge expansion joints in accordance with Section 2-02.3.

For polyester concrete headers, or elastomeric concrete headers, the Contractor shall clean and prepare all existing concrete surfaces bonding to the header in accordance with the ***Polyester Concrete*** or ***Elastomeric Concrete*** subsection, respectively, to Section 6-02.3 as supplemented in these Special Provisions. For concrete headers, the Contractor shall clean and prepare all existing concrete surfaces bonding to the header in accordance with Section 6-02.3(12)B.

6-02.3(13).OPT7(F).GB6
(April 6, 2015)
Drilling Holes and Setting Steel Reinforcing Bars
The Contractor shall drill holes for, and set, steel reinforcing bars into the existing concrete as shown in the Plans in accordance with Section 6-02.3(24)C as supplemented in these Special Provisions.

6-02.3(13).OPT7(G).GB6
(April 6, 2015)
Placing Polyester Concrete or Elastomeric Concrete Headers

The Contractor shall form the polyester concrete or the elastomeric concrete headers in accordance with either the ***Polyester Concrete*** or the ***Elastomeric Concrete*** subsection to Section 6-02.3 as supplemented in these Special Provisions. The Contractor shall remove all forms from the bridge expansion joints after casting and curing the polyester concrete or the elastomeric concrete headers.

6-02.3(13).OPT7(H).GB6
(April 6, 2015)
Placing Concrete Headers

The Contractor shall form, cast, and cure, the concrete headers in accordance with Section 6-02.3 and as shown in the Plans. The concrete headers shall have attained a minimum compressive strength of 2,500 psi before the Contractor may allow traffic to pass across the expansion joint.

6-02.3(13).OPT7(I).GB6
(April 6, 2015)
Placing Expansion Joint Sealant

The Contractor shall have the services of a qualified sealant manufacturer's technical representative physically present at the job site to assist in assuring the proper installation of the rapid cure silicone sealant, provide technical assistance for the use of the joint sealant, train the Contractor's personnel installing the joint sealant, and to observe and inspect the installation of at least the first complete joint.

The joint sealant shall not be placed against concrete until at least seven days after concrete placement. The joint sealant shall not be placed against polyester concrete or elastomeric concrete until a time period recommended by the sealant manufacturer.

The Contractor shall clean the bridge expansion joints of all forms, dirt, form oil, grease, and other deleterious material. The Contractor shall clean and prepare the entire joint surface receiving the joint sealant in accordance with the manufacturer’s joint preparation procedure, and as recommended by the sealant manufacturer's technical representative, including two stage abrasive blasting surface preparation and compressed air cleaning. All steel surfaces to be in contact with the joint sealant shall be cleaned to an SSPC-SP10 condition. The joint receiving the sealant shall be sound, clean, dry, and frost free.

After the cleaned and prepared joint has received the Engineer's approval for joint dimensions, alignment, and preparation, the Contractor shall apply the primer, as recommended by the sealant manufacturer, to all surfaces to be in contact with the joint sealant. The primer shall dry and cure for the time period recommended by the sealant manufacturer for the surface type.

After the primer is cured, the Contractor shall place the backer rod, and place the rapid cure silicone sealant in accordance with the joint installation procedure.

If the joint width at the time of installation is less than 1-inch or greater than three inches, the Contractor shall not proceed with the expansion joint modification until the installation procedure is revised as recommended by the sealant manufacturer's technical representative.

After installing the rapid cure silicone sealant, the Contractor shall flood the joint area with water. If leakage is detected, the bridge expansion joint system shall be repaired by the Contractor, as recommended by the sealant manufacturer and approved by the Engineer.

6-02.3(13).OPT7(J).GB6
(April 6, 2015)
Placing Expansion Joint Sealant

The Contractor shall have the services of a qualified sealant manufacturer's technical representative physically present at the job site to assist in assuring the proper installation of the rapid cure silicone sealant, provide technical assistance for the use of the joint sealant, train the Contractor's personnel installing the joint sealant, and to observe and inspect the installation of at least the first complete joint.

Prior to scarifying the concrete deck for the modified concrete overlay, the Contractor shall remove all expansion joint materials and debris from the existing expansion joints, and shall dispose of these materials and debris as specified in Section 2-02.3.

Prior to placing the modified concrete overlay, the Contractor shall install a temporary form as shown in the Plans to fill the expansion joint gap. The temporary form shall preserve the expansion joint gap during the modified concrete overlay placement, and shall not damage the joint or the concrete overlay upon removal. The Contractor shall submit Type 2 Working Drawing consisting of the type of temporary form material, and the method of installation and removal.

The joint sealant shall not be placed against concrete (including concrete overlay except for polyester concrete overlay) until at least seven days after concrete placement.

After placing the modified concrete overlay and rounding the corner of the overlay at the joints with a 3/8 inch radius, the Contractor shall clean the bridge expansion joints of all temporary forms, dirt, form oil, grease, and other deleterious material. The Contractor shall clean and prepare the entire joint surface receiving the joint sealant in accordance with the manufacturer’s joint preparation procedure, and as recommended by the sealant manufacturer's technical representative, including two stage abrasive blasting surface preparation and compressed air cleaning. All steel surfaces to be in contact with the joint sealant shall be cleaned to an SSPC-SP10 condition. The joint receiving the sealant shall be sound, clean, dry, and frost free.

After the cleaned and prepared joint has received the Engineer's approval for joint dimensions, alignment, and preparation, the Contractor shall apply the primer, as recommended by the sealant manufacturer, to all surfaces to be in contact with the joint sealant. The primer shall dry and cure for the time period recommended by the sealant manufacturer for the surface type.

After the primer is cured, the Contractor shall place the backer rod, and place the rapid cure silicone sealant in accordance with the joint installation procedure.

If the joint width at the time of installation is less than 1-inch or greater than three inches, the Contractor shall not proceed with the expansion joint modification until the installation procedure is revised as recommended by the sealant manufacturer's technical representative and as approved by the Engineer.

After installing the rapid cure silicone sealant, the Contractor shall flood the joint area with water. If leakage is detected, the bridge expansion joint system shall be repaired by the Contractor, as recommended by the sealant manufacturer and approved by the Engineer.

6-02.3(14).GR6
Finishing Concrete Surfaces

6-02.3(14).INST1.GR6
Section 6-02.3(14) is supplemented with the following:

6-02.3(14).OPT1.GB6
(June 26, 2000)
Exposed Aggregate Finish
Submittals
The Contractor shall submit the following items to the Engineer for approval:

1. Written description of the equipment to be used and procedure to be followed in producing the exposed aggregate finish.

2. Two copies each of the manufacturer’s written instructions for applying the retardant coating and the clear sealer.

3. Type of nozzle, nozzle pressure, type and gradation of abrasive, blasting techniques, safety procedures, and containment methods and procedures used with all abrasive blasting and water blasting operations.

4. The method and materials used to collect, contain, and dispose of the concrete surface mortar removed from the finish surface, and the chemical agent residue and abrasives used to remove the concrete surface mortar.

5. A sample panel, equal to the size of one traffic barrier panel minimum, cast in a vertical position on the site and constructed in accordance with the procedure submitted to the Engineer.

The Contractor shall not begin construction of the concrete members with exposed aggregate finish until receiving the Engineer's approval of the sample panel and the other submittals specified above.

Producing Exposed Aggregate Finish
The Contractor shall produce all exposed aggregate concrete in accordance with procedure and equipment approved by the Engineer. The exposed aggregate shall achieve the same final effect as demonstrated on the sample panel approved by the Engineer.

Formwork shall be cleaned, reconditioned, and repaired before each use. Formwork with repairs, patches or defects which, in the opinion of the Engineer, would result in adverse effects to the concrete finish shall not be used.

Forms and form joints shall remain completely watertight. Butt joints and joints between form units used on surfaces which are to receive an exposed aggregate finish shall be tongue and grooved, or splined and shall be sealed with a caulking compound approved by the Engineer.

As an alternative to using tongue and grooved or splined joints, a closed cell polyvinylchloride foam sealer of 3/16 inch thickness with pressure-sensitive adhesive on one or both sides may be used to seal the butt joints between form units, as approved by the Engineer. The foam sealer shall be recessed by an amount such that when the form units are compressed to their final position, the foam sealer will be flush with the face of the form units. Adjacent formwork panels, if used, shall be in line and no offset shall occur between panels.

Forms for the exposed aggregate surface for members not yet supporting loads, including the members own load, may be removed as required to effect the exposed aggregate surface, provided the concrete has a minimum age of twelve hours and is of sufficient strength and hardness so as not to be damaged by the form removal operations and provided that curing and protection operations are maintained.

Removal of forms on the remaining concrete surfaces shall be in accordance with Section 6-02.3(17)N.

After the forms are stripped, the surface mortar shall be removed from the areas specified to receive the exposed aggregate finish.

The exposed aggregate finish shall be obtained by either one or a combination of the two following methods as necessary to provide the specified exposed aggregate finish:

Method 1 - Retardant Coating
A retardant coating as specified for Method 1 in Section 6-02.2 as supplemented in these Special Provisions shall be applied to the formwork where concrete surfaces with exposed aggregate finish are shown in the Plans.

For cast-in-place concrete the retardant shall have an effective life of not less than the length of time required for the Class EA concrete to be in place prior to the removal of forms plus 12 hours.

For slip-formed traffic barrier the retardant shall have an effective life of not less than 24 hours. The Contractor shall remove the surface mortar two to three hours after applying the retardant coating.

Retardant shall be applied in accordance with the manufacturer's instructions to remove the surface mortar.

The sealer and form release agent used on the form shall be compatible with the retardant and shall not react with the retardant to produce an undesirable effect on the exposed aggregate finish. The sealer and form release agent to be used on the form shall be as recommended by the manufacturer of the retardant and approved by the Engineer.

Surface mortar shall be removed using one of the following methods:

1. Light abrasive blasting

2. Washing with water under pressure, avoiding excessive pressure which loosens individual aggregate particles.

3. A combination of both methods.

Method 2 - Abrasive Blasting
As soon as forms are stripped, the exposed aggregate areas shall be abrasive blasted to remove the surface mortar. For slip-formed traffic barrier this shall be done once the concrete has attained a minimum age of 12 hours and is of sufficient strength and hardness to prevent damage.

Adjacent materials and finishes shall be protected from dust, dirt and other damage during abrasive blasting operations. Corners and edge of patterns shall be carefully blasted using back-up boards to maintain a uniform corner or edge line.

The abrasive blast finishing shall be done in as continuous an operation as possible, utilizing the same work crew to maintain continuity of finish on each surface or area of work.

The type and gradation of abrasive grit used, the type of nozzle, nozzle pressure, and blasting techniques shall be as specified in the Contractor's submittal as approved by the Engineer, and as required to expose the aggregate.

The Contractor shall be responsible for safety of the workers and shall equip each with air-fed helmets. The Contractor shall provide suitable enclosures for the collection of grit and dust from the abrasive blasting operation.

After receiving the Engineer's approval of the exposed aggregate finish, a 10 percent muriatic acid wash shall be applied to the exposed aggregate surfaces. Surfaces shall be flushed thoroughly with water following a 5 to 10 minute interaction period between the acid solution and the surface.

All stains and streaks on the exposed aggregate surface shall be removed before applying the clear sealer.

6-02.3(14).OPT2.GB6
(June 26, 2000)
Containment
The Contractor shall exercise care and use suitable means to collect and dispose of abrasives and chemical agents, and the resulting concrete surface mortar debris used in or resulting from the finishing of the exposed aggregate surfaces to prevent their entry into the environment surrounding the structure.

6-02.3(14).OPT3.GB6
(April 2, 2007)
Applying the Clear Sealer
Two seal coatings of the clear sealer specified in Section 6-02.2 as supplemented in these Special Provisions shall be applied to the exposed aggregate surfaces in accordance with manufacturer's recommended procedure as approved by the Engineer.

6-02.3(14).OPT5.GB6
(April 7, 2008)
Fractured Basalt Finish
Fractured basalt finish form liners shall be placed with the pillars and joints normal to grade for barrier applications and vertical for all other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 8 feet in height provided that the minimum form liner panel height and width dimensions are 8 feet by 2 feet, respectively.

6-02.3(14).OPT6.GB6
(June 26, 2000)
Fractured Fin Finish
Form liners shall be placed with fins and joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 8 feet in height provided that the minimum form liner panel dimension is 8 feet.

6-02.3(14).OPT7.GB6
(June 26, 2000)
Fractured Granite Finish
Form liners shall be placed with the joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 8 feet in height provided that the minimum form liner panel dimension is 8 feet.

6-02.3(14).OPT8.GB6
(April 7, 2008)
Variable Depth Random Board Finish and 3/4 Inch Random Board Finish
Form liners shall be placed with board lines and joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 8 feet in height provided that the minimum form liner panel dimension is 8 feet.

6-02.3(14).OPT9.GB6
(June 26, 2000)
Random Board Finish
The 3/4 inch random board finish for concrete surfaces specified in the Plans to receive such a finish shall be achieved with reusable wooden forms conforming to Section 6-02.3(17)J and the texture pattern shown in the Plans. ABS, plastic, or elastomeric form liners shall not be used.

The texture pattern shall be accomplished with 3/4 inch thick battens in varying widths applied to the surface of the forms. The edge of all battens shall be sloped 15 degrees to facilitate form removal.

The Contractor shall submit a concrete panel test section, with the 3/4 inch random board texture to be used, to the Engineer for approval. The test section shall be constructed using the forms and materials intended to construct the permanent structures. The test section shall be composed of two ten foot by ten foot form sections which shall be assembled to make a ten foot by 20 foot concrete surface section, and shall include the wall top treatment, and one horizontal joint treatment. The Contractor shall not form any concrete elements specified to receive 3/4 inch random board finish until receiving the Engineer's approval of the test section.

All cracks, holes, slits, gaps, and apertures in forms shall be plugged and caulked with molding plaster to remain completely watertight and withstand the pressures of concrete placement. Joints between the form units shall be sealed with silicone or latex caulking compound. Butt joints may be sealed with non-absorptive sponge tape. Construction joints and expansion joints shall be incorporated into the pattern of the face treatment.

Forms and form ties shall be designed to permit removal without damaging the finish. Prying against the face of the concrete will not be allowed. After removing the forms, the Contractor shall treat the joint areas by patching or light sandblasting as required by the Engineer to ensure that the joints are not visible.

Storage of formwork and form materials shall be in a manner to prevent damage or distortion. Any damage to formwork during placing, removal, or storage shall be repaired by the Contractor as no additional expense to the Contracting Agency.

Form liners shall be cleaned, reconditioned, and repaired before each use. Form liners with repairs, patches, or defects which, in the opinion of the Engineer, would result in adverse effects to the concrete finish shall not be used.

Care shall be taken to ensure uniformity of color throughout the textured surface. A change in form release agent will not be allowed.

All surfaces with the 3/4 inch random board finish shall also receive a Class 2 surface finish. Form ties shall be a type that leaves a clean hole when removed. All spalls and form tie holes shall be filled as specified for a Class 2 surface finish.

6-02.3(14).OPT10.GB6
(August 6, 2007)
Ribbed Finish

Form liners shall be placed with fins and joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 8 feet in height provided that the minimum form liner panel dimension is 8 feet.

6-02.3(14).OPT11.GB6
(August 6, 2007)
Striated Finish

Form liners shall be placed with fins and joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 8 feet in height provided that the minimum form liner panel dimension is 8 feet.

6-02.3(14).OPT12.GB6
(August 6, 2007)
Ashlar Stone Finish

Form liners shall be placed with the faux mortar joints and formliner joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 8 feet in height provided that the minimum form liner panel dimension is 8 feet.

6-02.3(14).OPT13.GB6
(August 6, 2007)
Block Finish

Form liners shall be placed with the faux mortar joints and formliner joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 8 feet in height provided that the minimum form liner panel dimension is 8 feet.

6-02.3(14).OPT14.GB6
(April 7, 2008)
Split Face Finish

Form liners shall be placed with the joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 8 feet in height provided that the minimum form liner panel height and width dimensions are 8 feet by 6 feet, respectively.

6-02.3(14).OPT15.GB6
(April 7, 2008)
River Rock Finish

Form liners shall be placed with the joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 4 feet in height provided that the minimum form liner panel height and width dimensions are 4 feet by 8 feet, respectively.

6-02.3(14).OPT16.GB6
(April 5, 2010)
Cascadian Stone Finish

Form liners shall be placed with joints normal to grade for barrier applications and vertical (or as shown in the Plans) for other applications. Horizontal joints in the elastomeric form liners are permitted on surfaces greater than 4 feet in height provided that the minimum form liner panel height and width dimensions are 4 feet and 8 feet respectively.

No partial rocks will be allowed in the finished pattern. Adjust horizontal and vertical joints as needed.

Form ties shall be a type that leaves a clean hole when removed. All spalls and form tie holes shall be filled as specified for a Class 2 surface finish.

6-02.3(14).OPT25.GB6
(April 6, 2015)
Permeon Treatment

The Contractor shall apply surface aging treatment (Permeon Treatment) to all concrete surfaces specified in the Plans to receive permeon treatment. The Contractor shall use Federal Standard 595 Color Number 30219 as the target color. The target color is intended as a reference for hue, and is not intended as a reference for opacity or luster. The Contractor is advised that this target color is based on the following concentration formula and application rate for each of the following products:

Product	Concentration Formula	Application Rate
"Permeon Simulated Desert Varnish" produced by Soil Tech	5:1	5.5 to 6.5 square yards per gallon
"Natina Concrete Formula" produced by Natina Products, LLC	1:1	22 to 23 square yards per gallon
"Naturock" produced by Livingston Construction, Inc.	5:1	5.5 to 6.5 square yards per gallon
"CR2020" produced by Custom Rock	5:1	25 to 27 square yards per gallon

The permeon treatment shall be applied only by personnel approved by the manufacturer to apply the product. The Contractor shall furnish certificates of approval from the manufacturer, for the personnel scheduled to perform the work, to the Engineer prior to beginning the treatment operation.

The concrete shall be cured for the time period recommended by the manufacturer prior to receiving the permeon treatment coating.

The Contractor shall clean and prepare the concrete surfaces in accordance with the recommendations of the manufacturer for the use of the treatment product.

The Contractor shall apply the permeon treatment to the surfaces specified, in accordance with the recommendations of the manufacturer for the use of the treatment product.

The Contractor shall prevent permeon treatment from reaching surfaces not specified to receive the permeon treatment.

The Contractor shall prevent pigmented sealer from reaching surfaces that have received permeon treatment. Should pigmented sealer reach surfaces that have received permeon treatment, the pigmented sealer shall be removed and the permeon treatment repaired in accordance with Section 1-07.13.

6-02.3(14)C.GR6
Pigmented Sealer for Concrete Surfaces

6-02.3(14)C.INST1.GR6
Section 6-02.3(14)C is supplemented with the following:

6-02.3(14)C.OPT1.GB6
(April 6, 2009)
The color of the pigmented sealer shall be Washington Gray.

6-02.3(14)C.OPT2.GB6
(April 6, 2009)
The color of the pigmented sealer shall be Mt. St. Helens Gray.

6-02.3(14)C.OPT3.GB6
(April 6, 2009)
The color of the pigmented sealer shall be Mt. Baker Gray.

6-02.3(14)C.OPT4.GB6
(April 6, 2009)
The color of the pigmented sealer shall be Cascade Green.

6-02.3(14)C.OPT5.FB6
(April 6, 2009)
The color for the following structure feature(s) shall match the specified color(s):

Structure and Feature	Pigmented Sealer Color
*** $$1$$ ***	*** $$2$$ ***

6-02.3(17).GR6
Falsework and Formwork

6-02.3(17)C.GR6
Falsework and Formwork at Special Locations

6-02.3(17)C.INST1.GR6
Section 6-02.3(17)C is supplemented with the following:

6-02.3(17)C.OPT1.GB6
(June 26, 2000)
The Contractor shall obtain permission from the Railroad Company and the Washington Utilities and Transportation Commission for the Contractor's falsework openings over railroad tracks. The Contractor shall notify the Railroad Company at least 10 working days prior to erecting falsework over a track, and shall include the dimensions of the opening and the duration of the restricted clearance in the submittal.

6-02.3(17)K.GR6
Concrete Forms on Steel Spans

6-02.3(17)K.INST1.GR6
The first paragraph of Section 6-02.3(17)K is revised to read as follows:

6-02.3(17)K.OPT1.GB6
(August 4, 2010)
Except as otherwise specified, concrete forms on all steel structures shall be removable and shall not remain in place. Where needed, the forms shall have openings for truss or girder members. Each opening shall be large enough to leave at least 1-1/2 inches between the concrete and steel on all sides of the steel member after the forms have been removed. Unit contract prices cover all costs related to these openings.

Permanent metal forms may be used to form that portion of the concrete slab inside the webs of the steel box girders, subject to the following requirements:

1. Metal forms shall be 18 gage minimum thickness, zinc coated, steel sheet conforming to ASTM A 653 Coating Designation G 210. All accessories shall conform to ASTM A 36 or Section 9-06.1 with a zinc coating of 2.0 ounces per square foot.

2. Forms shall be designed by the Contractor to support the plastic concrete, metal forms, steel reinforcing bars, and a construction live load of 60 pounds per square foot. Deflection of the metal form shall not exceed 1/360 of the span. Camber of the metal form shall not exceed the anticipated deflection. The working unit stress shall not exceed 0.725 of the specified yield strength of the metal form material.

3. The metal forms shall provide for the full depth of the deck slab above the uppermost portions of the form. Bottom transverse steel reinforcing bars of the deck slab shall be at least 1 inch clear of the

metal forms at all points. Forms or supports shall not be welded to girder flanges.

4. The deck slab concrete shall be placed continuously between the transverse construction joints shown in the Plans, except in an emergency when the Engineer approves interrupting the concrete placement. In such an emergency, the Contractor shall construct a transverse joint at the bottom of a flute and shall field drill 1/4 inch weep holes through the metal form at 12 inch centers along the line of the joint.

5. All zinc coating on exposed metal form damaged or removed during construction shall be repaired with one coat of paint conforming to Section 9-08.1(2)B, two mils minimum dry film thickness.

6. Should the Engineer determine that inspection of the underside of the hardened slab is warranted, the Contractor shall remove at least one section of metal form in each span at no extra cost to the Contracting Agency. If excessive honeycomb or other defects are found, the Contractor shall, if required by the Engineer, remove additional form sections at no additional expense to the Contracting Agency, and shall revise concrete placing methods as required to produce sound concrete. All unacceptable concrete shall be removed or repaired as approved by the Engineer.

7. Complete layout, details, and a description of materials, for the permanent metal forms shall be included in the Contractor's falsework and formwork submittal as specified in Section 6-02.3(16).

8. No adjustment will be made to the lump sum contract price for "Bridge Deck - ____" for additional quantities of materials required because of the use of the permanent forms.

6-02.3(18).GR6
Placing Anchor Bolts

6-02.3(18).INST1.GR6
Section 6-02.3(18) is supplemented with the following:

6-02.3(18).OPT1.GR6
(January 3, 2011)
Resin Bonded Anchors
The embedment depth of the anchors shall be as specified in the Plans. If the embedment depth of the anchor is not specified in the Plans then the embedment depth shall be as specified in the table of minimum and maximum torque below.

The anchors shall be installed in accordance with the resin manufacturer's written procedure.

Holes shall be drilled as specified in the Plans. Holes may be drilled with a rotary hammer drill when core drilling is not specified in the Plans. If holes are core drilled, the sides of the holes shall be roughened with a rotary hammer drill after core drilling.

Holes shall be prepared in accordance with the resin manufacturer's recommendations and shall meet the minimum requirements as specified herein. Holes drilled into concrete shall be thoroughly cleaned of debris, dust, and laitance prior to installing the threaded rod and resin bonding material. Holes shall not have any standing liquid at the time of installation of the threaded anchor rod.

The anchor nuts shall be tightened to the following torques when the embedment equals or exceeds the minimum embedment specified.

Anchor Diameter (inch)	Minimum Torque (ft-lbs)	Maximum Torque (ft-lbs)	Minimum Embedment (Inch)
3/8	12	18	3-3/8
1/2	22	35	4-1/2
5/8	55	80	5-5/8
3/4	106	140	6-3/4
7/8	165	190	7-7/8
1	195	225	9
1-1/4	370	525	11-1/4

When the anchor embedment depth is less than the minimum values specified, the anchor nuts shall be tightened to the torque values specified in the Plans, or as recommended by the resin bonded anchor system manufacturer and approved by the Engineer.

6-02.3(19).GR6
Bridge Bearings

6-02.3(19)A.GR6
Elastomeric Bearing Pads

6-02.3(19)A.INST1.GR6
Section 6-02.3(19)A is supplemented with the following:

6-02.3(19)A.OPT1.BSP.GB6
(BSP June 26, 2000)
High-Load Elastomeric Bearing Pad Assembly
The Contractor shall install all bearings level, unless otherwise shown in the Plans.

The Contractor shall measure the slope of the top surface of the bearing and the contact surface of the bridge superstructure. If the difference in slope between these surfaces exceeds 0.005 radians, the Contractor shall adjust the surfaces to within this tolerance by shimming, grouting, or other method as approved by the Engineer.

The Contractor shall set the sole plate with epoxy gel just before setting the superstructure in place on the bearing. The Contractor shall spread a thin uniform film of silicone grease on the top surface of the sole plate in contact with the epoxy gel to prevent bonding of the sole place to the epoxy gel. The Contractor shall grease the bolts attaching the sole plate to the superstructure to prevent bonding and allow for future removal. The Contractor shall apply epoxy gel to the bottom surface of the superstructure and immediately bolt the sole plate in place to obtain a level surface at the bottom of the sole plate. The Contractor shall set the superstructure in place on the bearing before the epoxy gel has cured, squeezing out excess epoxy gel. The Contractor shall immediately remove all excess epoxy gel and grease. After the epoxy gel has cured, the Contractor shall tighten the sole plate attachment bolts.

6-02.3(19)B.GR6
Bridge Bearing Assemblies

6-02.3(19)B.INST1.GR6
Section 6-02.3(19)B is supplemented with the following:

6-02.3(19)B.OPT1.GB6
(August 6, 2012)
Fabric Pad Bearing
The fabric pad bearing consists of an upper unit and a lower unit. The upper unit consists of a stainless steel sheet and either a single sole plate or upper and lower sole plates, as shown in the Plans. The lower unit consists of a polytetrafluoroethylene (PTFE) sheet, a backing plate, and a pre-formed fabric pad, and may also include keeper bars and a masonry plate, as shown in the Plans. Lower unit components of transverse restrainer bearings and transverse stop bearings shall be as shown in the Plans. The upper and lower units shall be supplied by a single bearing manufacturer.

Shop Drawings
The Contractor shall submit shop drawings to the Engineer for approval in accordance with Section 6-03.3(7). These drawings shall include but not be limited to the following information:

1. Plan and elevation of the assembled bearing and each of the components showing dimensions and tolerances.

2. Complete details of all components and sections showing all materials incorporated into the bearing.

3. All AASHTO, ASTM or other material designations.

4. Bearing manufacturer's recommendations and procedures for bearing assembly shipment and storage.

The Contractor shall not begin fabricating the fabric pad bearings until receiving the Engineer’s approval of the shop drawings.

Flatness and Manufacturing Tolerances
Flatness of bearing surfaces shall be determined by the following method:

1. A precision straightedge, longer than the nominal dimension to be measured shall be placed in contact with the surface to be measured as parallel to it as possible.

2. A feeler gauge having an accuracy equal to the tolerance allowed ± .001 inch, shall be selected and inserted under the straightedge.

3. Surfaces are acceptable for flatness if the feeler gauge does not pass under the straightedge.

4. In determining the flatness, the straightedge may be located in any position on the surface being measured.

Flatness tolerances shall be defined as follows:

1. Class A tolerance = 0.001 x nominal dimension

2. Class B tolerance = 0.002 x nominal dimension

3. Class C tolerance = 0.005 x nominal dimension

(Nominal dimension shall be taken as the actual dimension of the plate or sheet under the straightedge, in inches.)

Manufacturing tolerances for the bearings are as follows:

PTFE Sheet	
Plan dimensions:	Total nominal design area -0, +1/8"
Thickness:	-0", + 1/64"
Flatness:	Class A tolerance, both surfaces
Pre-formed Fabric Pad	
Plan dimension:	-0", +3/16"
Thickness:	-1/16", +3/16"
Surface finish:	For pre-formed fabric pads fabricated from multiple layers, all pad edges shall be free of visible horizontal displacement between the individual layers.
Stainless Steel Sheet	
Plan dimensions:	-0", +3/16"
Flatness:	Class A tolerance, both surfaces
Sole Plate	
Plan dimensions:	-0", +3/16"
Thickness:	-1/16", +3/16"
Flatness:	Class A tolerance, side in contact with the stainless steel sheet or sole plate Class C tolerance, side in contact with epoxy gel, grout, or concrete

Backing Plate

Plan dimensions:	-0", +3/16"
Thickness:	-0", +3/16"
Width and length of recess:	-0", +1/16", of PTFE sheet size
Flatness:	Class A tolerance, both surfaces

Masonry Plate

Plan dimension:	-0", +3/16"
Thickness:	-0", +3/16"
Flatness:	Class A Tolerance, side in contact with pre-formed fabric pad. Class C tolerance, free side or side in contact with grout.

Keeper Bar

Length:	±1/8"
Section dimensions:	±1/16"
Flatness:	Class A Tolerance, side in contact with masonry plate.
Bar to bar tolerance:	±1/32"

Bars shall be not more than 1/32" out of parallel

Overall Height

Total thickness:	-0, +10 percent

Special Fabrication Requirements

When the following components are shown in the Plans as part of the fabric pad bearing assembly, the following special fabrication requirements shall apply:

PTFE

PTFE shall be 1/8 inch thick unless otherwise noted in the Plans. PTFE shall be recessed and bonded to a depth of one half the PTFE sheet thickness into the backing plate. The exposed height of the PTFE shall not be less than 3/64 inch.

Dimpled PTFE, if shown in the Plans, shall be unfilled and have a minimum thickness of 3/16 inch. Dimples shall be placed in a 1/2 inch grid and shall have a depth of 1/16 inch.

The PTFE sheet shall be recessed and chemically bonded to the supporting steel plate or bar. Bonding shall be performed under controlled conditions and in accordance with the written instructions of the PTFE manufacturer.

Following the bonding operation, the PTFE surface shall be smooth and free from bubbles. Filled PTFE shall be polished after the bonding operation is complete, in accordance with AASHTO LRFD Bridge Construction Specification Section 18.8.3.2.2, current edition and latest interims.

Stainless Steel

The stainless steel sheet shall be seal welded all around to the supporting steel plate or bar by the gas tungsten-arc welding (GTAW) process in accordance with current AWS specifications. The stainless steel sheet shall be clamped down to have full contact with the sole plate during welding. The welds shall not protrude beyond the sliding surface of the stainless steel sheet.

Keeper Bars

Each keeper bar shall be fabricated from a single steel plate. The keeper bars shall be connected to the masonry plate either by welding or by bolting, as shown in the Plans.

Corrosion Protection

Steel surfaces, except as otherwise specified below, shall be painted in accordance with Section 6-07.3(9), and Section 6-03.3(30) as supplemented in these Special Provisions. The surfaces of all welds fastening stainless steel to structural steel shall be painted as specified for structural steel. Stainless steel shall not be painted. Galvanized fastening hardware (anchor bolts, bolts, nuts and washers) shall be painted in accordance with Section 6-07.3(11)A.

All coats of paint as specified in Section 6-07.3(9)A for steel surfaces shall be applied in the shop. After the fabric pad bearing assembly has been erected in its final position with the anchor bolt nuts installed, all surfaces with damaged paint shall be repaired in accordance with Section 6-07.3(9)I.

All coats of paint as specified in Section 6-07.3(11)A for galvanized fastening hardware shall be applied after the fabric pad bearing assembly has been erected in its final position with the anchor bolt nuts installed and tightened. The Contractor shall prepare the galvanized surfaces for painting in accordance with Section 6-07.3(11)A except only hand or power tool cleaning methods shall be used.

Bearing Component Assembly, Shipping, and Storage

Each bearing, except for upper sole plate components embedded into cast-in-place concrete superstructures, shall be fully assembled at the manufacturing plant and delivered to the construction site as a complete unit, ready for installation. The units shall be held together with removable restraints so that the sliding surfaces are not damaged. Softeners shall be placed under the restraints to protect all painted surfaces. The Contractor shall not damage the painted surfaces during shipping, storing and installing the bearing assemblies.

All bearing assemblies shall be marked with the following information prior to shipping:

1. Location of the bearing, including the pier and the specific location along the pier.

2. Direction arrow pointing in the ahead on station direction.

The above information shall be marked on the top plate of the upper unit of the bearing assembly. The marks shall be permanent and shall be visible after bearing installation.

The bearing assemblies shall have centerlines marked on both upper and lower units for checking alignment in the field.

The bearing assemblies shall be shipped in light-proof, moisture-proof and dust-proof containers.

Bearing Assembly Field Inspection
Field inspection of a representative number of bearing assemblies will be performed by the Engineer. The Contractor shall provide a clean, dry and enclosed area at the site, spacious enough for the field inspection activities. The Contractor shall disassemble and reassemble the bearings for inspection by the Engineer. The disassembly and reassembly of the bearings shall be in accordance with the bearing manufacturer's written procedure and in the presence of the Engineer.

Bearings that fail the inspection shall be replaced or repaired by the Contractor, as approved by the Engineer, at no additional expense to the Contracting Agency. All proposed corrective procedures shall be submitted by the Contractor to the Engineer for approval before beginning corrective work.

Bearing Assembly Installation
The sliding surfaces shall be finished true, lubricated and installed level, or installed as shown in the Plans for transverse restrainer bearings and transverse stop bearings.

PTFE sheet shall not be greased, except as otherwise noted. A thin uniform film of silicone grease shall be applied to the entire dimpled PTFE sheet before installation (all dimples shall be filled with grease).

For cast-in-place concrete superstructures, the fabric pad bearing upper unit shall be anchored to the structure as shown in the Plans. For precast concrete superstructures with fabric pad bearing upper units consisting of upper and lower sole plates, the upper sole plate shall be cast into and anchored to the precast concrete member as shown in the Plans.

The upper unit of fabric pad bearings for steel superstructures, and the lower sole plate assemblies for precast concrete superstructures shall be set with epoxy gel as specified below just before setting the superstructure in place.

The sole plate top surface in contact with the epoxy gel shall receive a thin uniform film of silicone grease, to prevent bonding to the epoxy gel. The anchor bolts and insert threads shall be greased to prevent bonding and allow future removal. The Contractor shall apply the epoxy gel by troweling it into the concrete recess, or onto the bottom of the steel superstructure or upper sole plate surface, and immediately bolt the upper unit of the bearing in place to obtain a level surface.

Before the epoxy gel has cured, the superstructure shall be set in place, squeezing out excess epoxy gel while filling the entire recess. Excess epoxy and grease shall be removed immediately. Special care shall be exercised at all times to ensure protection of the stainless steel and PTFE surfaces from coming in contact with concrete, epoxy gel, or any other foreign matter. After the epoxy gel has cured, the anchor bolts shall be tightened to snug tight.

The grout pad, and masonry plate when shown in the Plans, shall be installed level. When shown with a masonry plate, the grout pad shall be pressure installed starting at the middle of the masonry plate.

All forms and debris that tend to interfere with the free action of the bearing assemblies shall be removed at the time falsework and forms are removed.

6-02.3(19)B.OPT6.GB6
(April 6, 2015)
Transverse Stop Bearing
All material and construction requirements for the transverse stop bearings shall conform to those specified for **Fabric Pad Bearing**, in Sections 6-02.2 and 6-02.3(19)B as supplemented in these Special Provisions.

6-02.3(19)B.OPT7.BSP.GB6
(BSP June 4, 2012)
Cylindrical Bearing
Bearing Types
The cylindrical bearings shall be one of the following types, with bridge specific modifications, if any, as shown in the Plans:

Guided Cylindrical Bearings
Each guided cylindrical bearing shall consist of an upper, a middle, and a lower unit. The lower unit shall be a masonry plate welded to a cylindrically curved convex upper surface base plate. The convex upper surface shall be stainless steel. The middle unit shall be a bearing plate with a cylindrically curved concave lower surface and a flat upper surface.

Polytetrafluoroethylene (PTFE) sheets shall be bonded to the upper and lower surfaces of the middle unit. The upper unit shall be a sole plate to which guide bars, if shown in the Plans, shall be attached. The lower surface of the sole plate between the guide bars shall have stainless steel sheet welded to it. The interspace between the guide bars and the bearing plate shall be provided with stainless steel sheet against PTFE. The stainless steel sheet shall be welded to the guide bars and the PTFE sheet shall be mechanically fastened to the bearing plate.

Fixed Cylindrical Bearings

Each fixed cylindrical bearing shall consist of an upper and lower unit. The lower unit shall be a masonry plate welded to a cylindrically curved convex upper surface base plate. The convex upper surface shall be of stainless steel. The upper unit shall be a sole plate welded to a cylindrically curved, concave lower surface bearing plate. Polytetrafluoroethylene (PTFE) sheet shall be bonded to the concave surface.

Design Requirements

The Contractor shall design the bearing assemblies based on the current AASHTO LRFD Bridge Design Specifications, including latest interims, and also based on the following:

1. The bearing assembly design requirements for loads, movements, and rotations shall be as shown in the Plans.

2. The bearing assembly shall be removable and replacable by raising the bridge superstructure 1/4 inch maximum. The bearing shall be held in place by recessing the upper and lower keeper plates and by providing recessed bolted keeper bars on the side of bearing removal.

3. The area of the PTFE surface shall be designed so that the contact pressure does not exceed the maximum contact pressure specified in Table 14.7.2.4-1 of the AASHTO LRFD Bridge Design Specifications. The contact stress shall be determined at the strength limit state as specified in Section 14.7.2.4 of the AASHTO LRFD Bridge Design Specifications.

4. The minimum coefficient of friction on PTFE surfaces used for design shall be those corresponding to 68F in Table 14.7.2.5-1 of the AASHTO LRFD Bridge Design Specifications.

5. The anchorage of the sole plates, masonry plates, and guide bars to the supporting structural element shall be designed for the maximum horizontal design force per bearing shown in the Plans, or 10 percent of the maximum unfactored vertical design force per bearing, whichever is greater.

6. The sole and masonry plates shall have leveling capabilities.

7. The guide bars shall maintain all guided components within the guides at all points of translation and rotation of the bearing.

Submittals

Design Calculations

The Contractor shall submit design calculations for all the bearing components, including the base plates, bearing plates, sole plates, masonry plates, keeper plates and bars, and anchor bolts to the Engineer for approval in accordance with Section 6-02.3(16). The design calculations shall accompany the shop plans.

The calculations shall provide, but not be limited to the following information:

1. Bending stresses in the plates due to bearing pressure at maximum design load and eccentricity.

2. Concrete bearing pressure under the plates at maximum bearing pressure and eccentricity.

3. Bearing clearances at maximum load and rotation. The calculated clearances shall include the effects of anticipated initial set and modified center of rotation.

4. Design of all connections and mating surfaces.

5. Compressive stress on all sliding surfaces at maximum and minimum design loads, including rotation.

6. The Contractor shall not begin bearing fabrication until receiving the Engineer's written approval of the calculations.

Bearing Manufacturer Requirements
The cylindrical bearing manufacturer shall have a minimum of three years experience in fabrication of cylindrical bearings, and shall meet additional testing requirements as specified in this Special Provision.

The Contractor shall submit the name of the cylindrical bearing manufacturer with a certification of cylindrical bearing manufacturing experience to the Engineer for approval. The certification of experience shall include a list of at least three cylindrical bearing installations performed by the bearing manufacturer on previous projects. The list shall include the following information for each installation:

1. Project Name and Location (Bridge name and highway number).

2. Date of installation.

3. Governmental Agency/Owner.

4. Name, address, and phone number of the Governmental Agency's/Owner's representative.

The Contractor shall not begin preparation of the design calculations and shop plans until receiving the Engineer's written approval of the bearing manufacturer's certification of experience.

Shop Drawings
The Contractor shall submit shop drawings to the Engineer for approval in accordance with Section 6-03.3(7). These drawings shall include but not be limited to the following information:

1. Bearing schedule identifying location and bearing type as described in subsection **Bearing Types** of this Special Provision.

2. Minimum and maximum horizontal and vertical service loads.

3. Magnitude and direction of movements at all bearing support points.

4. Minimum and maximum rotation capacity.

5. Construction rotation requirements.

6. Plan and elevation of the assembled bearing and each of the components showing dimensions and tolerances.

7. Complete details of all components and sections showing all materials incorporated into the bearing.

8. All AASHTO, ASTM, and other material designations.

9. All surface finishes.

10. Bearing manufacturer’s recommendations and procedures for bearing assembly shipment, storage, and installation.

The Contractor shall not begin fabricating the cylindrical bearings until receiving the Engineer’s approval of the shop drawings.

Shop Inspection
The manufacturer shall provide for inspection, as specified in the **Bearing Inspection and Acceptance** subsection of this Special Provision. Inspection during the fabrication process shall ensure that the materials and workmanship meet the requirements of the contract.

Quality Assurance Inspection and Final Shop Inspection shall be performed by an independent inspection entity approved by the Engineer. The Contractor shall submit the name, address, phone number and contact person of the inspection entity performing the required certified shop inspection of the bearings to the Engineer for approval. The Contractor shall not begin bearing fabrication until receiving the Engineer’s written approval of the inspection entity for certified shop inspection.

Bearing Testing Procedure
The Contractor shall submit the name, address, phone number, and contact person of the testing entity performing the required bearing testing specified in **Bearing Testing** subsection of this Special Provision to the Engineer for approval.

The testing entity shall be one of the following:

1. An independent testing agency.

2. The cylindrical bearing manufacturer, with independent verification by the inspection entity performing the certified shop inspection of the bearings.

The Contractor shall not begin bearing fabrication until receiving the Engineer's written approval of the testing entity.

Bearing Assembly Inspection Reports and Certificates
The Contractor shall submit the daily inspection reports of the independent inspection entity performing the required certified shop inspection to the Engineer for approval. The daily inspection reports shall report on the shop fabrication and testing activities relating to the bearing assemblies, and their conformance to the specification requirements.

The Contractor shall submit written documentation from the bearing manufacturer certifying that the bearing assemblies have been manufactured in full compliance with the specification requirements.

The Contractor shall not ship the bearing assemblies from the fabricator's facility until receiving the Engineer's approval of the certified shop inspection daily inspection reports and the bearing manufacturer's certificate of compliance.

Flatness and Manufacturing Tolerances
Flatness of bearing surfaces shall be determined by the following method:

1. A precision straightedge, longer than the nominal dimension to be measured shall be placed in contact with the surface to be measured as parallel to it as possible.

2. A feeler gauge having an accuracy of □ 0.001 inches equal to the tolerance allowed shall be selected and inserted under the straightedge.

3. If the feeler gauge does not pass under the straightedge, the surfaces shall be acceptable for flatness.

4. In determining the flatness, the straightedge may be located in any position on the surface being measured.

Flatness tolerances shall be defined as follows:

1. Class A tolerance = 0.001 x nominal dimension

2. Class B tolerance = 0.002 x nominal dimension

3. Class C tolerance = 0.005 x nominal dimension

(Nominal dimension shall be taken as the actual dimension of the plate or sheet under the straightedge, in inches.)

Manufacturing tolerances for the bearings are as follows:

Sole, Bearing, Base, and Masonry Plate	
Plan dimensions	
Greater than 30 inches:	-0.00, +3/16 inch
30 inches or less:	-0.00, +1/8 inch
Thickness:	-1/32, +1/8 inch
Flatness:	Class A tolerance, side in contact with steel or PTFE Class C tolerance, side in contact with grout or concrete
Guide Bar	
Length:	± 1/8 inch
Section dimensions:	± 1/16 inch
Flatness:	Class A tolerance, side in contact with steel
Bar to bar tolerance:	± 1/32 inch
Bars shall be not more than 1/32” out of parallel	
PTFE Sheet	
Plan dimensions:	Total nominal design area –0, +5 percent
Thickness:	-0.00, +1/64 inch
Flatness:	Class A tolerance
PTFE Recess:	Length and width –0.00, +0.04 inch
Stainless Steel Sheet	
Flatness:	Class A tolerance
Curved Surfaces	
Convex Radius:	-0.01, +0.00 inch
Concave Radius:	-0.00, +0.01 inch
Overall Height	
Total thickness:	-1/16, +3/16 inch

The edges of all components shall be broken by grinding so that there are no sharp edges.

Special Fabrication Requirements

When the following components are shown in the Plans as part of the cylindrical bearing assembly, the following special fabrication requirements shall apply:

Sole Plate and Masonry Plate

The sole plate and masonry plate shall be 3/4 inches minimum thickness, unless otherwise shown in the Plans.

PTFE Sheet

The thickness of solid PTFE sheet shall be a minimum of 1/8 inch and a maximum of 3/16 inch. Solid PTFE sheet shall be recessed for a depth equal to one-half of its thickness into the material it is bonded to.

The thickness of woven PTFE fabric, if used, shall be a minimum of 1/16 inch and a maximum of 1/8 inch.

Dimpled PTFE, if shown in the Plans, shall be unfilled and shall have a maximum thickness of 3/16 inch. Dimples shall be placed on a 1/2 inch grid and have a depth of 1/16 inch.

The PTFE sheet shall be recessed and chemically bonded to the supporting steel plate or bar. The woven PTFE sheet shall be mechanically bonded to the supporting steel plate or bar by using an interlocking grid. Bonding shall be performed under controlled conditions and in accordance with the written instructions of the PTFE manufacturer.

Following the bonding operation, the PTFE surface shall be smooth and free from bubbles. Filled PTFE shall be polished after the bonding operation is complete, in accordance with AASHTO LRFD Bridge Construction Specification Section 18.8.3.2.2, current edition and latest interims.

Stainless Steel Sheet

The stainless steel sliding surface shall completely cover the PTFE surface in all operating positions plus one additional inch in all directions.

The stainless steel shall be 14 gage thick for the main sliding surfaces and 10 gage thick for the guide bars.

The curved surfaces that receive stainless steel shall be weld overlaid to produce a surface chemistry equivalent to ASTM A 240 Type 304L stainless steel.

Stainless steel welded overlay on the curved surface shall be a minimum of 3/32 inch thick after welding, grinding, and polishing.

The stainless steel sheet shall be seal welded all around to the supporting steel plate or bar by the gas tungsten arc welding (GTAW) process in accordance with current AWS specifications. The stainless steel sheet shall be clamped down to have full contact with the supporting steel plate or bar during welding. The welds shall not protrude beyond the sliding surface of the stainless steel sheet.

Guide Bar
Each guide bar shall be fabricated from a single steel plate. The guide bars shall be connected to the cylindrical bearing assembly by recessing and bolting. The stainless steel sheet shall be welded to the guide bar before attaching the guide bar to the cylindrical bearing assembly. The space between the guide bar and the guided component shall be 3/16 inch ± 1/16 inch.

Corrosion Protection
Steel surfaces, except as otherwise specified below, shall be painted in accordance with Section 6-07.3(9), and Section 6-03.3(30) as supplemented in these Special Provisions. The weld surfaces fastening stainless steel to structural steel shall be painted as specified for structural steel. Stainless steel shall not be painted. Galvanized fastening hardware (anchor bolts, bolts, nuts and washers) shall be painted in accordance with Section 6-07.3(11)A.

All coats of paint as specified in Section 6-07.3(9)A for steel surfaces shall be applied in the shop. After the cylindrical bearing assembly has been erected in its final position with the anchor bolt nuts installed, all surfaces with damaged paint shall be repaired in accordance with Section 6-07.3(9)I.

All coats of paint as specified in Section 6-07.3(11)A for galvanized fastening hardware shall be applied after the cylindrical bearing assembly has been erected in its final position with the anchor bolt nuts installed. The Contractor shall prepare the galvanized surfaces for painting in accordance with Section 6-07.3(11)A except only hand or power tool cleaning methods shall be used.

The embedded pipe assembly, when shown in the Plans, shall not be painted.

Bearing Testing
The Contractor shall provide for testing of the bearings. The testing shall be performed by the testing entity submitted by the Contractor and approved by the Engineer as specified in the **Bearing Testing Procedure** subsection of this Special Provision.

All testing specified by this Special Provision performed by the bearing manufacturer shall be witnessed by the inspection entity performing the certified shop inspection of the bearings.

When fabrication of the bearings is complete, a Wear and Damage Characteristics test shall be performed either on bearing assemblies randomly selected from the production bearings, or on an equal number of prototype bearings with a minimum design capacity of 1,000 kips. One bearing per lot shall be tested where one lot is defined as the smaller of the following:

1. 25 cylindrical bearing assemblies.

2. The total quantity of cylindrical bearing assemblies specified in the contract.

The Wear and Damage Characteristics test shall be performed on the selected test bearing assemblies as follows:

1. The bearing shall be subjected to 5,000 cycles of rotation (2.0 degrees each direction from level, 4.0 degrees total rotation) under the specified vertical dead load plus live load.

2. After completing the load cycles, the bearing shall be disassembled and inspected for wear and damage. A 1/64 inch reduction in PTFE thickness, or damage to the bearing, shall be cause for rejection of the bearing assembly.

3. The test bearing shall show no signs of defects and failure while under load, and after disassembly and inspection.

Failure of the test bearing will result in rejection of all bearings.

The testing requirements specified above may be waived for bearing manufacturers with at least three years of cylindrical bearing fabrication experience provided:

1. The bearing manufacturer, through the Contractor, shall submit certified test results from a previous installation of cylindrical bearings of similar design and load capacity to the Engineer for approval. This submittal shall accompany the design calculation and shop plan submittal.

2. The tests performed on the previously installed bearings satisfy the requirements specified above.

3. All test requirements not performed on and not satisfied by the previously installed bearings shall be performed on and satisfied by a test bearing in this contract through a Wear and Damage Characteristics test as specified above.

The test bearing may be used as a production bearing provided:

1. The test results meet with the approval of the Engineer.

2. The test bearing was selected from the production bearings.

3. All PTFE in the test bearing assembly shall be replaced with new PTFE.

Bearing Inspection and Acceptance

Three levels of inspection shall be satisfied before the bearings are accepted. These are: Quality Control Inspection, Quality Assurance Inspection, and Final Shop Inspection. The manufacturer shall provide for both Quality Control and Quality Assurance Inspection. The manufacturer shall provide access for the Final Shop Inspection. The three levels of inspection are described below:

1 Quality Control Inspection

During the fabrication process of all major components, the manufacturer shall provide full time Quality Control Inspection to ensure that the materials and workmanship meet or exceed the minimum requirements of the contract. Quality Control Inspection shall be the responsibility of the manufacturer's quality control group, which shall be independent of the fabrication group.

2. Quality Assurance Inspection

Quality Assurance Inspection shall be performed by the independent inspection entity performing the certified shop inspection, as submitted by the Contractor and approved by the Engineer. The independent inspection entity, the proposed Quality Assurance Inspection Program, and the forms to be used for the Quality Assurance Program shall be submitted to the Engineer for approval prior to the start of fabrication. Quality Assurance Inspection is not required to be full time inspection, but shall be done at all phases of the manufacturing process. The frequency of inspection shall be included in the Quality Assurance Inspection Program.

3. Final Shop Inspection

Prior to shipping the bearings to the job site, a representative number of bearings shall be inspected by the independent inspection entity at the manufacturer's facility. The manufacturer shall provide a clean, dry, and enclosed area for the bearing inspection. The manufacturer shall disassemble and reassemble the bearings for inspection by the independent inspection entity. The independent inspection entity shall certify that the bearings have been inspected, and that the bearings have been manufactured in full compliance with the contract requirements.

The bearings shall satisfy each of the three levels of inspection described above before they will be accepted. Bearings that fail any one of the three levels of inspection shall be replaced or repaired as approved by the Engineer at no additional expense to the Contracting Agency. All proposed corrective procedures shall be submitted by the Contractor to the Engineer for approval before beginning corrective work.

Bearing Component Assembly, Shipping, and Storage

Each bearing, except bearing components welded to the bottom flange of steel girders, shall be fully assembled at the manufacturing plant and delivered to the construction site as a complete unit, ready for installation.

The units shall be held together with removable restraints so that the sliding surfaces are not damaged. Softeners shall be placed under the restraints to protect all painted surfaces. The Contractor shall not damage the painted surfaces while shipping, storing and installing the bearing assemblies.

All bearing assemblies shall be marked with the following information prior to shipping:

1. Location of the bearing, including the pier and the specific location along the pier.

2. Direction arrow pointing in the ahead on station direction.

The above information shall be marked on the top plate of the upper unit of the bearing assembly. The marks shall be permanent and shall be visible after bearing installation.

The bearing assemblies shall have centerlines marked on both upper and lower units for checking alignment in the field.

The bearing assemblies shall be shipped in light-proof, moisture-proof and dust-proof containers.

Bearing Assembly Field Inspection
Field inspection of a representative number of bearings assemblies will be performed by the Engineer. The Contractor shall provide a clean, dry and enclosed area at the site, spacious enough for the field inspection activities. The Contractor shall disassemble and reassemble the bearings for inspection by the Engineer. The disassembly and reassembly of the bearings shall be in accordance with the bearing manufacturer's written procedure and in the presence of the Engineer.

Bearings that fail the inspection shall be replaced or repaired by the Contractor, as approved by the Engineer, at no additional expense to the Contracting Agency. All proposed corrective procedures shall be submitted by the Contractor to the Engineer for approval before beginning corrective work.

Bearing Assembly Installation
The Contractor shall install the cylindrical bearing assembly in accordance with the installation procedure included with the shop drawing submittal as approved by the Engineer.

PTFE sheet shall not be greased, except as otherwise noted. A thin uniform film of silicone grease shall be applied to the entire dimpled PTFE sheet before installation (all dimples shall be filled with grease).

For cylindrical bearing assemblies with PTFE and stainless steel components, the Contractor shall take special care at all times to ensure protection of the PTFE and stainless steel surfaces from coming in contact with concrete and any other foreign matter.

When bearing assemblies are supporting steel superstructure, the interface between the sole plate and the steel girder flange (or the upper and lower sole plates when separate) shall be set with epoxy gel just before setting the superstructure in place. The (lower) sole plate surface in contact with the epoxy gel shall receive a thin uniform film of silicone grease, to prevent bonding to the epoxy gel. The threads of the sole plate clamping bolts shall be greased to prevent bonding and allow future removal. The Contractor shall apply the epoxy gel by troweling it onto the bottom surface of the steel girder flange or the upper sole plate welded to the steel girder flange and shall immediately bolt the (lower) sole plate in place to obtain a level surface.

Before the epoxy gel has cured, the superstructure shall be set in place, squeezing out the excess epoxy gel while filling the interface between the steel surfaces. Excess epoxy and grease shall be removed immediately. After the epoxy gel has cured, the sole plate clamping bolts shall be tightened to snug tight.

6-02.3(19)B.OPT8.BSP.GB6
(BSP June 4, 2012)
Disc Bearing

Bearing Types

The disc bearings shall be one of the following types, with bridge specific modifications, if any, as shown in the Plans:

Guided Disc Bearings

Each guided disc bearing shall consist of an upper and a lower unit. The lower unit consists of a masonry bearing plate and an upper bearing plate, with a polyether urethane disc between the plates. A polytetrafluoroethylene (PTFE) sheet is bonded to the upper bearing plate.

The upper unit consists of a sole plate, a top sliding plate, and a stainless steel sheet welded to the bottom side of the top sliding plate. Guide bars, if shown in the Plans, shall be attached to the top sliding plate.

The interspace between the guide bars of the upper unit and the upper bearing plate of the lower unit shall be provided with stainless steel sheet against PTFE. The stainless steel sheet shall be welded to the guide bars and the PTFE sheet shall be mechanically fastened to the upper bearing plate of the lower unit.

Fixed Disc Bearings

Each fixed disc bearing shall consist of an upper and a lower unit. The lower unit consists of a masonry bearing plate and an upper bearing plate, with a polyether urethane disc between the plates. A polytetrafluoroethylene (PTFE) sheet is bonded to the upper bearing plate.

The upper unit consists of a sole plate, and a stainless steel sheet welded to the bottom side of the sole plate.

Design Requirements

The Contractor shall design the bearing assemblies based on the current AASHTO LRFD Bridge Design Specifications, including latest interims, and also based on the following:

1. The bearing assembly design requirements for loads, movements, and rotations shall be as shown in the Plans.

2. The bearing assembly shall be removable and replacable by raising the bridge superstructure 1/4 inch maximum. The bearing shall be held in place by recessing the upper and lower keeper plates and by providing recessed bolted keeper bars on the side of bearing removal.

3. The area of the polyether urethane disc shall be designed for a unfactored stress of 5,000 psi $\pm$ 5 percent at full dead load and live load.

4. The area of the PTFE surface shall be designed so that the contact pressure does not exceed the maximum contact pressure specified in Table 14.7.2.4-1 of the AASHTO LRFD Bridge Design Specifications. The contact stress shall be determined at the strength limit state as specified in Section 14.7.2.4 of the AASHTO LRFD Bridge Design Specifications.

5. The minimum coefficient of friction on PTFE surfaces used for design shall be those corresponding to 68F in Table 14.7.2.5-1 of the AASHTO LRFD Bridge Design Specifications.

6. The anchorage of the sole plates, masonry plates, and guide bars to the supporting structural element shall be designed for the maximum horizontal design force per bearing shown in the Plans, or 10 percent of the maximum unfactored vertical design force per bearing, whichever is greater.

7. The sole and masonry plates shall have leveling capabilities.

8. The guide bars shall maintain all guided components within the guides at all points of translation and rotation of the bearing.

Submittals

Design Calculations

The Contractor shall submit design calculations for all the bearing components, including the polyether urethane disc, shear pin, bearing plates, sole plates, masonry plates, guide bars, and anchor bolts to the Engineer for approval in accordance with Section 6-02.3(16). The design calculations shall accompany the shop plans.

The calculations shall provide, but not be limited to the following information:

1. Bending stresses in the plates due to bearing pressure at maximum design load and eccentricity.

2. Concrete bearing pressure under the plates at maximum bearing pressure and eccentricity.

3. Bearing clearances at maximum load and rotation. The calculated clearances shall include the effects of anticipated initial set and modified center of rotation.

4. Shear stress in the shear pin at maximum horizontal load.

5. Design of all connections and mating surfaces.

6. Compressive stress on all sliding surfaces at maximum and minimum design loads, including rotation.

The Contractor shall not begin bearing fabrication until receiving the Engineer's written approval of the calculations.

Bearing Manufacturer Requirements
The disc bearing manufacturer shall have a minimum of three years experience in fabrication of disc bearings, and shall meet additional testing requirements as specified in this Special Provision.

The Contractor shall submit the name of the disc bearing manufacturer with a certification of disc bearing manufacturing experience to the Engineer for approval. The certification of experience shall include a list of at least three disc bearing installations performed by the bearing manufacturer on previous projects. The list shall include the following information for each installation:

1. Project Name and Location (Bridge name and highway number).

2. Date of installation.

3. Governmental Agency/Owner.

4. Name, address, and phone number of the Governmental Agency's/Owner's representative.

The Contractor shall not begin preparation of the design calculations and shop plans until receiving the Engineer's written approval of the bearing manufacturer's certification of experience.

Shop Drawings

The Contractor shall submit shop drawings to the Engineer for approval in accordance with Section 6-03.3(7). These drawings shall include but not be limited to the following information:

1. Bearing schedule identifying location and bearing type as described in subsection **Bearing Types** of this Special Provision.

2. Minimum and maximum horizontal and vertical service loads.

3. Magnitude and direction of movements at all bearing support points.

4. Minimum and maximum rotation capacity.

5. Construction rotation requirements.

6. Plan and elevation of the assembled bearing and each of the components showing dimensions and tolerances.

7. Complete details of all components and sections showing all materials incorporated into the bearing.

8. All AASHTO, ASTM, and other material designations.

9. All surface finishes.

10. Bearing manufacturer’s recommendations and procedures for bearing assembly shipment, storage, and installation.

The Contractor shall not begin fabricating the disc bearings until receiving the Engineer’s approval of the shop drawings.

Shop Inspection

The manufacturer shall provide for inspection, as specified in the **Bearing Inspection and Acceptance** subsection of this Special Provision. Inspection during the fabrication process shall ensure that the materials and workmanship meet the requirements of the contract.

Quality Assurance Inspection and Final Shop Inspection shall be performed by an independent inspection entity approved by the Engineer. The Contractor shall submit the name, address, phone number and contact person of the inspection entity performing the required certified shop inspection of the bearings to the Engineer for approval. The Contractor shall not begin bearing fabrication until receiving the Engineer’s written approval of the inspection entity for certified shop inspection.

Bearing Testing Procedure

The Contractor shall submit the name, address, phone number, and contact person of the testing entity performing the required bearing testing specified in **Bearing Testing** subsection of this Special Provision to the Engineer for approval.

The testing entity shall be one of the following:

1. An independent testing agency.

2. The disc bearing manufacturer, with independent verification by the inspection entity performing the certified shop inspection of the bearings.

The Contractor shall not begin bearing fabrication until receiving the Engineer's written approval of the testing entity.

Bearing Assembly Inspection Reports and Certificates

The Contractor shall submit the daily inspection reports of the independent inspection entity performing the required certified shop inspection to the Engineer for approval. The daily inspection reports shall report on the shop fabrication and testing activities relating to the bearing assemblies, and their conformance to the specification requirements.

The Contractor shall submit written documentation from the bearing manufacturer certifying that the bearing assemblies have been manufactured in full compliance with the specification requirements.

The Contractor shall not ship the bearing assemblies from the fabricator's facility until receiving the Engineer's approval of the certified shop inspection daily inspection reports and the bearing manufacturer's certificate of compliance.

Flatness and Manufacturing Tolerances

Flatness of bearing surfaces shall be determined by the following method:

1. A precision straightedge, longer than the nominal dimension to be measured shall be placed in contact with the surface to be measured as parallel to it as possible.

2. A feeler gauge having an accuracy of □ 0.001 inches equal to the tolerance allowed shall be selected and inserted under the straightedge.

3. If the feeler gauge does not pass under the straightedge, the surfaces shall be acceptable for flatness.

4. In determining the flatness, the straightedge may be located in any position on the surface being measured.

Flatness tolerances shall be defined as follows:

1. Class A tolerance = 0.001 x nominal dimension

2. Class B tolerance = 0.002 x nominal dimension

3. Class C tolerance = 0.005 x nominal dimension

(Nominal dimension shall be taken as the actual dimension of the plate or sheet under the straightedge, in inches.)

Manufacturing tolerances for the bearings are as follows:

Polyether Urethane Disc

Diameter:	± 1/8 inch
Thickness:	-0, + 1/16 inch
Flatness:	Class B tolerance

Discs shall be manufactured from a single piece.

Sole, Bearing, Masonry, and Sliding Plate

Plan dimensions	
Greater than 30 inches:	-0.00, +3/16 inch
30 inches or less:	-0.00, +1/8 inch
Thickness:	-1/32, +1/8 inch
Flatness:	Class A tolerance, side in contact with steel, polyether urethane disc, or PTFE
	Class C tolerance, side in contact with grout or concrete

Guide Bar

Length:	± 1/8 inch
Section dimensions:	± 1/16 inch
Flatness:	Class A tolerance, side in contact with steel
Bar to bar tolerance:	± 1/32 inch

Bars shall be not more than 1/32” out of parallel

PTFE Sheet

Plan dimensions:	Total nominal design area –0, +5 percent
Thickness:	-0.00, +1/64 inch
Flatness:	Class A tolerance
PTFE Recess:	Length and width –0.00, +0.04 inch

Stainless Steel Sheet

Flatness:	Class A tolerance

Overall Height

Total thickness:	-1/16, +3/16 inch

The edges of all components shall be broken by grinding so that there are no sharp edges.

Special Fabrication Requirements

When the following components are shown in the Plans as part of the disc bearing assembly, the following special fabrication requirements shall apply:

Sole Plate and Masonry Plate

The sole plate and masonry plate shall be 3/4 inches minimum thickness, unless otherwise shown in the Plans.

PTFE Sheet

The thickness of solid PTFE sheet shall be a minimum of 1/8 inch and a maximum of 3/16 inch. Solid PTFE sheet shall be recessed for a depth equal to one-half of its thickness into the material it is bonded to.

The thickness of woven PTFE fabric, if used, shall be a minimum of 1/16 inch and a maximum of 1/8 inch.

Dimpled PTFE, if shown in the Plans, shall be unfilled and shall have a maximum thickness of 3/16 inch. Dimples shall be placed on a 1/2 inch grid and have a depth of 1/16 inch.

The PTFE sheet shall be recessed and chemically bonded to the supporting steel plate or bar. The woven PTFE sheet shall be mechanically bonded to the supporting steel plate or bar by using an interlocking grid. Bonding shall be performed under controlled conditions and in accordance with the written instructions of the PTFE manufacturer.

Following the bonding operation, the PTFE surface shall be smooth and free from bubbles. Filled PTFE shall be polished after the bonding operation is complete, in accordance with AASHTO LRFD Bridge Construction Specification Section 18.8.3.2.2, current edition and latest interims.

Stainless Steel Sheet

The stainless steel sliding surface shall completely cover the PTFE surface in all operating positions plus one additional inch in all directions.

The stainless steel shall be 14 gage thick for the main sliding surfaces and 10 gage thick for the guide bars.

The stainless steel sheet shall be seal welded all around to the supporting steel plate or bar by the gas tungsten arc welding (GTAW) process in accordance with current AWS specifications. The stainless steel sheet shall be clamped down to have full contact with the supporting steel plate or bar during welding. The welds shall not protrude beyond the sliding surface of the stainless steel sheet.

Guide Bar

Each guide bar shall be fabricated from a single steel plate. The guide bars shall be connected to the disc bearing assembly by recessing and bolting. The stainless steel sheet shall be welded to the guide bar before attaching the guide bar to the disc bearing assembly. The space between the guide bar and the guided component shall be 3/16 inch ± 1/16 inch.

Corrosion Protection

Steel surfaces, except as otherwise specified below, shall be painted in accordance with Section 6-07.3(9), and Section 6-03.3(30) as supplemented in these Special Provisions. The weld surfaces fastening stainless steel to structural steel shall be painted as specified for structural steel. Stainless steel shall not be painted. Galvanized fastening hardware (anchor bolts, bolts, nuts and washers) shall be painted in accordance with Section 6-07.3(11)A.

All coats of paint as specified in Section 6-07.3(9)A for steel surfaces shall be applied in the shop. After the disc bearing assembly has been erected in its final position with the anchor bolt nuts installed, all surfaces with damaged paint shall be repaired in accordance with Section 6-07.3(9)I.

All coats of paint as specified in Section 6-07.3(11)A for galvanized fastening hardware shall be applied after the disc bearing assembly has been erected in its final position with the anchor bolt nuts installed. The Contractor shall prepare the galvanized surfaces for painting in accordance with Section 6-07.3(11)A except only hand or power tool cleaning methods shall be used..

The embedded pipe assembly, when shown in the Plans, shall not be painted.

Bearing Testing

The Contractor shall provide for testing of the bearings. The testing shall be performed by the testing entity submitted by the Contractor and approved by the Engineer as specified in the **Bearing Testing Procedure** subsection of this Special Provision.

All testing specified by this Special Provision performed by the bearing manufacturer shall be witnessed by the inspection entity performing the certified shop inspection of the bearings.

When fabrication of the bearings is complete, a Proof Load test shall be performed either on bearing assemblies randomly selected from the production bearings, or on an equal number of prototype bearings with a minimum design capacity of 400 kips. One bearing per lot shall be tested where one lot is defined as the smaller of the following:

1. 25 disc bearing assemblies.

2. The total quantity of disc bearing assemblies specified in the contract.

The Proof Load test shall be performed on the selected test bearing assemblies as follows:

1. A proof load of 150 percent of the design capacity of the bearing shall be applied at the maximum design bearing rotation for a duration of six hours.

2. A bevel plate with a taper equal to the maximum design bearing rotation shall be used to simulate the specified bearing rotation.

3. After completing the specified load duration, the bearing shall be disassembled and inspected for wear and damage.

4. The test bearing shall show no signs of defects and failure while under load, and after disassembly and inspection.

Failure of the test bearing will result in rejection of all bearings.

The testing requirements specified above may be waived for bearing manufacturers with at least three years of disc bearing fabrication experience provided:

1. The bearing manufacturer, through the Contractor, shall submit certified test results from a previous installation of disc bearings of similar design and load capacity to the Engineer for approval. This submittal shall accompany the design calculation and shop plan submittal.

2. The tests performed on the previously installed bearings satisfy the requirements specified above.

3. All test requirements not performed on and not satisfied by the previously installed bearings shall be performed on and satisfied by a test bearing in this contract through a Wear and Damage Characteristics test as specified above.

The test bearing may be used as a production bearing provided:

1. The test results meet with the approval of the Engineer.

2. The test bearing was selected from the production bearings.

3. All PTFE in the test bearing assembly shall be replaced with new PTFE.

Bearing Inspection and Acceptance
Three levels of inspection shall be satisfied before the bearings are accepted. These are: Quality Control Inspection, Quality Assurance Inspection, and Final Shop Inspection. The manufacturer shall provide for both Quality Control and Quality Assurance Inspection. The manufacturer

shall provide access for the Final Shop Inspection. The three levels of inspection are described below:

1 Quality Control Inspection

During the fabrication process of all major components, the manufacturer shall provide full time Quality Control Inspection to ensure that the materials and workmanship meet or exceed the minimum requirements of the contract. Quality Control Inspection shall be the responsibility of the manufacturer's quality control group that shall be independent of the fabrication group.

2. Quality Assurance Inspection

Quality Assurance Inspection shall be performed by the independent inspection entity performing the certified shop inspection, as submitted by the Contractor and approved by the Engineer. The independent inspection entity, the proposed Quality Assurance Inspection Program, and the forms to be used for the Quality Assurance Program shall be submitted to the Engineer for approval prior to the start of fabrication. Quality Assurance Inspection is not required to be full time inspection, but shall be done at all phases of the manufacturing process. The frequency of inspection shall be included in the Quality Assurance Inspection Program.

3. Final Shop Inspection

Prior to shipping the bearings to the job site, a representative number of bearings shall be inspected by the independent inspection entity at the manufacturer's facility. The manufacturer shall provide a clean, dry, and enclosed area for the bearing inspection. The manufacturer shall disassemble and reassemble the bearings for inspection by the Independent Inspection Agency. The independent inspection entity shall certify that the bearings have been inspected, and that the bearings have been manufactured in full compliance with the contract requirements.

The bearings shall satisfy each of the three levels of inspection described above before they will be accepted. Bearings that fail any one of the three levels of inspection shall be replaced or repaired as approved by the Engineer at no additional expense to the Contracting Agency. All proposed corrective procedures shall be submitted by the Contractor to the Engineer for approval before beginning corrective work.

Bearing Component Assembly, Shipping, and Storage

Each bearing, except bearing components welded to the bottom flange of steel girders, shall be fully assembled at the manufacturing plant and delivered to the construction site as a complete unit, ready for installation. The units shall be held together with removable restraints so that the sliding surfaces are not damaged. Softeners shall be placed under the restraints to protect all painted surfaces. The Contractor shall not damage the painted surfaces while shipping, storing and installing the bearing assemblies.

All bearing assemblies shall be marked with the following information prior to shipping:

1. Location of the bearing, including the pier and the specific location along the pier.

2. Direction arrow pointing in the ahead on station direction.

The above information shall be marked on the top plate of the upper unit of the bearing assembly. The marks shall be permanent and shall be visible after bearing installation.

The bearing assemblies shall have centerlines marked on both upper and lower units for checking alignment in the field.

The bearing assemblies shall be shipped in light-proof, moisture-proof and dust-proof containers.

Bearing Assembly Field Inspection
Field inspection of a representative number of bearings assemblies will be performed by the Engineer. The Contractor shall provide a clean, dry and enclosed area at the site, spacious enough for the field inspection activities. The Contractor shall disassemble and reassemble the bearings for inspection by the Engineer. The disassembly and reassembly of the bearings shall be in accordance with the bearing manufacturer’s written procedure and in the presence of the Engineer.

Bearings that fail the inspection shall be replaced or repaired by the Contractor, as approved by the Engineer, at no additional expense to the Contracting Agency. All proposed corrective procedures shall be submitted by the Contractor to the Engineer for approval before beginning corrective work.

Bearing Assembly Installation
The Contractor shall install the disc bearing assembly in accordance with the installation procedure included with the shop drawing submittal as approved by the Engineer.

PTFE sheet shall not be greased, except as otherwise noted. A thin uniform film of silicone grease shall be applied to the entire dimpled PTFE sheet before installation (all dimples shall be filled with grease).

For disc bearing assemblies with PTFE and stainless steel components, the Contractor shall take special care at all times to ensure protection of the PTFE and stainless steel surfaces from coming in contact with concrete and any other foreign matter.

When bearing assemblies are supporting steel superstructure, the interface between the sole plate and the steel girder flange (or the upper and lower sole plates when separate) shall be set with epoxy gel just before setting the superstructure in place. The (lower) sole plate surface in contact with the epoxy gel shall receive a thin uniform film of silicone grease, to prevent bonding to the epoxy gel. The threads of the sole plate clamping bolts shall be greased to prevent bonding and allow future removal. The Contractor shall apply the epoxy gel by troweling it onto the bottom surface of the steel girder flange or the upper sole plate welded to the steel girder flange and shall immediately bolt the (lower) sole plate in place to obtain a level surface.

Before the epoxy gel has cured, the superstructure shall be set in place, squeezing out the excess epoxy gel while filling the interface between the steel surfaces. Excess epoxy and grease shall be removed immediately. After the epoxy gel has cured, the sole plate clamping bolts shall be tightened to snug tight.

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Spherical Bearing

Bearing Types

The spherical bearings shall be one of the following types, with bridge specific modifications, if any, as shown in the Plans:

Fixed Spherical Bearings With External Restrainer

Each bearing shall consist of an upper, a middle, and a lower unit. The lower unit shall be a masonry plate, a bottom keeper plate, and a circular base plate with spherically curved concave upper surface. The base plate shall be recessed into the bottom keeper plate. Polytetrafluoroethylene (PTFE) shall be recessed and bonded to the upper concave surface of the base plate.

The middle unit shall be a bearing plate with a spherically curved convex lower surface and a flat upper surface. The convex lower surface shall be stainless steel. Polytetrafluoroethylene (PTFE) sheets shall be recessed and bonded to the upper surface of the middle unit.

The upper unit shall be a sole plate with a cylindrical cavity machined out of it. Walls of the cavity shall form the external restrainer. The lower surface of the sole plate inside the cavity shall have stainless steel sheet welded to it.

Guided Spherical Bearings With External Restrainer

Each bearing shall consist of an upper, a middle, and a lower unit. Lower and middle units shall be as specified for the fixed spherical bearings with external restrainer.

The upper unit shall be a sole plate to which guide bars, if shown in the Plans, shall be recessed and bolted. The lower surface of the steel plate between the guide bars shall have stainless steel welded to it.

Restraining effect shall be accomplished by installing a restraining plate in between the lower unit and the guide bars. Restraining plate shall be a flat plate with a circular hole in the middle. Different surfaces of the restraining plate shall be compatible with the mating surfaces. Polytetrafluoroethylene (PTFE) sheets shall be recessed and bonded to the upper, lower, and other sides (mating with the guide bars) of the restraining plate. The stainless steel sheets shall be welded to the sides of the guide bars mating with the restraining plate.

Fixed Spherical Bearings Without External Restrainer
Each bearing shall consist of an upper and lower unit. The lower unit shall be a masonry plate and a circular base plate with spherically curved convex upper surface. The base plate shall be recessed into and welded to the masonry plate. The convex upper surface shall be stainless steel.

The upper unit shall be a sole plate and a circular bearing plate with spherically curved, concave lower surface. The bearing plate shall be recessed and welded to the sole plate. Polytetrafluoroethylene (PTFE) sheet shall be recessed and bonded to the concave surface.

Guided Spherical Bearings Without External Restrainer
Each bearing shall consist of an upper, a middle, and a lower unit. The lower unit shall be a masonry plate, a bottom keeper plate, and a circular base plate with a spherically curved convex upper surface. The base plate shall be recessed into the bottom keeper plate. The convex upper surface of the base plate shall be stainless steel.

The middle unit shall be a bearing plate with a spherically curved concave lower surface and a flat upper surface. Polytetrafluoroethylene (PTFE) sheets shall be recessed and bonded to the upper and lower surfaces of the middle unit.

The upper unit shall be a sole plate and a top keeper plate to which guide bars, if shown in the Plans, shall be recessed and bolted. The lower surface of the top keeper plate between the guide bars shall have stainless steel sheet welded to it. The interspace between the guide bars and the middle unit bearing plate shall be provided with a stainless steel sheet against PTFE. The stainless steel sheet shall be welded to the guide bars and the PTFE sheet shall be recessed and mechanically bonded to the middle unit bearing plate.

Multi-Directional Spherical Bearings Without External Restrainer
Each bearing shall consist of an upper, a middle, and a lower unit. The lower unit shall be a masonry plate, a bottom keeper plate, and a circular base plate with a spherically curved convex upper surface. The base plate shall be recessed into the bottom keeper plate. The convex upper surface of the base plate shall be stainless steel.

The middle unit shall be a bearing plate with a spherically curved concave lower surface and a flat upper surface. Polytetrafluoroethylene (PTFE) sheets shall be recessed and bonded to the upper and lower surfaces of the middle unit.

The upper unit shall be a sole plate and a top keeper plate. The lower surface of the sole plate shall have stainless steel sheet welded to it.

Design Requirements

The Contractor shall design the bearing assemblies based on the current AASHTO LRFD Bridge Design Specifications, including latest interims, and also based on the following:

1. The bearing assembly design requirements for loads, movements, and rotations shall be as shown in the Plans.

2. The bearing assembly shall have an external restrainer when the horizontal design force of a design load combination exceeds 25 percent of the simultaneous vertical design force. The external restrainer shall be capable of withstanding the full horizontal design force as shown in the Plans.

3. The bearing assembly shall be removable and replacable by raising the bridge superstructure 1/4 inch maximum. The bearing shall be held in place by recessing the upper and lower keeper plates and by providing recessed bolted keeper bars on the side of bearing removal.

4. The area of the PTFE surface shall be designed so that the average bearing pressure does not exceed the maximum contact pressure specified in Table 14.7.2.4-1 of the AASHTO LRFD Bridge Design Specifications. The contact stress shall be determined at the strength limit state as specified in Section 14.7.2.4 of the AASHTO LRFD Bridge Design Specifications.

5. The mechanical interlock of the solid or woven PTFE sheets to the steel substrates shall be sufficient to develop a horizontal force equal to 10 percent of the maximum unfactored vertical load for bearings with an external restrainer, and 25 percent of the maximum unfactored vertical load for bearings without an external restrainer.

6. The minimum coefficient of friction on PTFE surfaces used for design shall be those corresponding to 68F in Table 14.7.2.5-1 of the AASHTO LRFD Bridge Design Specifications.

7. The anchorage of the sole plates, masonry plates, and guide bars to the supporting structural element shall be designed for the maximum unfactored horizontal design force per bearing shown in the Plans, or 10 percent of the maximum unfactored vertical design force per bearing, whichever is greater.

8. The sole and masonry plates shall have leveling capabilities.

9. The guide bars shall maintain all guided components within the guides at all points of translation and rotation of the bearing.

Submittals

Design Calculations

The Contractor shall submit design calculations for all the bearing components, including the base plates, bearing plates, sole plates, masonry plates, keeper plates and bars, and anchor bolts to the Engineer for approval in accordance with Section 6-02.3(16). The design calculations shall accompany the shop plans.

The calculations shall provide, but not be limited to the following information:

1. Bending stresses in the plates due to bearing pressure at maximum design load and eccentricity.

2. Concrete bearing pressure under the plates at maximum bearing pressure and eccentricity.

3. Bearing clearances at maximum load and rotation. The calculated clearances shall include the effects of anticipated initial set and modified center of rotation.

4. Design of all connections and mating surfaces.

5. Compressive stress on all sliding surfaces at maximum and minimum design loads, including rotation.

The Contractor shall not begin bearing fabrication until receiving the Engineer's written approval of the calculations.

Bearing Manufacturer Requirements

The spherical bearing manufacturer shall have a minimum of three years experience in fabrication of spherical bearings, and shall meet additional testing requirements as specified in this Special Provision.

The Contractor shall submit the name of the spherical bearing manufacturer with a certification of spherical bearing manufacturing experience to the Engineer for approval. The certification of experience shall include a list of at least three spherical bearing installations performed by the bearing manufacturer on previous projects. The list shall include the following information for each installation:

1. Project Name and Location (Bridge name and highway number).

2. Date of installation.

3. Governmental Agency/Owner.

4. Name, address, and phone number of the Governmental Agency's/Owner's representative.

The Contractor shall not begin preparation of the design calculations and shop plans until receiving the Engineer's written approval of the bearing manufacturer's certification of experience.

Shop Drawings
The Contractor shall submit shop drawings to the Engineer for approval in accordance with Section 6-03.3(7). These drawings shall include but not be limited to the following information:

1. Bearing schedule identifying location and bearing type as described in subsection **Bearing Types** of this Special Provision.

2. Minimum and maximum horizontal and vertical service loads.

3. Magnitude and direction of movements at all bearing support points.

4. Minimum and maximum rotation capacity.

5. Construction rotation requirements.

6. Plan and elevation of the assembled bearing and each of the components showing dimensions and tolerances.

7. Complete details of all components and sections showing all materials incorporated into the bearing.

8. All AASHTO, ASTM, and other material designations.

9. All surface finishes.

10. Bearing manufacturer’s recommendations and procedures for bearing assembly shipment, storage, and installation.

The Contractor shall not begin fabricating the spherical bearings until receiving the Engineer’s approval of the shop drawings.

Shop Inspection
The manufacturer shall provide for inspection, as specified in the **Bearing Inspection and Acceptance** subsection of this Special Provision. Inspection during the fabrication process shall ensure that the materials and workmanship meet the requirements of the contract.

Quality Assurance Inspection and Final Shop Inspection shall be performed by an independent inspection entity approved by the Engineer. The Contractor shall submit the name, address, phone number and contact person of the inspection entity performing the required certified shop inspection of the bearings to the Engineer for approval. The Contractor shall not begin bearing fabrication until receiving the Engineer’s written approval of the inspection entity for certified shop inspection.

Bearing Testing Procedure
The Contractor shall submit the name, address, phone number, and contact person of the testing entity performing the required bearing testing specified in **Bearing Testing** subsection of this Special Provision to the Engineer for approval.

The testing entity shall be one of the following:

1. An independent testing agency.

2. The spherical bearing manufacturer, with independent verification by the inspection entity performing the certified shop inspection of the bearings.

The Contractor shall not begin bearing fabrication until receiving the Engineer's written approval of the testing entity.

Bearing Assembly Inspection Reports and Certificates
The Contractor shall submit the daily inspection reports of the independent inspection entity performing the required certified shop inspection to the Engineer for approval. The daily inspection reports shall report on the shop fabrication and testing activities relating to the bearing assemblies, and their conformance to the specification requirements.

The Contractor shall submit written documentation from the bearing manufacturer certifying that the bearing assemblies have been manufactured in full compliance with the specification requirements.

The Contractor shall not ship the bearing assemblies from the fabricator’s facility until receiving the Engineer’s approval of the certified shop inspection daily inspection reports and the bearing manufacturer’s certificate of compliance.

Flatness and Manufacturing Tolerances
Flatness of bearing surfaces shall be determined by the following method:

1. A precision straightedge, longer than the nominal dimension to be measured shall be placed in contact with the surface to be measured as parallel to it as possible.

2. A feeler gauge having an accuracy of □ 0.001 inches equal to the tolerance allowed shall be selected and inserted under the straightedge.

3. If the feeler gauge does not pass under the straightedge, the surfaces shall be acceptable for flatness.

4. In determining the flatness, the straightedge may be located in any position on the surface being measured.

Flatness tolerances shall be defined as follows:

1. Class A tolerance = 0.001 x nominal dimension

2. Class B tolerance = 0.002 x nominal dimension

3. Class C tolerance = 0.005 x nominal dimension

(Nominal dimension shall be taken as the actual dimension of the plate or sheet under the straightedge, in inches.)

Manufacturing tolerances for the bearings are as follows:

Sole, Bearing, Base, and Masonry Plate, and Keeper Plate and Bar

Plan dimensions	
Greater than 30 inches:	-0.00, +3/16 inch
30 inches or less:	-0.00, +1/8 inch
Thickness:	
Unmachined:	-1/32, + 1/8 inch
Both Faces Machined:	± 0.01 inch
One Face Machined:	± 0.02 inch
Flatness:	Class A tolerance, side in contact with steel or PTFE Class C tolerance, side in contact with grout or concrete

The maximum gap between the external restrainer and the circular base plate, and the walls of a recess and a recessed plate shall be 0.04 inches.

Spherically Curved Surfaces

Radii:	± 1 percent, surfaces shall be parallel to each other.
Profile of Spherical Surfaces:	± 0.0002D h” or ± 1/128”, whichever is greater, where D = length of chord (in inches) between the ends of the PTFE surface in the direction of rotation, and h = projection of the PTFE (in inches) above the top of the confining recess.

Guide Bar

Length:	± 1/8 inch
Section dimensions:	± 1/16 inch
Flatness:	Class A tolerance, side in contact with steel
Bar to bar tolerance:	± 1/32 inch

Bars shall be not more than 1/32” out of parallel

PTFE Sheet

Plan dimensions:	Total nominal design area –0, +5 percent
Thickness:	-0.00, +1/64 inch
Flatness:	Class A tolerance
PTFE Recess:	Length and width –0.00, +0.04 inch

Stainless Steel Sheet

Flatness:	Class A tolerance

Overall Height

Total thickness:	-1/16, +3/16 inch

The edges of all components shall be broken by grinding so that there are no sharp edges.

Special Fabrication Requirements
When the following components are shown in the Plans as part of the spherical bearing assembly, the following special fabrication requirements shall apply:

Sole Plate and Masonry Plate
The sole plate and masonry plate shall be 3/4 inches minimum thickness, unless otherwise shown in the Plans.

PTFE Sheet
The thickness of solid PTFE sheet shall be a minimum of 1/8 inch and a maximum of 3/16 inch. Solid PTFE sheet shall be recessed for a depth equal to one-half of its thickness into the material it is bonded to.

The thickness of woven PTFE fabric, if used, shall be a minimum of 1/16 inch and a maximum of 1/8 inch.

Dimpled PTFE, if shown in the Plans, shall be unfilled and shall have a maximum thickness of 3/16 inch. Dimples shall be placed on a 1/2 inch grid and have a depth of 1/16 inch.

The PTFE sheet shall be recessed and chemically bonded to the supporting steel plate or bar. The woven PTFE sheet shall be mechanically bonded to the supporting steel plate or bar by using an interlocking grid. Bonding shall be performed under controlled conditions and in accordance with the written instructions of the PTFE manufacturer.

Following the bonding operation, the PTFE surface shall be smooth and free from bubbles. Filled PTFE shall be polished after the bonding operation is complete, in accordance with AASHTO LRFD Bridge Construction Specification Section 18.8.3.2.2, current edition and latest interims.

Stainless Steel Sheet

The stainless steel sliding surface shall completely cover the PTFE surface in all operating positions plus one additional inch in all directions.

The stainless steel shall be 14 gage thick for the main sliding surfaces and 10 gage thick for the guide bars.

The curved surfaces that receive stainless steel shall be weld overlaid to produce a surface chemistry equivalent to ASTM A 240 Type 304L stainless steel.

Stainless steel welded overlay on the curved surface shall be a minimum of 3/32 inch thick after welding, grinding, and polishing.

The stainless steel sheet shall be seal welded all around to the supporting steel plate or bar by the gas tungsten arc welding (GTAW) process in accordance with current AWS specifications. The stainless steel sheet shall be clamped down to have full contact with the supporting steel plate or bar during welding. The welds shall not protrude beyond the sliding surface of the stainless steel sheet.

Guide Bar

Each guide bar shall be fabricated from a single steel plate. The guide bars shall be connected to the spherical bearing assembly by recessing and bolting. The stainless steel sheet shall be welded to the guide bar before attaching the guide bar to the spherical bearing assembly. The space between the guide bar and the guided component shall be 3/16 inch ± 1/16 inch.

Corrosion Protection

Steel surfaces, except as otherwise specified below, shall be painted in accordance with Section 6-07.3(9), and Section 6-03.3(30) as supplemented in these Special Provisions. The weld surfaces fastening stainless steel to structural steel shall be painted as specified for structural steel. Stainless steel shall not be painted. Galvanized fastening hardware (anchor bolts, bolts, nuts and washers) shall be painted in accordance with Section 6-07.3(11)A.

All coats of paint as specified in Section 6-07.3(9)A for steel surfaces shall be applied in the shop. After the spherical bearing assembly has been erected in its final position with the anchor bolt nuts installed, all surfaces with damaged paint shall be repaired in accordance with Section 6-07.3(9)I.

All coats of paint as specified in Section 6-07.3(11)A for galvanized fastening hardware shall be applied after the spherical bearing assembly has been erected in its final position with the anchor bolt nuts installed. The Contractor shall prepare the galvanized surfaces for painting in accordance with Section 6-07.3(11)A except only hand or power tool cleaning methods shall be used..

The embedded pipe assembly, when shown in the Plans, shall not be painted.

Bearing Testing
The Contractor shall provide for testing of the bearings. The testing shall be performed by the testing entity submitted by the Contractor and approved by the Engineer as specified in the **Bearing Testing Procedure** subsection of this Special Provision.

All testing specified by this Special Provision performed by the bearing manufacturer shall be witnessed by the inspection entity performing the certified shop inspection of the bearings.

When fabrication of the bearings is complete, a Wear and Damage Characteristics test shall be performed either on bearing assemblies randomly selected from the production bearings, or on an equal number of prototype bearings with a minimum design capacity of 1,000 kips. One bearing per lot shall be tested where one lot is defined as the smaller of the following:

1. 25 spherical bearing assemblies.

2. The total quantity of spherical bearing assemblies specified in the contract.

The Wear and Damage Characteristics test shall be performed on the selected test bearing assemblies as follows:

1. The bearing shall be subjected to 5,000 cycles of rotation (2.0 degrees each direction from level, 4.0 degrees total rotation) under the specified vertical dead load plus live load.

2. After completing the load cycles, the bearing shall be disassembled and inspected for wear and damage. A 1/64 inch reduction in PTFE thickness, or damage to the bearing, shall be cause for rejection of the bearing assembly.

3. The test bearing shall show no signs of defects and failure while under load, and after disassembly and inspection.

Failure of the test bearing will result in rejection of all bearings.

The testing requirements specified above may be waived for bearing manufacturers with at least three years of spherical bearing fabrication experience provided:

1. The bearing manufacturer, through the Contractor, shall submit certified test results from a previous installation of spherical bearings of similar design and load capacity to the Engineer for approval. This submittal shall accompany the design calculation and shop plan submittal.

2. The tests performed on the previously installed bearings satisfy the requirements specified above.

3. All test requirements not performed on and not satisfied by the previously installed bearings shall be performed on and satisfied by a test bearing in this contract through a Wear and Damage Characteristics test as specified above.

The test bearing may be used as a production bearing provided:

1. The test results meet with the approval of the Engineer.

2. The test bearing was selected from the production bearings.

3. All PTFE in the test bearing assembly shall be replaced with new PTFE.

Bearing Inspection and Acceptance
Three levels of inspection shall be satisfied before the bearings are accepted. These are: Quality Control Inspection, Quality Assurance Inspection, and Final Shop Inspection. The manufacturer shall provide for both Quality Control and Quality Assurance Inspection. The manufacturer shall provide access for the Final Shop Inspection. The three levels of inspection are described below:

1 Quality Control Inspection
During the fabrication process of all major components, the manufacturer shall provide full time Quality Control Inspection to ensure that the materials and workmanship meet or exceed the minimum requirements of the contract. Quality Control Inspection shall be the responsibility of the manufacturer's quality control group, which shall be independent of the fabrication group.

2. Quality Assurance Inspection
Quality Assurance Inspection shall be performed by the independent inspection entity performing the certified shop inspection, as submitted by the Contractor and approved by the Engineer. The independent inspection entity, the proposed Quality Assurance Inspection Program, and the forms to be used for the Quality Assurance Program shall be submitted to the Engineer for approval prior to the start of fabrication. Quality Assurance Inspection is not required to be full time inspection, but shall be done at all phases of the manufacturing process. The frequency of inspection shall be included in the Quality Assurance Inspection Program.

3. Final Shop Inspection
Prior to shipping the bearings to the job site, a representative number of bearings shall be inspected by the independent inspection entity at the manufacturer's facility. The manufacturer shall provide a clean, dry, and enclosed area for the bearing

inspection. The manufacturer shall disassemble and reassemble the bearings for inspection by the independent inspection entity. The independent inspection entity shall certify that the bearings have been inspected, and that the bearings have been manufactured in full compliance with the contract requirements.

The bearings shall satisfy each of the three levels of inspection described above before they will be accepted. Bearings that fail any one of the three levels of inspection shall be replaced or repaired as approved by the Engineer at no additional expense to the Contracting Agency. All proposed corrective procedures shall be submitted by the Contractor to the Engineer for approval before beginning corrective work.

Bearing Component Assembly, Shipping, and Storage
Each bearing, except bearing components welded to the bottom flange of steel girders, shall be fully assembled at the manufacturing plant and delivered to the construction site as a complete unit, ready for installation. The units shall be held together with removable restraints so that the sliding surfaces are not damaged. Softeners shall be placed under the restraints to protect all painted surfaces. The Contractor shall not damage the painted surfaces while shipping, storing and installing the bearing assemblies.

All bearing assemblies shall be marked with the following information prior to shipping:

1. Location of the bearing, including the pier and the specific location along the pier.

2. Direction arrow pointing in the ahead on station direction.

The above information shall be marked on the top plate of the upper unit of the bearing assembly. The marks shall be permanent and shall be visible after bearing installation.

The bearing assemblies shall have centerlines marked on both upper and lower units for checking alignment in the field.

The bearing assemblies shall be shipped in light-proof, moisture-proof and dust-proof containers.

Bearing Assembly Field Inspection
Field inspection of a representative number of bearings assemblies will be performed by the Engineer. The Contractor shall provide a clean, dry and enclosed area at the site, spacious enough for the field inspection activities. The Contractor shall disassemble and reassemble the bearings for inspection by the Engineer. The disassembly and reassembly of the bearings shall be in accordance with the bearing manufacturer’s written procedure and in the presence of the Engineer.

Bearings that fail the inspection shall be replaced or repaired by the Contractor, as approved by the Engineer, at no additional expense to the

Contracting Agency. All proposed corrective procedures shall be submitted by the Contractor to the Engineer for approval before beginning corrective work.

Bearing Assembly Installation
The Contractor shall install the spherical bearing assembly in accordance with the installation procedure included with the shop drawing submittal as approved by the Engineer. After installation, the orientation of the spherically curved units shall be ± 1/2 degree from level.

PTFE sheet shall not be greased, except as otherwise noted. A thin uniform film of silicone grease shall be applied to the entire dimpled PTFE sheet before installation (all dimples shall be filled with grease).

For spherical bearing assemblies with PTFE and stainless steel components, the Contractor shall take special care at all times to ensure protection of the PTFE and stainless steel surfaces from coming in contact with concrete and any other foreign matter.

When bearing assemblies are supporting steel superstructure, the interface between the sole plate and the steel girder flange (or the upper and lower sole plates when separate) shall be set with epoxy gel just before setting the superstructure in place. The (lower) sole plate surface in contact with the epoxy gel shall receive a thin uniform film of silicone grease, to prevent bonding to the epoxy gel. The threads of the sole plate clamping bolts shall be greased to prevent bonding and allow future removal. The Contractor shall apply the epoxy gel by troweling it onto the bottom surface of the steel girder flange or the upper sole plate welded to the steel girder flange and shall immediately bolt the (lower) sole plate in place to obtain a level surface.

Before the epoxy gel has cured, the superstructure shall be set in place, squeezing out the excess epoxy gel while filling the interface between the steel surfaces. Excess epoxy and grease shall be removed immediately. After the epoxy gel has cured, the sole plate clamping bolts shall be tightened to snug tight.

6-02.3(20).GR6
Grout for Anchor Bolts and Bridge Bearings

6-02.3(20).INST1.GR6
Section 6-02.3(20) is supplemented with the following:

6-02.3(20).OPT1.FB6
(June 26, 2000)
Grout placed at the following locations shall conform to the requirements of this section.

*** $$1$$ ***

6-02.3(24).GR6
Reinforcement

6-02.3(24)C.GR6
Placing and Fastening

6-02.3(24)C.INST1.GR6
Section 6-02.3(24)C is supplemented with the following:

6-02.3(24)C.OPT1.GB6
(June 26, 2000)
Drilling Holes for, and Setting, Steel Reinforcing Bar Dowels
Where called for in the Plans, holes shall be drilled into existing concrete to the size and dimension shown in the Plans. The Contractor may use any method for drilling the holes provided the method selected does not damage the concrete and the steel reinforcing bar that is to remain. Core drilling will be required when specifically noted in the Plans.

The Contractor shall exercise care in locating and drilling the holes to avoid damage to existing steel reinforcing bars and concrete. Location of the holes may be shifted slightly with the approval of the Engineer in order to avoid damaging the existing steel reinforcing bars. All damage caused by the Contractor's operations shall be repaired by the Contractor at no cost to the Contracting Agency and the repair shall be as approved by the Engineer.

Steel reinforcing bars shall be set into the holes noted in the Plans with epoxy resin. The holes shall be blown clean with dry compressed air before placing the resin.

The Contractor shall demonstrate, to the satisfaction of the Engineer, that the method used for setting the steel reinforcing bars completely fills the void between the steel reinforcing bar and the concrete with epoxy resin. Dams shall be placed at the front of the holes to confine the epoxy and shall not be removed until the epoxy has cured in the hole.

6-02.3(24)C.OPT2.GR6
(June 26, 2000)
Drilling Holes for, and Setting, Dowels for Conc. Box Culvert Extension
After removing the specified portions of the box culvert, the Contractor shall drill 1-3/8 inch diameter holes into the exposed concrete face for the placement of #9 dowel bars between the existing concrete and the box culvert extension. The holes shall be 12 inches deep, minimum, and shall be spaced at 12 inch centers. The #9 dowels shall be of sufficient length to provide a 2’-0” minimum extension into the box culvert extension.

6-02.3(24)D.GR6
Splicing

6-02.3(24)D.INST1.GR6
Section 6-02.3(24)D is supplemented with the following:

6-02.3(24)D.OPT1.GB6
(April 6, 2015)
Splicing of Hoop Reinforcement for Columns and Shafts
When the Plans show steel reinforcement bar hoops, the hoops shall be spliced by one of the following methods:

1. Resistance butt weld splice, welded in accordance with Section 6-02.3(24)E as supplemented in these Special Provisions.

2. Welded direct butt splice, welded in accordance with Section 6-02.3(24)E as supplemented in these Special Provisions.

3. Welded lap splice if shown in the Plans, welded in accordance with Section 6-02.3(24)E as supplemented in these Special Provisions.

All welded splices of hoop reinforcement shall be welded in the shop.

6-02.3(24)E.GR6
Welding Reinforcing Steel

6-02.3(24)E.INST1.GR6
Section 6-02.3(24)E is supplemented with the following:

6-02.3(24)E.OPT2.GB6
(April 6, 2015)
Resistance Butt Weld Splicing of Hoop Reinforcement for Columns and Shafts

Splicing Quality Control Manager
The Contractor shall designate in writing a Splicing Quality Control Manager (SQCM). The SQCM shall be responsible for the quality of all hoop reinforcement splicing, including the inspection of materials and workmanship, and submitting, receiving, and approving all correspondence, required submittals, and reports regarding hoop reinforcement splicing to and from the Engineer.

Splice Sample Test Facilities
Qualification testing and testing of production sample splices shall be performed at an independent qualified testing laboratory at no additional expense to the Contracting Agency. The laboratory shall have the following:

1. Proper facilities, including a tensile testing machine capable of breaking full size samples of all steel reinforcing bar splices.

2. Operators who have received documented training for performing the testing requirements of ASTM A 370.

3. A record of annual calibration of testing equipment performed by an independent third party that has standards that are traceable to the National Institute of Standards and Technology and a formal reporting procedure, including published test forms.

Calibration records shall be made available for the Engineer's review upon request.

Splice Qualification Report

The Contractor shall submit a Splice Qualification Report as a Type 1 Working Drawing. This report shall include, at a minimum:

1. Name of the designated Splicing Quality Control Manager (SQCM).

2. Splice material information

3. Names of the operators who will be performing the splicing

4. Descriptions of the positions, locations, equipment, and procedures that will be used in the splice work.

5. Fabricator's Quality Control Manual for the fabrication of hoops including, but not be limited to, the following:

    a. The pre-production procedures for the qualification of material and equipment.

    b. The methods and frequencies for performing quality control procedures during production.

    c. The calibration procedures and calibration frequency for all equipment.

    d. The welding procedure specification for resistance welding.

    e. The method for identifying and tracking lots.

6. Certifications from the fabricator for qualifications of operators and procedures based on sample qualification tests performed within the past 24 months of the date of the Splice Qualification Report submittal.

    a. Each operator shall be certified by performing two sample splices for each bar size of each splice type that the operator will be performing in the work.

7. Certified test results for all qualification sample splices, tested by an independent qualified testing laboratory and conforming to the specified production test criteria.

Production Control Splice Test Criteria

For the purpose of hoop reinforcement splice testing, a lot of splices are defined as 200, or a fraction thereof, of the same type of splice for each bar diameter that is used in the work. A production control sample shall consist of four splices removed from each lot of completed splices.

The Contractor shall select the splices comprising the lot. The Engineer will select the product control sample of four splices to be tested from each lot.

Production control testing shall be performed for all hoop reinforcement splices used in the work. Production control samples shall be tested in accordance with ASTM A 370.

Sample Test Criteria

After the splices in a lot have been completed, the SQCM shall notify the Engineer in writing that the splices in this lot conform to the specifications and are ready for testing.

At least one week before sample testing, the Contractor shall notify the Engineer in writing of the date and location of the testing.

Samples shall achieve at least 125 percent of the specified yield strength of the bar. In addition, either necking of the bar or a plateau of the stress-strain curve shall be evident at rupture.

Sample Acceptance Criteria

If all four sample splices from a lot conform to the requirements of the **Sample Test Criteria** subsection of this Special Provision, all splices in the lot represented by the test will be considered acceptable.

If only two or three of the four sample splices from a lot conform to the requirements of the **Splice Test Criteria** subsection of this Special Provision, the Engineer will select an additional set of four samples for re-test from the same lot of splices. Should any of the four sample splices from this additional test fail to conform to these requirements; all splices in the lot will be rejected.

Should only one sample splice from a lot conform to the requirements of the **Splice Test Criteria** subsection of this Special Provision, all splices in the lot will be rejected.

Whenever a lot of splices are rejected, the rejected lot and subsequent lots of splices shall not be used in the work until the following requirements are met:

1. The SQCM performs a complete review of the Contractor's quality control process for these splices.

2. A written report is submitted to the Engineer describing the cause of the failure of the splices in this lot and provisions for preventing similar failures in future lots.

3. The Engineer has provided the Contractor with written notification that the report and any corrective action is acceptable.

All bars within a lot shall be visually inspected to verify bar offset at the joint doesn't exceed what is permitted in ANSI/AWS D1.4/D1.4M:2011 Section 4.2.1. Any splice with offsets exceeding those as specified in ANSI/AWS D1.4/D1.4M:2011 Section 4.2.1 will be rejected.

Reporting Test Results

A Production Control Test Report for all testing performed on each lot shall be prepared by the independent testing laboratory performing the testing and submitted to the SQCM. The report shall include the following information for each test:

1. Contract number.
2. Dates received and tested.
3. Lot number.
4. Bar diameter, hoop diameter, and bar length.
5. Type of splice.
6. Length of test specimen.
7. Physical condition of the test sample splice and description of break and location in relation to splice.
8. Any noticeable defects.
9. Ultimate tensile strength of each splice.

The SQCM shall review, approve with a signature, and submit each Production Control Test Report as a Type 2 Working Drawing. The Contractor shall not encase the splices represented by the report in concrete until receiving the Engineer's written response to the submittal.

Welded Direct Butt Splicing of Hoop Reinforcement for Columns and Shafts

Welded Direct Butt Splices

Welded direct butt splices shall be complete joint penetration butt welds conforming to ANSI/AWS D1.4/D1.4M figure 3.2. Split pipe backing shall not be used.

Thermite welding is not allowed.

Nondestructive Splice Tests

Radiographic examinations shall be performed on 25 percent of all complete joint penetration butt welded splices from a lot defined as 200, or a fraction thereof, of the same type of splice for each bar diameter that is used in the work.

All splices shall be 100 percent visually inspected.

All required radiographic examinations shall be performed by the Contractor in accordance with ANSI/AWS D1.4/D1.4M and as specified below.

Before radiographic examination, welds shall conform to ANSI/AWS D1.4/D1.4M Section 4.4. Radiographic acceptance shall be in accordance with ANSI/AWS D1.4/D1.4M Table 4.1. Acceptance criteria for bar size #7 shall be the same as for bar size #8.

Should more than 12 percent of the splices which have been radiographically examined in any lot be defective, an additional 25 percent of the splices, selected by the Engineer from the same lot, shall be radiographically examined. Should more than 12 percent of the cumulative total of splices tested from the same lot be defective, all remaining splices in the lot shall be radiographically examined.

All defects shall be repaired in accordance with ANSI/AWS D1.4/D1.4M, latest edition.

The Contractor shall notify the Engineer in writing a minimum of 48 hours before performing any radiographic examinations.

The radiographic procedure used shall conform to ANSI/AWS D1.1, ANSI/AWS D1.4/D1.4M Section 7.9, and the following:

1. Two exposures shall be made for each splice. For each of the two exposures, the radiation source shall be centered on each bar to be radiographed. The first exposure shall be made with the radiation source placed at zero degrees from the top of the weld and perpendicular to the weld root and identified with a station mark of "0". The second exposure shall be at 90 degrees to the "0" station mark and shall be identified with a station mark of "90". When obstructions prevent a 90 degree placement of the radiation source for the second exposure, and when approved in writing by the Engineer, the source may be rotated, around the centerline of the steel reinforcing bar, a maximum of 25 degrees.

2. If more than one weld is to be radiographed during one exposure, the angle between the root line of each weld and the direction to the radiation source shall not be less than 65 degrees.

3. Radiographs shall be made by either X-ray or gamma ray. Radiographs made by X-ray or gamma rays shall have densities of not less than 2.3 nor more than 3.5 in the area of interest. A tolerance of 0.05 in density is allowed for densitometer variations. Gamma rays shall be from the iridium 192 isotope and the emitting specimen shall not exceed 0.18 inches in the greatest diagonal dimension.

4. The radiographic film shall be placed perpendicular to the radiation source at all times; parallel to the root line of the weld unless source placement determines that the film shall be turned; and as close to the root of the weld as possible.

5. The minimum source to film distance shall be maintained so as to ensure that all radiographs maintain a maximum geometric unsharpness of 0.020 at all times, regardless of the size of the steel reinforcing bars.

6. Penetrameters shall be placed on the source side of the bar and perpendicular to the radiation source at all times. One penetrameter shall be placed in the center of each bar to be radiographed, perpendicular to the weld root, and adjacent to the weld. Penetrameter images shall not appear in the weld area.

7. When radiography of more than one weld is being performed per exposure, each exposure shall have a minimum of one penetrameter per bar, or three penetrameters per exposure. When three penetrameters per exposure are used, one penetrameter shall be placed on each of the two outermost bars of the exposure, and the remaining penetrameter shall be placed on a centrally located bar.

8. An allowable weld buildup of 0.16 inch may be added to the total material thickness when determining the proper penetrameter selection. No image quality indicator equivalency will be accepted. Wire penetrameters or penetrameter blocks shall not be used.

9. Penetrameters shall be sufficiently shimmed using a radiographically identical material. Penetrameter image densities shall be a minimum of 2.0 and a maximum of 3.6.

10. Radiographic film shall be Class 1, regardless of the size of the steel reinforcing bars.

11. Radiographs shall be free of film artifacts and processing defects, including, but not limited to, streaks, scratches, pressure marks or marks made for the purpose of identifying film or welding indications.

12. Each splice shall be identified on each radiograph and the radiograph identification and marking system shall be established between the Contractor and the Engineer before radiographic inspection begins. Film shall be identified by lead numbers only; etching, flashing or writing in identifications of any kind will not be permitted. Each piece of film identification information shall be legible and shall include, as a minimum, the following information:

    a. The Contractor's name.

b. The name of the nondestructive testing firm.

c. Contract number.

d. Date of the test.

e. Initials of the radiographer.

f. Part number.

g. Weld number.

The letter "R" and repair number shall be placed directly after the weld number to designate a radiograph of a repaired weld.

13. Radiographic film shall be developed within a time range of one minute less to one minute more than the film manufacturer's recommended maximum development time. Sight development will not be allowed.

14. Processing chemistry shall be done with a consistent mixture and quality, and processing rinses and tanks shall be clean to ensure proper results. Records of all developing processes and any chemical changes to the developing processes shall be kept and furnished to the Engineer upon request. The Engineer may request, at any time, that a sheet of unexposed film be processed in the presence of the Engineer to verify processing chemical and rinse quality.

15. The results of all radiographic interpretations shall be recorded on a signed certification and a copy kept with the film packet.

Technique sheets prepared in accordance with ASME Boiler and Pressure Vessels Code Section V Article 2 Section T-291 shall also contain the developer temperature, developing time, fixing duration and all rinse times.

The Contractor shall maintain the radiographs and the radiographic inspection report(s) in the shop until the Engineer reviews them or requests copies. If the Engineer reviews them in the shop then the film and reports shall be released to the Engineer for permanent record keeping at that time. If copies are requested, the Contractor shall submit a Type 2 Working Drawing consisting of the film and a PDF or two paper copies of the radiographic inspection report. Adequate facilities and equipment shall be provided the Engineer for examining film, if performed in the shop.

If the Engineer has not reviewed the film and reports in the shop or requested copies within ten working days of completion of the lot, the Contractor shall submit a Type 2 Working Drawing consisting of the film and reports.

Welded Lap Splicing of Hoop Reinforcement for Shafts
All production splices shall be 100 percent visually inspected for weld quality, size and length.

6-02.3(26).GR6
Cast-in-Place Prestressed Concrete

6-02.3(26).INST1.GR6
The third paragraph of Section 6-02.3(26) is revised to read as follows:

6-02.3(26).OPT1.GB6
(January 4, 2010)
Before tensioning, the Contractor shall remove all side forms from the girders. The Contractor shall not release the falsework supporting the superstructure, and shall not place construction loads and other live loads on the superstructure, until the job-cured 2-inch grout cubes, fabricated in accordance with WSDOT TM 813, reach a minimum compressive strength of 800 psi in accordance with WSDOT FOP for AASHTO T 106.

6-02.3(28).GR6
Precast Concrete Panels

6-02.3(28).INST1.GR6
Section 6-02.3(28) is supplemented with the following:

6-02.3(28).OPT1.GR6
(January 7, 2013)
Precast Reinforced Concrete Three Sided Structures
Manufacturing Plant Quality Control Program
The manufacturing plant of precast reinforced concrete three sided structures shall be certified by one of the organizations specified in Section 6-02.3(28).

Design Criteria
The precast reinforced concrete three sided structures shall be designed in accordance with the WSDOT *Geotechnical Design Manual (M46-03)* and the current AASHTO LRFD Bridge Design Specifications, including an HL-93 vehicular live load. Live load for the Extreme Event-I Limit State shall be applied in accordance with WSDOT *Bridge Design Manual LRFD (M23-50)* Section 3.5.

For precast reinforced concrete three sided structures with span lengths greater than 20 feet, the AASHTO LRFD Bridge Design Specification Section 12.6.1 exemption from seismic loading shall not apply, and such three sided structures shall be designed for seismic loads in accordance with other provisions of the current AASHTO LRFD Bridge Design Specifications. FHWA Publication No. FHWA-NHI-09-010 *Technical Manual for Design and Construction of Road Tunnels Civil Elements*, dated November 2008, may also be used as a design specification reference for the seismic design requirement.

Wingwalls and headwalls associated with precast reinforced concrete three sided structures shall be designed in accordance with the *WSDOT Geotechnical Design Manual (M46-03)* and Chapter 11 of the current AASHTO LRFD Bridge Design Specifications, including seismic loads.

The Contractor shall use the geotechnical report prepared for this project and available through the source(s) specified in Section 1-02.4(2) as supplemented in these Special Provisions.

Precast reinforced concrete three sided structures shall be precast rigid frames with monolithic upper corners internally reinforced for moment and shear resistance, except as otherwise noted. Connecting separate and individually precast concrete panels together to form the specified three sided frame geometry is acceptable provided the following additional requirement is satisfied:

1. The structure system shall provide moment and shear resistance from the lateral load from backfill placed full width and full height at one side only of the three sided structure.

6-02.3(28)A.GR6
Shop Drawings

6-02.3(28)A.INST1.GR6
The third paragraph of Section 6-02.3(28)A is supplemented with the following:

6-02.3(28)A.OPT1.GR6
(August 1, 2011)
Precast Reinforced Concrete Three Sided Structures
For three sided structures, the Contractor shall submit two sets of design calculations to the Bridge and Structures Engineer with the eight sets of shop drawings submitted for the Engineer's approval.

The Contractor shall affirm with the design calculations submitted with the shop drawings for the Engineer's approval, that the three sided structure conforms to the specified design criteria. The design calculations shall include, but not be limited to, analysis of the following elements:

1. Flexure (substructure and superstructure).
2. Compression in the walls.
3. Shear (substructure and superstructure).
4. Factored bearing pressure versus factored soil bearing resistance for all appropriate limit states.
5. Deflection.
6. Minimum and maximum reinforcement ratios.
7. Distribution of flexural reinforcement.
8. Fatigue.
9. Live load distribution.

For three sided structures, in addition to items 1 through 6 under shop drawing content requirements, the following shop drawing details shall be submitted:

1. Footing and slab base details.
2. Wingwall and cutoff wall details.
3. Erection and backfill procedure.
4. Complete, site specific, itemized bar list for all steel reinforcement.

All design calculations and shop drawings for the precast reinforced concrete three sided structures shall be stamped and signed by a Professional Engineer in accordance with Section 6-01.9.

6-02.3(28)A.INST2.GR6
The list included in the third paragraph of Section 6-02.3(28)A is supplemented with the following:

6-02.3(28)A.OPT6.BSP.GB6
(BSP April 5, 2010)

7. Construction sequence and method of forming the precast prestressed concrete stay-in-place panels.

8. Details of additional reinforcement, if any, provided at lifting and support locations.

9. Method and equipment used to support the precast prestressed concrete stay-in-place panels during storage, transporting, and erection.

10. Method used to identify the precast prestressed concrete stay-in-place panel's location for calculating its position accounting for profile grade and transverse slope, and for ensuring correct placement during erection.

11. Erection sequence, including the method of lifting the panels, placing and adjusting the panels to proper alignment and grade, and supporting the panels during leveling and grouting operations.

12. Method for forming the grout pad on the exterior face of the prestressed concrete girder flange, if an alternative method is proposed, and at the interior face of the stay-in-place panel to the dimensions detailed in the Plans.

6-02.3(28)B.GR6
Casting

6-02.3(28)B.INST1.GR6
Section 6-02.3(28)B is supplemented with the following:

6-02.3(28)B.OPT1.GR6
(April 30, 2001)
Precast Reinforced Concrete Three Sided Structure
The precast reinforced concrete three sided structure fabricator shall notify the Washington State Department of Transportation Materials and Fabrication Inspection Section at least five working days in advance of beginning fabrication of the structures for this project.

Whenever the minimum finished backfill depth above the top of the structure is less than 1'-0", either all steel reinforcing bars in the span unit shall be epoxy-coated in accordance with Sections 6-02.3(24)H and 9-07.3, or the minimum concrete cover dimension from the face of concrete to the face of the top mat of steel reinforcing bars shall be 2-1/2”.

Whenever the minimum concrete cover dimension from the face of concrete to the face of the top mat of steel reinforcing bars is less than 1-1/2", the top mat of steel reinforcing bars in the span unit shall be epoxy-coated in accordance with Sections 6-02.3(24)H and 9-07.3.

The Contractor may strip forms from precast reinforced concrete three sided structures after the concrete reaches a minimum compressive strength of 3,000 psi, provided the precast reinforced concrete three sided structure remains in the casting bed in accordance with Section 6-02.3(28)G as supplemented in these Special Provisions. All damage from stripping is the Contractor’s responsibility.

6-02.3(28)B.OPT6.BSP.GB6
(BSP April 5, 2010)
Strand slippage (withdrawal) in excess of 0.06-inches at each end of precast prestressed concrete stay-in-place panels will be subject to evaluation by the Engineer for possible rejection. The Contractor shall, with at least one panel for each lot of ten production panels, cut all strands flush with the panel immediately upon removing the panel from the forms, and shall visibly mark the panel for periodic inspection by the Engineer.

The Contractor shall cast a sufficient number of precast prestressed concrete stay-in-place panels to cover 105 percent of the quantity required by the design shown in the Plans. The additional precast prestressed concrete stay-in-place forms shall be available for use as replacement panels for panels damaged during handling, storage, and erection. All panels not incorporated into the bridge deck, including additional panels cast but not used, and all damaged panels, shall remain property of the Contractor and be disposed of in accordance with Section 2-02.3.

6-02.3(28)E.GR6
Finishing

6-02.3(28)E.INST1.GR6
Section 6-02.3(28)E is supplemented with the following:

6-02.3(28)E.OPT1.GR6
(January 7, 2002)
Precast Reinforced Concrete Three Sided Structures
The Contractor shall finish all exposed surfaces of the structure with a Class 2 finish.

The Contractor shall mark the following information, using waterproof paint, on the inside of a vertical leg of each section of the structure:

Design Loads

Span and Rise dimension
Job Number
Fabrication Date
Manufacturer's Name and Trademark

6-02.3(28)E.OPT6.BSP.GB6
(BSP April 5, 2010)
The Contractor shall furnish a Class 2 surface finish, as specified in Section 6-02.3(14)B, on all surfaces of the precast prestressed concrete stay-in-place panels, except as otherwise noted. The top surface of all panels shall receive a textured finish in accordance with Section 6-02.3(10), except that the depth of striations shall be 1/4-inch, and shall be spaced 3/4 to 1 inch apart. Areas of mortar buildup more than 1/4 inch above the top surface of the panel shall be removed.

6-02.3(28)F.GR6
Tolerances

6-02.3(28)F.INST1.GR6
Section 6-02.3(28)F is supplemented with the following:

6-02.3(28)F.OPT1.BSP.GB6
(BSP April 5, 2010)
The precast prestressed concrete stay-in-place panels shall not exceed the following scalar tolerances:

Length and Width:	± 1/8 inch
Thickness:	+ 1/8, -0 inch
Location of strands (measured from centerline of panel to centerline of strand):	± 1/16 inch
Camber (either upward or downward) at time of placement on structure:	± 1/4 inch in ten feet

Precast prestressed concrete stay-in-place panels with tolerances exceeding those specified above, or with hairline cracks visibly apparent radiating from the strand at the end of the panel and extending more than three inches along the panel will be subject to evaluation by the Engineer for possible rejection.

6-02.3(28)G.GR6
Handling and Storage

6-02.3(28)G.INST1.GR6
Section 6-02.3(28)G is supplemented with the following:

6-02.3(28)G.OPT1.GR6
(April 30, 2001)
Precast Reinforced Concrete Three Sided Structures
The Contractor shall not move three sided structure sections from the casting bed into storage until the concrete reaches a minimum compressive strength

of 70 percent of the final design strength specified in the shop drawing and design calculation submittal.

The Contractor shall pick, move, and store the three sided structure sections in the cast position until the concrete reaches a minimum compressive strength equal to the final design strength specified in the shop drawing and design calculation submittal.

6-02.3(28)G.OPT6.BSP.GB6
(BSP April 5, 2010)
Precast prestressed concrete stay-in-place panels shall be maintained in a flat and level position, without any twisting, at all times. Panels shall be supported at approximately 1'-3" from the panel ends and at the midpoint. Supports shall be placed transverse to the prestressed strands and shall extend the full width of the panel.

Unloading and reloading at a site other than the bridge site will be permitted only under the direct supervision of the Engineer. The panels shall not be stacked, unless otherwise approved by the Engineer. If such permission is granted, the panel supports shall be in the same vertical plane and shall be of sufficient height to prevent damage to the lifting bar loops. The Contractor shall have received the Engineer's verification that the bottom panel of the stack is flat and level, without any twisting, prior to stacking additional panels. The Contractor shall not stack panels on top of adjacent girders of the structure.

6-02.3(28)H.GR6
Shipping

6-02.3(28)H.INST1.GR6
Section 6-02.3(28)H is supplemented with the following:

6-02.3(28)H.OPT1.GR6
(April 30, 2001)
Precast Reinforced Concrete Three Sided Structure
Prior to shipping, the precast reinforced concrete three sided structure fabricator shall furnish the Inspector a complete documentation package for each structure.

The documentation package shall include the following information for each structure:

1. Concrete batch tickets.
2. Concrete cylinder break results.
3. Material certifications.
4. Copies of all changes from the Plans and Specifications.

6-02.3(28)I.GR6
Erection

6-02.3(28)I.INST1.GR6
Section 6-02.3(28)I is supplemented with the following:

6-02.3(28)I.OPT1.GR6
(August 3, 2009)
Precast Reinforced Concrete Three Sided Structures
The Contractor shall erect and backfill precast reinforced concrete three sided structures in accordance with the erection sequence specified in the shop drawings approved by the Engineer, and the construction equipment restrictions specified in Section 6-02.3(25)O.

Adjacent precast units shall be connected by welding the weld-tie anchors in accordance with Section 6-02.3(25)O. The weld-tie anchor spacing shall not exceed 6'-0". After connecting the weld-tie anchors, the Contractor shall paint the exposed metal surfaces with one coat of field primer conforming to Section 9-08.1(2)F. Keyways shall be filled with grout conforming to Section 6-02.3(25)O.

6-02.3(28)I.OPT6.BSP.GB6
(BSP April 5, 2010)
The precast prestressed concrete stay-in-place panels shall be at least 60 days old at the time of placing bridge deck concrete. The Contractor shall place the panels atop the prestressed girders as shown in the Plans, adjusting the leveling bolts as required to match the level of adjacent panels and accommodate camber.

The grout pad shall be placed after the panels have been fully adjusted for grade and camber. The exposed portion of the grout pad forms that are intended to be left in place permanently shall be tinted to match the color of the adjacent concrete surfaces and shall be secured with an approved adhesive or other method as approved by the Engineer.

Prior to placing the bridge deck steel reinforcing bars and concrete, the Contractor shall place a backer rod at the intersection between panels as shown in the Plans. All intersections between panels shall be sealed to prevent leakage of slurry during concrete placement. Prior to placing the bridge deck concrete, the surface of the panels shall be cleaned of all foreign materials and fully saturated with water.

6-02.4.GR6
Measurement

6-02.4.INST1.GR6
Section 6-02.4 is supplemented with the following:

6-02.4.OPT1.FB6
(August 2, 2010)
*** $$1$$ *** contains the following approximate quantities of materials and work:

*** $$2$$ ***

The quantities are listed only for the convenience of the Contractor in determining the volume of work involved and are not guaranteed to be accurate. The prospective bidders shall verify these quantities before submitting a bid. No adjustments other than for approved changes will be made in the lump sum contract price for *** $$3$$ *** even though the actual quantities required may deviate from those listed.

6-02.4.OPT3.FB6

(August 2, 2010)

Modular expansion joint system contains the following approximate quantities of materials and work:

*** $$1$$ ***

The quantities are listed only for the convenience of the Contractor in determining the volume of work involved and are not guaranteed to be accurate. The prospective bidders shall verify these quantities before submitting a bid. No adjustments other than for approved changes will be made in the applicable modular expansion joint system lump sum contract price even though the actual quantities required may deviate from those listed.

6-02.4.OPT8.FB6

(April 6, 2015)

Expansion joint modification contains the following approximate quantities of materials and work:

*** $$1$$ ***

The quantities are listed only for the convenience of the Contractor in determining the volume of work involved and are not guaranteed to be accurate. The prospective bidders shall verify these quantities before submitting a bid. No adjustments other than for approved changes will be made in the lump sum contract price for “Expansion Joint Modification” even though the actual quantities required may deviate from those listed.

6-02.4.OPT13.FB6

(June 26, 2000)

*** $$1$$ *** bearing - superstr. will be measured per each for each bearing assembly furnished and installed.

6-02.4.OPT18.GB6

(April 6, 2015)

Transverse stop bearing will be measured per each.

6-02.4.OPT19.BSP.GB6

(BSP June 26, 2000)

High-load elastomeric bearing pads will be measured per each for each bearing pad assembly furnished and installed in the bridge.

6-02.4.OPT24.GB6

(August 6, 2012)

Epoxy crack sealing will be measured by the linear foot along the sealed crack at the concrete surface.

6-02.4.OPT25.GB6

(June 26, 2000)

Bridge grate inlet will be measured per each for each bridge grate inlet constructed.

6-02.4.OPT26.GB6

(June 26, 2000)

Modify bridge drain will be measured per each for each bridge drain modified.

6-02.4.OPT27.GB6

(June 26, 2000)

Plugging existing bridge drain will be measured per each for each bridge drain plugged.

6-02.4.OPT32.GB6

(April 6, 2015)

Core drilled bridge deck drain will be measured per each for each bridge deck drain core drilled and completed with a PVC pipe sleeve.

6-02.4.OPT37.GB6

(June 26, 2000)

Bridge deck repair will be measured by the cubic foot of pre-packaged concrete material placed in the repaired bridge deck, based upon a bag count of material required to produce the material actually used in the repair. When pre-packaged mix is extended with aggregate, the volumetric basis for payment will be determined on the basis of the bag count plus the absolute volume of aggregate extender actually used. Material wasted or unused will not be included. The yield of the pre-packaged concrete material per bag shall be determined under production conditions.

6-02.4.OPT42.GB6

(April 6, 2015)

Bridge deck repair will be measured by the square foot of surface area of deck concrete removed, with the measurement taken at the plane of the top mat of steel reinforcing bars.

6-02.4.OPT43.GB6

(April 6, 2015)

Longitudinal seismic restrainer will be measured per each.

6-02.4.OPT44.FB6

(April 6, 2015)

Seismic retrofit contains the following approximate quantities of materials and work:

*** $$1$$ ***

The quantities are listed only for the convenience of the Contractor in determining the volume of work involved and are not guaranteed to be accurate. The prospective bidders shall verify these quantities before submitting a bid. No adjustments other than for approved changes will be made in the lump sum contract price for “Seismic Retrofit - ______” even though the actual quantities required may deviate from those listed.

6-02.4.OPT45.FB6
(April 6, 2015)
Column jacketing contains the following approximate quantities of materials and work:

*** $$1$$ ***

The quantities are listed only for the convenience of the Contractor in determining the volume of work involved and are not guaranteed to be accurate. The prospective bidders shall verify these quantities before submitting a bid. No adjustments other than for approved changes will be made in the lump sum contract price for "Column Jacketing - ______" even though the actual quantities required may deviate from those listed.

6-02.4.OPT47.GB6
(April 6, 2015)
Permeon treatment will be measured by the square yard of concrete surface area receiving the treatment.

6-02.5.GR6
Payment

6-02.5.INST1.GR6
The first bid item under Section 6-02.5 is supplemented with the following:

6-02.5.OPT1.GB6
(June 26, 2000)
All costs in connection with furnishing and applying epoxy mortar to the concrete surfaces as specified shall be included in the unit contract price per cubic yard for "Conc. Class ______". If the concrete is to be paid for other than by class of concrete then the costs shall be included in the applicable adjacent item of work.

6-02.5.OPT3.GR6
(April 3, 2006)
All costs in connection with the treatment of high pH stormwater or dewatering water as specified shall be included in the unit contract price per cubic yard for "Conc. Class ______". If the concrete is to be paid for other than by class of concrete then the costs shall be included in the applicable adjacent item of work.

6-02.5.INST2.GR6
The third bid item under Section 6-02.5 is supplemented with the following:

6-02.5.OPT9.FB6
(June 26, 2000)
All costs in connection with *** $$1$$ *** shall be included in the lump sum contract price for "Superstructure - ______".

6-02.5.INST3.GR6
The fifth and sixth bid items under Section 6-02.5 are supplemented with the following:

6-02.5.OPT20.GB6
(April 6, 2015)
The contract quantity specified for “Steel Reinf. Bar for Bridge” includes the quantity for the epoxy-coated steel reinforcing bars located in the substructure of the bridge(s) included in this project.

6-02.5.INST4.GR6
Section 6-02.5 is supplemented with the following:

6-02.5.OPT25.GR6
(April 28, 1997)
“Precast Reinf. Conc. Three Sided Structure No. ___”, lump sum.

The lump sum contract price for “Precast Reinf. Conc. Three Sided Structure No. ___” shall be full pay for performing the work as specified, including footings, slab bases, wingwalls, and cutoff walls.

6-02.5.OPT26.FB6
(August 2, 2010)
“Bridge Deck - _____”, lump sum.
The lump sum contract price for “Bridge Deck - _____” shall be full pay for constructing the reinforced concrete portions of the steel bridge superstructure, including *** $$1$$ ***.

6-02.5.OPT28.GB6
(August 2, 2010)
"Modular Expansion Joint System - Superstr.", lump sum.
"Modular Expansion Joint System ___", lump sum.
The lump sum contract prices for "Modular Expansion Joint System - Superstr." and "Modular Expansion Joint System ___" shall be full pay for performing the work as specified, including design, fabrication, testing, inspection and installation of modular expansion joint system assemblies.

6-02.5.OPT33.GB6
(April 6, 2015)
“Expansion Joint Modification ___”, lump sum.

6-02.5.OPT38.GB6
(June 26, 2000)
“_____ Bearing - Superstr.”, per each.

6-02.5.OPT43.GB6
(April 6, 2015)
“Transverse Stop Bearing”, per each.

6-02.5.OPT44.BSP.GB6
(BSP June 26, 2000)
“High-Load Elastomeric Bearing Pad - _____”, per each.

The unit contract price per each for “High-Load Elastomeric Bearing Pad - _____” shall be full pay for furnishing, testing, and installing the bearing assemblies as specified, including all work required to adjust the bearing assemblies to their correct position following installation.

6-02.5.OPT49.GB6

(August 1, 2011)

“Epoxy Crack Sealing”, per linear foot.

Payment for taking and submitting cores to the Engineer for testing, as specified by the Engineer, will be by force account in accordance with Section 1-09.6. For the purpose of providing a common Proposal for all Bidders, the Contracting Agency has entered an amount for the item “Force Account Epoxy Crack Sealing Cores” in the bid proposal to become a part of the total bid by the Contractor.

6-02.5.OPT50.GB6

(June 26, 2000)

“Bridge Grate Inlet”, per each.

6-02.5.OPT51.GB6

(June 26, 2000)

“Modify Bridge Drain”, per each.

6-02.5.OPT52.GB6

(June 26, 2000)

“Plugging Existing Bridge Drain”, per each.

6-02.5.OPT53.FB6

(June 26, 2000)

All costs in connection with *** $$1$$ *** bridge drains as specified shall be included in the unit contract price per square yard for *** $$2$$ ***.

6-02.5.OPT58.GB6

(April 6, 2015)

“Core Drilled Bridge Deck Drain”, per each.

6-02.5.OPT59.FB6

(April 6, 2015)

All costs in connection with constructing the core drilled bridge deck drains as specified shall be included in the ***$$1$$***.

6-02.5.OPT64.GB6

(June 26, 2000)

“Bridge Deck Repair”, per cubic foot.

The unit contract price per cubic foot for "Bridge Deck Repair" shall be full pay for performing the work as specified, including removing all loose and unsound concrete, and mixing, placing (except for any necessary soffit forming), finishing and curing the pre-packaged concrete.

6-02.5.OPT65.GB6

(June 26, 2000)

Payment for "Bridge Deck Repair" will be by force account as provided in Section 1-09.6.

For the purpose of providing a common proposal for all bidders, the Contracting Agency has entered an amount for the item "Bridge Deck Repair" in the bid proposal to become a part of the total bid by the Contractor.

6-02.5.OPT70.GB6

(April 6, 2015)

"Bridge Deck Repair - ___", per square foot.

The unit contract price per square foot for "Bridge Deck Repair - ___" shall be full pay for performing the work as specified.

6-02.5.OPT71.GB6

(April 6, 2015)

“Longitudinal Seismic Restrainer”, per each.

6-02.5.OPT72.GB6

(April 6, 2015)

“Seismic Retrofit - _____”, lump sum.

6-02.5.OPT73.GB6

(April 6, 2015)

“Column Jacketing - _____”, lump sum.

6-02.5.OPT75.GB6

(April 6, 2015)

"Permeon Treatment", per square yard.

The unit contract price per square yard for "Permeon Treatment" shall be full pay for performing the work as specified.

6-02.5.OPT91.FB6

(June 26, 2000)

Bridge and Structures Minor Items

For the purpose of payment, such bridge and structures items as *** $$1$$ *** etc., for which there is no pay item included in the proposal, are considered as bridge and structures minor items. All costs in connection with furnishing and installing these bridge and structures minor items as shown and noted in the Plans and as outlined in these specifications and in the Standard Specifications shall be included in the *** $$2$$ ***

6-02.5.OPT92.FB6

(June 26, 2000)

Bridge Supported Utilities

All costs in connection with placing *** $$1$$ *** through the superstructure of *** $$2$$ *** as shown in the Plans, including all *** $$3$$ ***, shall be included in the *** $$4$$. ***

6-02.5.OPT93.GB6

(June 26, 2000)

No additional compensation will be made by reason of any delay or other expense to the Contractor caused by coordination with the utility company or by installing utility company furnished items. However, any unavoidable delays to the Contractor caused by coordination with the utility company or resulting from installing utility company furnished items will be adjusted in accordance with Section 1-08.8.

6-03.GR6
Steel Structures

6-03.2.GR6
Materials

6-03.2.INST1.GR6
Section 6-03.2 is supplemented with the following:

6-03.2.OPT2.BSP.GB6
(BSP January 7, 2013)
Pin Bearing
Unless other materials are specified in the Plans, pin bearing assembly components shall conform to the following requirements for those components shown and specified in the Plans:

Steel Plates and Bars
Steel plates and bars (base plate, bearing plate, sole plate, and guide bar) shall conform to ASTM A 36, and the dimensions shall comply with the details as shown in the Plans. The surface of pin bearing assembly steel components in contact with stainless steel and with the bearing block shall have an average surface roughness of 125 microinches or less. The surface within the recess of steel plates and bars retaining PTFE shall have an average surface roughness of 250 microinches or less. All other base plate, bearing plate, sole plate, and guide bar surfaces in contact with other pin bearing assembly components shall have an average surface roughness of 500 microinches or less.

Polytetrafluoroethylene (PTFE)
PTFE shall be 100 percent virgin PTFE, woven PTFE fabric, or dimpled PTFE conforming to Section 18.8.2 of the AASHTO LRFD Bridge Construction Specifications, current edition and latest interims.

Stainless Steel
Stainless steel sheet shall conform to ASTM A 240 Type 304L. Stainless steel in contact with PTFE shall be polished to a Number 8 mirror finish.

Stainless steel countersunk screws shall be hexagon socket type conforming to ANSI B 18.3 and shall conform to ASTM F 593 Type 304L.

Silicone Grease
Silicone grease shall conform to US Navy QPL AS8660-2.

Bolts, Nuts and Washers
Bolts, nuts and washers shall conform to Section 9-06.5(3) and shall be galvanized after fabrication in accordance with AASHTO M 232.

Anchor Bolt Assembly
Anchor bolts shall conform to ASTM F 1554 Grade 105, including supplemental requirements S2, S3, and S5. Nuts shall conform to ASTM A 563 Grade DH. Washers shall conform to ASTM F 436. Bars shall conform to ASTM A 36. Pipe shall conform to ASTM A 53 Grade B Type E or S, black. The upper portion of the anchor bolts, and associated nuts and washers, to six inches minimum below the

concrete surface, shall be galvanized after fabrication in accordance with AASHTO M 232

Resin Filler
Resin filler shall conform to Section 6-02.2 as supplemented in these Special Provisions.

Bearing Blocks and Keeper Rings
Bearing block forgings shall conform to Section 9-06.11, including AASHTO M 102 Supplemental Requirement S4. The grade shall be Grade F. The bearing block forging surfaces in contact with other pin bearing assembly components shall have an average surface roughness of 125 microinches or less. All other bearing block forging surfaces shall have an average surface roughness of 500 microinches or less.

Keeper ring forgings shall conform to Section 9-06.11 and the grade shall be Grade H. All keeper ring surfaces shall have an average surface roughness of 125 microinches or less.

Pin Assembly
Pins shall conform to ASTM A 276, UNS Designation 21800. Nuts shall conform to ASTM A 563 Grade DH. Nuts with a thread diameter equal to or less than six inches shall have a minimum Rockwell Hardness of HRc 24. Nuts with a thread diameter greater than six inches shall have a Rockwell Hardness between HRc 20 and HRc 30. Washers shall conform to ASTM A 572 Grade 50. Cotter pins shall be stainless steel. The pin surfaces in contact with the bearing blocks shall have an average surface roughness of 125 microinches or less.

Submittals of Acceptance Test Reports and Certificates
The Contractor shall submit the following production samples, and test reports and certificates, to the Engineer for review, testing, and approval:

1. Manufacturer’s certificate of compliance for the PTFE, resin filler, and silicone grease, in accordance with Section 1-06.3.

2. A six inch by six inch by 1/8 inch sample of PTFE taken from the lot of production material.

3. Certified mill test reports for all steel and stainless steel materials incorporated in the bearings.

The Contractor shall not ship the bearings from the fabricator’s facility until receiving the Engineer’s written approval of all production samples, and test reports and certificates.

6-03.3.GR6
Construction Requirements

6-03.3.INST1.GR6
Section 6-03.3 is supplemented with the following:

6-03.3.OPT2.BSP.GB6
(BSP June 4, 2012)
Pin Bearing

Shop Drawings

The Contractor shall submit shop drawings to the Engineer for approval in accordance with Section 6-03.3(7). These drawings shall include but not be limited to the following information:

1. Plan and elevation of the assembled bearing and each of the components showing dimensions and tolerances.

2. Complete details of all components and sections showing all materials incorporated into the bearing.

3. All AASHTO, ASTM or other material designations.

4. All surface finishes.

5. Bearing manufacturer’s recommendations and procedures for bearing assembly shipment, storage, and installation.

The Contractor shall not begin fabricating the pin bearings until receiving the Engineer’s approval of the shop drawings.

Shop Inspection

The manufacturer shall provide for inspection. Inspection during the fabrication process shall ensure that the materials and workmanship meet the requirements of the contract. Inspection shall be performed by an independent inspection entity approved by the Engineer.

The Contractor shall submit the name, address, phone number and contact person of the inspection entity performing the required certified shop inspection of the bearings to the Engineer for approval. The Contractor shall not begin bearing fabrication until receiving the Engineer’s written approval of the inspection entity for certified shop inspection.

Flatness and Manufacturing Tolerances

Flatness of bearing surfaces shall be determined by the following method:

1. A precision straightedge, longer than the nominal dimension to be measured shall be placed in contact with the surface to be measured as parallel to it as possible.

2. A feeler gauge having an accuracy of □ 0.001 inches equal to the tolerance allowed shall be selected and inserted under the straightedge.

3. If the feeler gauge does not pass under the straightedge, the surfaces shall be acceptable for flatness.

4. In determining the flatness, the straightedge may be located in any position on the surface being measured.

Flatness tolerances shall be defined as follows:

1. Class A tolerance = 0.001 x nominal dimension

2. Class B tolerance = 0.002 x nominal dimension

3. Class C tolerance = 0.005 x nominal dimension

(Nominal dimension shall be taken as the actual dimension of the plate or sheet under the straightedge, in inches.)

Manufacturing tolerances for the bearings are as follows:

Base Plate, Bearing Plate and Sole Plate

Plan dimensions	
Greater than 30 inches:	-0.00, +3/16 inch
30 inches or less:	-0.00, +1/8 inch
Thickness:	-1/32, +1/8 inch
Flatness:	Class A tolerance, side in contact with steel or PTFE Class C tolerance, side in contact with grout or concrete

Guide Bar

Length:	± 1/8 inch
Section dimensions:	± 1/16 inch
Flatness:	Class A tolerance, side in contact with steel or PTFE
Bar to bar tolerance:	± 1/32 inch

Bars shall be not more than 1/32” out of parallel

PTFE Sheet

Plan dimensions:	Total nominal design area –0, +5 percent
Thickness:	-0.00, +1/64 inch
Flatness:	Class A tolerance
PTFE Recess:	Length and width –0.00, +0.04 inch

Stainless Steel Sheet

Flatness:	Class A tolerance

Bearing Block

Plan dimensions:	-0.00, +1/8 inch
Thickness:	±0.015 inch
Groove radius for pin:	As shown in the Plans

Keeper ring grooves in bearing blocks

Radius, inner and outer:	±0.005 inch
Depth of groove:	±0.010 inch

Keeper Ring

Radius, inner and outer:	±0.010 inch
Thickness:	±0.030 inch

Pin

Length, shldr. to shldr.:	+0.000, -0.020 inch
Diameter:	As shown in the Plans

Overall Height

Total thickness:	-1/16, +3/16 inch

The edges of all components shall be broken by grinding so that there are no sharp edges.

Special Fabrication Requirements
When the following components are shown in the Plans as part of the pin bearing assembly, the following special fabrication requirements shall apply:

PTFE Sheet
PTFE shall be 1/8 inch thick unless otherwise noted in the Plans. PTFE shall be recessed and bonded to a depth of one half the PTFE sheet thickness into the backing plate. The exposed height of the PTFE shall not be less than 3/64 inch.

Dimpled PTFE, if shown in the Plans, shall be unfilled and have a minimum thickness of 3/16 inch. Dimples shall be placed in a 1/2 inch grid and shall have a depth of 1/16 inch.

The PTFE sheet shall be recessed and chemically bonded to the supporting steel plate or bar. The woven PTFE sheet shall be mechanically bonded to the supporting steel plate or bar. Bonding shall be performed under controlled conditions and in accordance with the written instructions of the PTFE manufacturer.

Following the bonding operation, the PTFE surface shall be smooth and free from bubbles. Filled PTFE shall be polished after the bonding operation is complete, in accordance with AASHTO LRFD Bridge Construction Specification Section 18.8.3.2.2, current edition and latest interims.

Stainless Steel Sheet
The stainless steel sheet shall be seal welded all around to the supporting steel plate or bar by the gas tungsten arc welding (GTAW) process in accordance with current AWS specifications. The stainless steel sheet shall be clamped down to have full contact with the supporting steel plate or bar during welding. The welds shall not protrude beyond the sliding surface of the stainless steel sheet.

Guide Bar
Each guide bar shall be fabricated from a single steel plate. The guide bars shall be bolted to the pin bearing assembly as shown in the Plans. The stainless steel sheet shall be welded to the guide bar before attaching the guide bar to the pin bearing assembly. The space between the guide bar and the guided component shall be 3/16 inch ± 1/16 inch.

Corrosion Protection
Steel surfaces, except as otherwise specified below, shall be painted in accordance with Section 6-07.3(9), and Section 6-03.3(30) as supplemented in these Special Provisions. The surfaces of all welds fastening stainless steel to structural steel shall be painted as specified for structural steel. Stainless steel shall not be painted. Galvanized fastening hardware (anchor bolts, bolts, nuts and washers) shall be painted in accordance with Section 6-07.3(11)A.

All coats of paint as specified in Section 6-07.3(9)A for steel surfaces shall be applied in the shop. After the pin bearing assembly has been erected in its final position with the anchor bolt nuts and pin nuts installed, all surfaces with damaged paint shall be repaired in accordance with Section 6-07.3(9)I.

All coats of paint as specified in Section 6-07.3(11)A for galvanized fastening hardware shall be applied after the pin bearing assembly has been erected in its final position with the anchor bolt nuts installed. The Contractor shall prepare the galvanized surfaces for painting in accordance with Section 6-07.3(11)A except only hand or power tool cleaning methods shall be used..

The embedded pipe assembly, when shown in the Plans, shall not be painted.

The following items shall be painted only with one shop applied coat of inorganic zinc primer in accordance with Section 6-07.3(9):

1. The keeper rings.

2. The keeper ring groove surface in the bearing blocks.

The following items and surfaces shall not be painted, but shall instead be coated with #2 extreme pressure grease:

1. The machined surfaces of the bearing blocks that contact the pin and keeper rings.

2. All surfaces of the pins.

3. The threads of the pin nuts.

The primer paint coated keeper rings shall be coated with #2 extreme pressure grease prior to final bearing assembly.

Bearing Assembly Inspection Reports and Certification
The Contractor shall submit the daily inspection reports of the independent inspection entity performing the required certified shop inspection to the Engineer for approval. The daily inspection reports shall report on the shop fabrication and testing activities relating to the bearing assemblies, and their conformance to the specification requirements.

The Contractor shall submit written documentation from the bearing manufacturer certifying that the bearing assemblies have been manufactured in full compliance with the specification requirements.

The Contractor shall not ship the bearing assemblies from the fabricator's facility until receiving the Engineer's approval of the certified shop inspection daily inspection reports and the bearing manufacturer's certificate of compliance.

Bearing Component Assembly, Shipping, and Storage
Each bearing shall be fully assembled at the manufacturing plant and delivered to the construction site as a complete unit, ready for installation. The units shall be held together with removable restraints so that the sliding surfaces are not damaged. Softeners shall be placed under the restraints to protect all painted surfaces. The Contractor shall not damage the painted surfaces while shipping, storing and installing the bearing assemblies.

All bearing assemblies shall be marked with the following information prior to shipping:

1. Location of the bearing, including the pier and the specific location along the pier.

2. Direction arrow pointing in the ahead on station direction.

The above information shall be marked on the top plate of the upper unit of the bearing assembly. The marks shall be permanent and shall be visible after bearing installation.

The bearing assemblies shall have centerlines marked on both upper and lower units for checking alignment in the field.

The bearing assemblies shall be shipped in light-proof, moisture-proof and dust-proof containers.

Bearing Assembly Field Inspection
Field inspection of a representative number of bearings assemblies will be performed by the Engineer. The Contractor shall provide a clean, dry and enclosed area at the site, spacious enough for the field inspection activities. The Contractor shall disassemble and reassemble the bearings for inspection by the Engineer. The disassembly and reassembly of the bearings shall be in accordance with the bearing manufacturer's written procedure and in the presence of the Engineer.

Bearings that fail the inspection shall be replaced or repaired by the Contractor, as approved by the Engineer, at no additional expense to the Contracting Agency. All proposed corrective procedures shall be submitted by the Contractor to the Engineer for approval before beginning corrective work.

6-03.3(7).GR6
Shop Plans

6-03.3(7)A.GR6
Erection Methods

6-03.3(7)A.INST1.GR6
The list in the second paragraph of Section 6-03.3(7)A is supplemented with the following:

6-03.3(7)A.OPT1.GB6
(April 6, 2015)
8. If the Contractor selects a girder launching method as the erection procedure, the Contractor shall submit plan details of the nose beam, roller assemblies, jacks, blocking, tow lines and control lines, and shall prepare an erection procedure that describes the method and equipment involved in the launching procedure, the elevation and alignment control and corrective measures enforced during the launching process, the methods of monitoring and adjusting the tow line and control line loads during the launching process, and the spare jacks, tow lines, control lines, and other critical field erection equipment provided to ensure a continuous and safe operations.

6-03.3(7)A.OPT2.GB6
(April 6, 2015)
8. The method and equipment used to drill holes, and ream existing rivet holes following rivet removal, through and in the existing gusset plates and steel members.

6-03.3(25).GR6
Welding and Repair Welding

6-03.3(25).INST1.GR6
Section 6-03.3(25) is supplemented with the following:

6-03.3(25).OPT2.GB6
(April 6, 2015)
Electroslag Welding - Narrow Gap (ESW-NG) Procedure
The ESW-NG procedure may be used for groove welds in bridge members and member components up to four inches thick subject to the following requirements:

Qualification Testing
Unless the Contractor submits previously performed qualification testing documents, the Contractor shall provide the opportunity for Contracting Agency representatives to witness all qualification testing.

HAZ Specimens, Type and Number of Tests for ESW-NG
For all compression members including ESW-NG of compression members, CVN testing of the HAZ is not required. However, for welds deposited by ESW-NG on tension and reversal members, additional CVN tests of the HAZ shall be performed to qualify the process. The CVN tests for the HAZ shall be the following:

1. Five specimens shall be removed from the quarter-thickness section of the HAZ on each side of the procedure qualification welded joint in accordance with the ESW-NG Tension Member CVN Test Plate Detail as shown in the Plans.

2. The weld fusion line shall be revealed by etching the transverse-to-weld section.

3. The notch location shall be in the base metal within 1/16 inch from the weld fusion line. If the weld curvature does not permit the entire notch to be placed within 1/16 inch from the fusion line, then one end of the notch shall be placed on the fusion line while the remaining portion of the notch extends away from the fusion line into the base metal.

If different grades of steel such as 36 and 50 or 50 and 50W are joined by ESW-NG, the procedure qualification tests shall be conducted on the same two grades of steel. If transition joints between thick and thin members are made, the WPS shall be conducted on the same joint preparation (having the same thicknesses and joint transition slope). The heat affected zone CVN toughness specimens shall be extracted from both sides of the transition joint.

Test Results Required for ESW-NG

HAZ

For CVN toughness determination in welds carrying applied tensile stress, five specimens taken at the quarter-thickness location on both sides of the ESW-NG weld shall be tested. The highest and lowest values shall be discarded. The test is successful if the following criteria are achieved for the three remaining tests:

1. The average CVN toughness shall be a minimum of 15 foot-pounds at 40F.

2. No more than one specimen shall have a CVN toughness less than 15 foot-pounds at 40F.

3. No specimen shall have a CVN toughness value below 10 foot-pounds at 40F.

6-03.3(27).GR6
High Strength Bolt Holes

6-03.3(27)B.GR6
Reamed and Drilled Holes

6-03.3(27)B.INST1.GR6

The second sentence of the first paragraph of Section 6-03.3(27)B is revised to read:

6-03.3(27)B.OPT1.FB6
(April 6, 2015)
Reamers and drills shall be directed mechanically, non hand-held, except as otherwise noted. The Contractor may ream and drill holes through *** $$1$$ *** of Bridge No(s) *** $$2$$ *** using hand-held reamers and drills, provided that the method and equipment used conforms to the erection plan as approved by the Engineer in accordance with Section 6-03.3(7)A as supplemented in these Special Provisions. Unless otherwise shown in the Plans, all holes reamed and drilled for bolted connections with existing gusset plates and steel members shall be 1/16 inch larger than the bolt diameter specified in the Plans for the connection.

6-03.3(28).GR6
Shop Assembly

6-03.3(28)A.GR6
Method of Shop Assembly

6-03.3(28)A.INST1.GR6
Section 6-03.3(28)A is supplemented with the following:

6-03.3(28)A.OPT1.GB6
(August 5, 2013)
The girders shall also be shop assembled either completely or progressively in the transverse direction. The transverse shop assembly shall consist of a minimum of two adjacent girders, with pier diaphragms, intermediate diaphragms and cross bracing, and temporary bracing between girders at the end of the shop assembly (longitudinally). Staging of the transverse shop assembly shall proceed along with the longitudinal shop assembly. Each next stage of the transverse shop assembly shall be assembled to one of the previous transverse shop assemblies, repositioned if necessary, and pinned to ensure accurate alignment. Unless otherwise specified, the girders shall be blocked or supported in the no-load position.

After acceptance of the shop assembly by the Engineer, pier diaphragms, intermediate diaphragms and cross bracing utilized in the transverse shop assembly shall be removed from the girders and shipped to the bridge construction site each as individual units. Shop bolted connections in the diaphragms and cross bracing shall be completed and fully tightened to the minimum tension specified during the shop assembly. Fully tightened connections shall be inspected prior to shipping.

6-03.3(28)B.GR6
Check of Shop Assembly

6-03.3(28)B.INST1.GR6
Section 6-03.3(28)B is supplemented with the following:

6-03.3(28)B.OPT1.GB6
(June 26, 2000)
If an assembly or stage of assembly is not approved by the Engineer, deficiencies shall be corrected and the assembly or stage of assembly shall be resubmitted to the Engineer for approval.

6-03.3(30).GR6
Painting

6-03.3(30).INST1.GR6
Section 6-03.3(30) is supplemented with the following:

6-03.3(30).OPT1.FB6
(August 3, 2009)
Paint for the new steel shall be applied in accordance with Section 6-07.3(9). The color of the top coat, when dry, shall match *** $$1$$ ***.

6-03.3(30).OPT6.FB6
(April 6, 2015)
The Contractor shall paint all galvanized structural steel components of the following specified items in accordance with Section 6-07.3(11):

*** $$1$$ ***

The color of the top coat, when dry, shall match *** $$2$$ ***.

6-03.3(37).GR6
Setting Steel Bridge Bearings

6-03.3(37).INST1.GR6
Section 6-03.3(37) is supplemented with the following:

6-03.3(37).OPT1.GB6
(April 6, 2015)
Pin Bearing Assembly Installation
The top surface of the pin bearing assembly in contact with the steel girder shall receive a thin uniform film of silicone grease, and the bolt threads connecting the pin bearing assembly to the steel girder shall be greased.

PTFE sheet shall not be greased, except as otherwise noted. A thin uniform film of silicone grease shall be applied to the entire dimpled PTFE sheet before installation (all dimples shall be filled with grease).

For pin bearing assemblies with PTFE and stainless steel components, the Contractor shall take special care at all times to ensure protection of the PTFE and stainless steel surfaces from coming in contact with concrete and any other foreign matter.

6-03.3(38).GR6
Placing Superstructure

6-03.3(38).INST1.GR6
Section 6-03.3(38) is supplemented with the following:

6-03.3(38).OPT1.GB6
(June 26, 2000)
All concrete located below the permanent location of the steel girders shall be completely covered to protect the concrete from staining from rusty water.

The Contractor shall submit a concrete surface protection plan to the Engineer for approval. The submittal shall include, but not be limited to, describing all material components of the surface protection system, including material specifications and thicknesses of all components, dimensions of all sub-units and details of how the sub-units are assembled to create the combined system, the method of installing the system, including all means of fastening the system to or holding the system against the concrete surfaces, the methods of maintaining the system in place during superstructure construction, and the methods of repairing damage to the system during superstructure construction.

The Contractor shall not begin steel erection operations until receiving the Engineer's approval of the concrete surface protection plan, and completing installation of the concrete surface projection plan.

Removal of the concrete surface protection system will be performed by Contracting Agency forces at a later date.

6-03.3(39).GR6
Swinging the Span

6-03.3(39).INST1.GR6
Section 6-03.3(39) is supplemented with the following:

6-03.3(39).OPT1.GB6
(June 26, 2000)
The Contractor shall measure and submit to the Engineer camber values at the points indicated in the Plans at each of the following times:

1. After the spans are swung.

2. After roadway slab placement.

6-03.4.GR6
Measurement

6-03.4.INST1.GR6
Section 6-03.4 is supplemented with the following:

6-03.4.OPT1.FB6
(August 6, 2007)
Structural low alloy steel contains the following approximate steel quantities:

Bridge	Quantity
*** $$1$$ ***	*** $$2$$ ***

6-03.4.OPT6.GB6
(April 6, 2015)
Pin bearing - superstr. will be measured per each.

6-03.5.GR6
Payment

6-03.5.INST1.GR6
The second bid item under Section 6-03.5 is supplemented with the following:

6-03.5.OPT1.GB6
(August 6, 2007)
All costs in connection with furnishing and installing steel girder pipe railing as shown in the Plans shall be included in the lump sum contract price for “Structural Low Alloy Steel”.

6-03.5.INST2.GR6
Section 6-03.5 is supplemented with the following:

6-03.5.OPT7.FB6
(June 26, 2000)
All costs in connection with furnishing, installing, and maintaining the concrete surface protection system as specified shall be included in the *** $$1$$ ***.

6-03.5.OPT12.GB6
(April 6, 2015)
“Pin Bearing – Superstr.”, per each.

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6-05.GR6
Piling

6-05.2.GR6
Materials

6-05.2.INST1.GR6
Section 6-05.2 is supplemented with the following:

6-05.2.OPT1.GB6
(April 6, 2015)
Micropiles
Materials for micropiles shall consist of the following:
Admixtures for grout shall conform to Section 9-23.6. Admixtures that control bleed, improve flowability, reduce water content, and retard set may be used in the grout, subject to the review and acceptance of the Engineer. Admixtures shall be compatible with the grout and mixed in accordance with the manufacturer's recommendations. Accelerators are not permitted. Admixtures containing chlorides are not permitted.

All cement shall be Portland cement conforming to Section 9-01.2(1).

Centralizers and spacers shall be fabricated from schedule 40 PVC pipe or tube, steel. Wood shall not be used. Centralizers and spacers shall be securely attached to the reinforcement; sized to position the reinforcement within 3/8 inch of plan location from center of micropile; sized to allow grout tremie pipe insertion to the bottom of the drillhole; and sized to allow grout.to freely flow up the drillhole and casing and between adjacent reinforcing bars.

Encapsulation (double corrosion protection) shall be shop fabricated using high-density, corrugated polyethylene tubing conforming to the requirements of AASHTO M 252 with a nominal wall thickness of 1/32 inch. The inside annulus between the reinforcing bars and the encapsulating tube shall be a minimum of 1/4 inch and be fully grouted with grout as defined below.

Epoxy coating shall conform to Section 9-07.3. Bearing plates and nuts encased in the micropile concrete footing need not be epoxy coated.

Fine aggregate for sand-cement grout shall be sand conforming to AASHTO M 45.

Grout shall be a neat cement or sand/cement mixture with a minimum seven day compressive strength of 4,000 psi in accordance with Section 9-20.3(4).

Steel pipe casing for micropiles shall have the diameter and at least the minimum wall thickness shown in the Working Drawings. Steel pipe casing shall conform to one of the following:

1. ASTM A 252, Grade 2 or 3. If the casing is to be welded, the carbon equivalency (CE) as defined in AWS D 1.1, Section XI 5.1, shall not exceed 0.45, and the sulfur content shall not exceed 0.05 percent.

2. API 5L Grade X52 or better.

3. API 5CT Grade N80 or better.

4. Another equivalent steel pipe specification acceptable to the Engineer.

The manufacturer or fabricator of steel piling shall furnish a certificate of compliance in accordance with Section 1-06.3 stating that the piling being supplied conforms to these specifications. The certificate of compliance shall include test reports for tensile and chemical tests. Samples for testing shall be taken from the base metal, steel, coil or from the manufactured or fabricated piling. The certificate of compliance shall be in English units. As an alternative to steel pipe with mill certificate of compliance documentation, new structural grade or mill secondary steel pipe may be furnished for micropile casing without certified mill test reports under the following conditions:

1. The steel pipe shall meet or exceed the mechanical requirements of API 5L Grade X52 or better or API 5CT Grade N80 or better.

2. The CE shall not exceed 0.45 and the sulfur content shall not exceed 0.05 percent, if welding of the casing is required.

3. Two unique coupon tests with reports, conforming to ASTM A 370, including Annex A2, shall be provided for each truckload of pipe supplied.

4. The pipe shall be free of defects (dents, cracks, and tears).

The alternate testing for non-mill certified steel pipe is not permitted if domestic steel is required for the project.

Welded circumferential joints in pipe shall develop the strength of the pipe section. Threaded pipe joints shall develop at least the nominal resistance used in the design of the micropile.

Structural steel plates and shapes for micropile top attachments shall conform to either ASTM A 36 or ASTM A 572 Grade 50.

Reinforcing steel shall be deformed bars in accordance with Sections 9-07.4 or 9-07.11. When a bearing plate and nut are required to be threaded onto the top end of reinforcing bars for the micropile top to footing anchorage, the threading may be continuous spiral deformed ribbing provided by the bar deformations or may be cut into a reinforcing bar. If threads are cut into a reinforcing bar, the next larger bar number designation from that shown on the Plans shall be provided, at no additional cost to the Contracting Agency. Reinforcing bars for micropiles shall be epoxy coated in accordance with Section 6-02.3(24)H and 9-07.3.

Bar tendon couplers, if required, shall develop the ultimate tensile strength of the bars.

6-05.2(9-10.5).GR6
Steel Piling
Section 9-10.5 is supplemented with the following:

6-05.2(9-10.5).OPT1.BSP.GB6
(BSP August 22, 2011)
Furnishing St. Piling

For this project, the Section 6-05.3(5) prohibition against spiral welded steel pile casings does not apply, and the steel pipe piling may be either longitudinal seam or helical (spiral) seam submerged-arc welded pipe, provided that the requirements of this Special Provision are met.

Steel pipe piling shall conform to API 5L Grade X46, latest edition. Alternatively, steel pipe piling may conform to ASTM A 252 Grade 3 provided that the chemical composition conforms to a prequalified base metal classification listed in Table 3.1 of the AWS D1.1/D1.1M, latest edition, Structural Welding Code. The grade of pipe piling shall meet or exceed the grade specified above or as shown in the Plans.

The Contractor shall submit a manufacturer's certification of compliance, conforming to Section 1-06.3 and accompanied by certified mill test reports, including chemical analysis and carbon equivalence, for each heat of steel used to fabricate the steel pipe piling.

6-05.3.GR6
Construction Requirements

6-05.3.INST1.GR6
Section 6-05.3 is supplemented with the following:

6-05.3.OPT1.FB6
(April 6, 2015)
Micropiles

General Requirements

The Contractor is responsible for the design, installation and testing of micropiles and micropile top attachments for this project. The Contractor shall select the micropile type, size, micropile top attachment, installation means and methods, shall estimate the ground-to-grout bond value, and shall determine the required grout bond length and final micropile diameter. The Contractor shall design and install micropiles that will develop the load capacities specified in the Plans. The micropile load capacities shall be verified by verification and proof load testing, and shall meet the test acceptance criteria specified in this Special Provision.

Contractor's Experience Requirements and Submittal

The micropile Contractor shall be experienced in the construction and load testing of micropiles and have successfully constructed at least three projects in the last five years involving construction totaling at least 50 micropiles of equal or greater capacity than required for this project. The Contractor shall submit construction details, structural details and load test results for at least three previous successful micropile load tests from different projects of similar scope to this project.

The micropile Contractor shall design the micropile system. The micropile system shall be designed by a Professional Engineer, licensed under Title 18 RCW State of Washington, with experience in the design and construction of at least three successfully completed micropile projects over the past five years, with micropiles of equal or greater capacity than required in these plans and specifications. The on-site foremen and drill rig operators shall also have experience on at least three projects over the past five years installing micropiles of equal or greater capacity than required for this project.

The Contractor shall submit a Type 2 Working Drawing consisting of the completed project reference list, including a brief project description with the owner's name and current phone numbers. This Working Drawing submittal shall also include a personnel list for the micropile system designer, supervising project Engineer, drill rig operators and on-site foremen to be assigned to the project. The personnel list shall contain a summary of each individual's experience and be complete enough for the Engineer to determine whether each individual satisfies the required qualifications.

Definitions

Alignment Load (AL): A minimum initial load (5 percent FDL) applied to micropile during testing to keep the testing equipment correctly positioned.

Factored Design Load (FDL): The factored design load expected to be applied to the micropile. The factored design load (FDL) is as specified in the bridge Plans.

Maximum Test Load: The maximum load to which the micropile is subjected during testing. The load shall be 1.5 *x* FDL for verification load tests and 1.0 *x* FDL for proof load tests.

Proof Load Test: Incremental loading of a production micropile, recording the total movement at each increment.

Verification Load Test: Non-production micropile load test performed to verify the design of the micropile system and the construction methods proposed, prior to installation of production micropiles.

Micropile Design Requirements

The micropiles shall be designed to meet the specified loading conditions, as shown in the Plans. The Contractor shall design the micropiles, and the micropile top to footing connections using the Load and Resistance Factor Design (LRFD) method.

Steel pipe used for micropile permanent casing shall incorporate an additional 1/16 inch thickness of sacrificial steel for corrosion protection. Where required as shown in the Plans, corrosion protection of the internal steel reinforcing bars, consisting of encapsulation (double corrosion protection), epoxy coating, or grout, shall be provided in accordance with Section 6-05.2 as supplemented in these Special Provisions. Where permanent casing is used for a portion of the micropile, encapsulation shall extend at least five feet into the casing.

Micropile Design Submittals

The Contractor shall submit Type 3E Working Drawings consisting of complete design calculations and working drawings with all details, dimensions, quantities, ground profiles, and cross-sections necessary to construct the micropile structure. The Contractor shall verify the limits of the micropile structure and ground survey data before preparing the detailed working drawings.

Design Calculations

Design calculations shall include the following items:

1. A written summary report which describes the overall micropile design and its compatibility with the anticipated subsurface conditions as described by the contract test hole boring logs, the Summary of Geotechnical Conditions provided in the Appendix to the Special Provisions, and the geotechnical report(s) prepared for this project.

2. Applicable code requirements and design references.

3. Micropile structure critical design cross-section(s) geometry including soil strata and piezometric levels and location, magnitude and direction of design applied loadings, including slope or external surcharge loads.

4. Design criteria including, soil shear strengths (friction angle and cohesion), unit weights, and ground-to-grout bond values and micropile drillhole diameter assumptions for each soil strata.

5. Load and resistance factors (for Load and Resistance Factor Design) used in the design of the ground-to-grout bond values, the ground-to-grout bond length, surcharges, soil/rock and material unit weights, steel, grout, and concrete materials.

   The bond zone for micropiles shall be below the following elevations:

   *** $$1$$ ***

6. Design calculation sheets with the project number, micropile structure location, designation, date of preparation, initials of designer and checker, and page number at the top of each page. An index page shall be included with the design calculations.

7. Design notes including an explanation of any symbols and computer programs used in the design.

8. Other design calculations as required.

Working Drawings

The Contractor shall submit Type 3E Working Drawings.

The working drawings shall include all information required for the construction and quality control of the piling. Working drawings shall include the following items:

1. A plan view of the micropile structure identifying:

   a. A reference baseline and elevation datum.

   b. The offset from the construction centerline or baseline to the face of the micropile structure at all changes in horizontal alignment.

   c. Beginning and end of micropile structure stations.

d. Right-of-way and permanent or temporary construction easement limits, location of all known active and abandoned existing utilities, adjacent structures or other potential interference. The centerline of any drainage structure or drainage pipe behind, passing through, or passing under the micropile structure.

e. Subsurface exploration locations shown on a plan view of the proposed micropile structure alignment with appropriate reference base lines to fix the locations of the explorations relative to the micropile structure.

2. An elevation view of the micropile structure(s) identifying:

   a. Elevation view showing micropile locations and elevations; vertical and horizontal spacing; batter and alignment and the location of drainage elements (if applicable).

   b. Existing and finish grade profiles both behind and in front of the micropile structure.

3. Design parameters and applicable codes.

4. General notes for constructing the micropile structure including the overall construction sequence, micropile installation sequence, means and methods to prevent damage to existing adjacent piles and micropiles, installation tolerances, and other special construction requirements.

5. Start date and time schedule and micropile installation schedule providing the following:

   Micropile number
   Micropile Factored Design Load
   Type and size of reinforcing steel
   Type and size of steel casing
   Minimum total bond length
   Total micropile length
   Micropile top attachment

6. Micropile structure typical sections including micropile spacing and inclination; minimum drill hole diameter; pipe casing and reinforcing bar sizes and details; splice types and locations; centralizers and spacers; grout bond zone and casing plunge lengths and corrosion protection details; and connection details to the substructure footing, anchorage, plates, etc.

7. A typical detail of verification and production proof test micropiles defining the micropile length, minimum drill hole diameter, inclination, and load test bonded and unbonded test lengths.

8. Details, dimensions, and schedules for all micropiles, casing and reinforcing steel, including reinforcing bar bending details.

9. Details and dimensions for micropile structure appurtenances such as barriers, coping, drainage gutters, fences, etc. (if applicable).

10. Details for constructing micropile structures around drainage facilities (if applicable).

11. Details for terminating micropile structures and adjacent slope construction (if applicable).

When plan dimensions are changed due to field conditions or for other reasons, the Contractor shall submit revised Type 3E Working Drawings, including supporting design calculations. Within 30 days after completion of the work, the Contractor shall submit as-built drawings to the Engineer, conforming to the requirements specified for Type 3E Working Drawings in Section 1-05.3.

Construction Submittals

The Contractor shall submit Type 2E Working Drawings consisting of the following for the micropile system or systems to be constructed:

1. Discussion of how the Contractor's construction methods accommodate and are compatible with the anticipated subsurface conditions as described in the contract test hole boring logs, the Summary of Geotechnical Conditions provided in the Appendix to the Special Provisions, and the geotechnical report(s) prepared for this project.

2. If welding of casing is proposed, the Contractor shall submit the proposed welding procedure in accordance with Section 6-03.3(25).

3. Manufacturer's information, model, size, and type of equipment to be used for installing micropiles, with appropriate manufacturer's literature for review. Include detailed description of the drilling equipment and methods proposed to be used to provide drillhole support and prevent detrimental ground movements.

4. Information on headroom and space requirements for installation equipment that verify the proposed equipment can perform at the site. Plan describing how surface water, drill flush, and excess waste grout will be controlled, contained, collected, and disposed of.

5. Certified mill test reports for the reinforcing steel and certified mill test reports or independent test reports for non-mill certified steel casing used in micropile installation. The ultimate strength, yield strength, elongation, and material properties composition shall be included.

6. Grouting Plan. The plan shall include complete descriptions, details, and supporting calculations for the following:

    a. Grout mix design and type of materials to be used in the grout including certified test data and trial batch reports.

b. Grouting equipment, including capacity and relation to the grouting demand and working conditions as well as provisions for back-up equipment and spare parts.

c. Types and sizes of grout hoses, connections, and grout delivery systems.

d. Methods and equipment for placing, positioning, and supporting the steel pipe casing and reinforcing bars. Centralizers and spacers shall permit the free flow of grout without misalignment of the reinforcing bar(s) and permanent casing.

e. Methods and equipment for accurately monitoring and recording the grout depth, grout volume and grout pressure as the grout is being placed. The Contractor shall estimate the grout take. There will be no extra payment for grout overruns.

f. Procedures and schedules for grout batching, mixing, and pumping including provisions for handling drilling fluid and for post grouting.

g. Grouting rate calculations, when requested by the Engineer. The calculations shall be based on the initial pump pressures or static head on the grout and losses throughout the placing system, including anticipated head of drilling fluid to be displaced.

h. Contingency procedures for handling blockage of ducts or equipment breakdowns.

i. Estimated curing time for grout to achieve specified strength. During production, grout shall be tested in accordance with the **Grout Testing** subsection of this Special Provision.

j. Procedure and equipment for Contractor monitoring of grout quality.

7. Detailed plans for the proposed micropile load testing method. This shall include all drawings, details, and structural design calculations necessary to describe the proposed test method, reaction load system capacity and equipment setup, types and accuracy of apparatus to be used for applying and measuring the test loads and micropile top movements in accordance with the **Micropile Load Tests** subsection of this Special Provision.

8. Calibration reports and data for each test jack, pressure gauge and master pressure gauge and electronic load cell to be used. The calibration tests shall have been performed by an independent testing laboratory within 90 calendar days of the date submitted.

9. Discussion of the Contractor's contingency plan if a verification load test or a proof load test fails.

Pre-construction Meeting

A pre-construction meeting will be scheduled by the Engineer and held prior to the start of micropile construction. The prime Contractor, micropile specialty Contractor, and excavation Contractor shall attend the meeting. The pre-construction meeting will be conducted to clarify the construction requirements for the work, to coordinate the construction schedule and activities, and to identify contractual relationships and delineation of responsibilities amongst the prime Contractor and the various Subcontractors - specifically those pertaining to excavation for micropile structures, anticipated subsurface conditions, micropile installation and testing, micropile structure survey control and site drainage control.

Site Drainage Control

The Contractor shall control and properly dispose of drill flush and construction related waste, including excess grout, in accordance with Section 1-07.5(3) as supplemented in these Special Provisions and all applicable local codes and regulations. The Contractor shall provide positive control and discharge of all surface water that will affect construction of the micropile installation. The Contractor shall maintain all pipes or conduits used to control surface water during construction. The Contractor shall repair damage caused by surface water in accordance with Section 1-07.13. Upon substantial completion of the work, the Contractor shall remove surface water control pipes or conduits from the site. Alternatively, with the approval of the Engineer, pipes or conduits that are left in place may be fully grouted and abandoned or left in a way that protects the structure and all adjacent facilities from migration of fines through the pipe or conduit and potential ground loss.

Excavation

The Contractor shall coordinate the work and the excavation so the micropile structures are safely constructed. The Contractor shall perform the micropile construction and related excavation in accordance with the Plans and approved submittals.

Micropile Allowable Construction Tolerances

The centerline of piling shall not be more than 3 inches from indicated plan location.

The pile-hole alignment of vertical micropiles shall be plumb within 2 percent of total-length plan alignment. The pile-hole alignment of micropiles inclined up to 1:6 shall be within 4-percent of plan alignment. The pile-hole alignment of micropiles inclined greater than 1:6 shall be within 7-percent of plan alignment.

The top elevation of micropile shall be ± 1 inch maximum from vertical elevation indicated.

The centerline of reinforcing steel shall not be more than 1/2 inch from indicated location.

Drilling

The drilling equipment and methods shall be suitable for drilling through the conditions to be encountered, without causing damage to any overlying or adjacent structures or services. The drill hole shall be open along its full length to at least the design minimum drill hole diameter prior to placing grout and reinforcement. Temporary casing or other approved method of micropile drill hole support will be required in caving or unstable ground to permit the micropile shaft to be formed to the minimum design drill hole diameter. The Contractor's proposed method(s) to provide drill hole support and to prevent ground movements shall have received the concurrence of the Engineer. Use of drilling fluid containing bentonite is not allowed.

Ground Heave or Subsidence

During construction, the Contractor shall observe the conditions in the vicinity of the micropile construction site on a daily basis for signs of ground heave or subsidence. The Contractor shall immediately notify the Engineer if signs of movements are observed. The Contractor shall immediately suspend or modify drilling or grouting operations if ground heave or subsidence is observed, if the micropile structure is adversely affected, or if adjacent structures are damaged from the drilling or grouting. If the Engineer determines that the movements require corrective action, the Contractor shall take corrective actions necessary to stop the movement or perform repairs.

When due to the Contractor's methods or operations or failure to follow the specified/approved construction sequence, the costs of providing corrective actions will be borne by the Contractor in accordance with Section 1-07.13.

Pipe Casing and Reinforcing Bars Placement and Splicing

Reinforcement may be placed either prior to grouting or placed into the grout-filled drill hole before temporary casing (if used) is withdrawn. Reinforcement surface shall be free of deleterious substances such as soil, mud, grease or oil. Micropile cages and reinforcement groups, if used, shall be sufficiently robust to withstand the installation and grouting process and the withdrawal of the drill casings without damage or disturbance. Grout shall provide one inch minimum cover over bare or epoxy coated bars (1/4-inch on bar couplers) or 1/2 inch minimum cover over the encapsulation of encapsulated bars.

The Contractor shall check micropile top elevations and adjust all installed micropiles to the planned elevations.

Permanent casing, if specified, shall be installed to the minimum tip elevations shown in the Plans.

Centralizers and spacers shall be provided at 10 feet centers maximum spacing. The upper and lower most centralizer shall be located a maximum of 5 feet from the top and bottom of the micropile. The central reinforcement bars with centralizers shall be lowered into the stabilized drill hole and set. The reinforcing steel shall be inserted into the drill hole to the desired depth. Bars shall not be driven or forced into the hole. The Contractor shall re-drill and reinsert reinforcing steel when necessary to facilitate insertion.

Lengths of casing and reinforcing bars to be spliced shall be secured in proper alignment and in a manner to avoid eccentricity or angle between the axes of the two lengths to be spliced. Splices and threaded joints shall meet the requirements of Section 6-05.2 as supplemented in these Special Provisions. Threaded pipe casing joints shall be located at least two casing diameters (OD) from a splice in any reinforcing bar. When multiple bars are used, bar splices shall be staggered at least one foot.

Grouting

Micropiles shall be primary grouted the same day the load transfer bond length is drilled. The Contractor shall complete the load transfer bond length drilling and primary grouting of a micropile before beginning work on another micropile in the same footing or pile cap.

Prior to grouting, the drill hole shall be flushed with water and/or air to remove drill cuttings.

The grouting equipment shall be colloidal mixers only and shall produce a grout free of lumps and undispersed cement. Contractor shall have means and methods of measuring the grout quantity and pumping pressure during the grouting operations. The grout pump shall be equipped with a pressure gauge to monitor grout pressures. A second pressure gauge shall be placed at the point of injection into the micropile top. The pressure gauges shall be capable of measuring pressures of 150 psi or twice the actual grout pressures used, whichever is greater. The grout shall be kept in agitation prior to mixing. Grout shall be placed within one hour of mixing. The grouting equipment shall be sized to enable each micropile to be grouted in one continuous operation.

The grout shall be injected from the lowest point of the drill hole and injection shall continue until uncontaminated grout flows from the top of the micropile. The grout may be pumped through grout tubes, casing, hollow-stem augers, or drill rods. Temporary casing, if used, shall be extracted in stages ensuring that after each length of casing is removed the grout level is brought back up to the ground level before the next length is removed. Additional grout shall be placed by the use of a tremie pipe at all times. The tremie pipe shall always extend below the level of the existing grout in the drill hole. The grout pressures and grout takes shall be controlled to prevent excessive heave or fracturing of rock or soil formations. Upon completion of grouting, the grout tube may remain in the hole, but must be filled with grout.

If the Contractor elects to use a postgrouting system, working drawings and details shall be submitted to the Engineer for review in accordance with the **Construction Submittals** subsection of this Special Provision.

Grout Testing

Grout within the micropile verification and proof test micropiles shall attain the minimum specified seven day design compressive strength prior to load testing. During placement of initial verification micropiles, proof test micropiles, and production micropiles, micropile grout will be sampled and tested by the Engineer for compressive strength in accordance with WSDOT Test Method 813 and AASHTO T 106 at a frequency of no less than one set of three 2 inch grout cubes from each grout plant each day of operation or per every 10 micropiles, whichever occurs more frequently. The compressive strength will be the average of the 3 cubes tested. The Contractor is responsible for sampling and testing additional grout cubes as necessary for early breaks prior to verification and proof testing.

If a compressive strength test fails, the Engineer may require the Contractor to proof test some or all of the production micropiles installed since the last grout batch that met the specified compressive strength.

Grout consistency, as measured by grout density, shall be tested by the Contractor just prior to the start of micropile grouting in accordance with API RP-13B-1 at a frequency of at least one test per micropile. For the grout to be approved for use, the specific gravity reported by the test shall be between 1.8 and 1.9. The Contractor's grout consistency test equipment shall be calibrated by an independent testing laboratory. The Contractor shall not use test equipment greater than 180-calendar days past the most recent calibration date, until such equipment is recalibrated by an independent testing laboratory.

Micropile Installation Records

The Contractor shall prepare and submit Type 1 Working Drawings consisting of full-length installation records for each micropile installed, including all grout volumes, pressures, and installation methods used. The records shall be submitted no later than the end of each work week and within 24 hours after all micropile installation is completed. The data shall be recorded in the micropile installation log. A separate log shall be provided for each micropile.

Micropile Load Tests

The Contractor shall perform verification and proof testing of micropiles at the locations specified in this Special Provision, the Plans or as otherwise specified by the Engineer. Tests shall be performed using a tension load test in accordance with ASTM D 3689 or a compression load test in accordance with ASTM D 1143, except as modified by this Special Provision.

Completed production micropiles may be used as part of the reaction frame for proof load testing. No reaction bearing elements of the load test frame for verification and proof load testing of micropiles shall bear on existing structure elements.

Verification Load Tests

The Contractor shall perform pre-production verification micropile testing to verify the design of the micropile system and the construction methods proposed prior to installing anyproduction micropiles. Sacrificial verification test micropiles shall be constructed in conformance with the Working Drawing submittal. Verification test micropiles shall be installed at the following locations:

*** $$2$$ ***

Verification load tests shall be performed to verify that the Contractor installed micropiles will meet the required compression and tension load capacities and load test acceptance criteria and to verify that the length of the micropile load transfer bond zone is adequate. The Contractor shall submit Type 2 Working Drawings consisting of the micropile verification load test results for the Engineer's acceptance prior to the installation of production micropiles.

The drilling-and-grouting method, casing length and outside diameter, reinforcing bar lengths, reinforcing bar size and strength, and depth of embedment for the verification test micropile(s) shall be identical to those specified for the production micropiles at the given locations. The verification test micropile structural steel sections shall be sized to safely resist the maximum test load.

The jack, bearing plates, and stressing anchorage shall be positioned at the beginning of the test such that unloading and repositioning during the test will not be required.

Testing Equipment and Data Recording

Testing equipment shall include dial gauges, dial gauge support, jack and pressure gauge, electronic load cell, and a reaction frame. The load cell is required only for the creep test portion of the verification test. The Contractor shall provide a description of test setup and jack, pressure gauge and load cell calibration curves in accordance with the **Working Drawings** subsection of this Special Provision. Additionally, the Contractor shall not use test jacks, pressure gauges and master pressure gauges, and electronic load cells greater than 90 calendar days past their most recent calibration date, until such items are recalibrated by an independent testing laboratory.

The Contractor shall design the testing reaction frame to be sufficiently rigid and of adequate dimensions such that excessive deformation of the testing equipment does not occur.

The Contractor shall apply and measure the test load with a hydraulic jack and pressure gauge. The pressure gauge shall be graduated in 75 psi increments or less. The jack and pressure gauge shall have a pressure range of no more than twice the anticipated maximum test pressure. Jack ram travel shall be sufficient to allow the test to be done without resetting the equipment. The Contractor shall monitor the creep test load hold during verification tests with both the pressure gauge and the electronic load cell. The Contractor shall use the load cell to accurately maintain a constant load hold during the creep test load hold increment of the verification test.

The Contractor shall measure the micropile top movement with a dial gauge capable of measuring to 1 mil (0.001 inch). The dial gauge shall have a travel sufficient to allow the test to be done without having to reset the gauge. The Contractor shall visually align the gauge to be parallel with the axis of the micropile and support the gauge independently from the jack, micropile or reaction frame. The Contractor shall use two dial gauges when the test setup requires reaction against the ground or single reaction micropiles on each side of the test micropile.

The required load test data shall be recorded by the Contractor.

Verification Test Loading Schedule

The Contractor shall test the verification micropiles to a maximum test load of 1.5 times the micropile Factored Design Load shown in the Plans. The verification micropile load tests shall be made by incrementally loading the micropile in accordance with the following cyclic load schedule:

AL = Alignment Load FDL = Factored Design Load

LOAD	HOLD TIME
AL	1 minute
0.075 FDL	4 minutes
0.150 FDL	4 minutes
0.225 FDL	4 minutes

0.300 FDL	4 minutes
0.375 FDL	4 minutes
AL	1 minute
0.150 FDL	1 minute
0.300 FDL	1 minute
0.375 FDL	1 minute
0.450 FDL	4 minutes
0.525 FDL	4 minutes
0.600 FDL	4 minutes
0.675 FDL	4 minutes
0.750 FDL	4 minutes
AL	1 minute
0.300 FDL	1 minute
0.600 FDL	1 minute
0.675 FDL	1 minute
0.750 FDL	1 minute
0.825 FDL	4 minutes
0.900 FDL	4 minutes
1.00 FDL	60 minutes (Creep Test Load Hold)
AL	1 minute
0.300 FDL	1 minute
0.600 FDL	1 minute
0.900 FDL	1 minute
0.975 FDL	4 minutes
1.050 FDL	4 minutes
1.125 FDL	4 minutes
1.200 FDL	4 minutes
1.275 FDL	4 minutes
1.350 FDL	4 minutes
1.425 FDL	4 minutes
1.500 FDL	4 minutes (Maximum Test Load)
1.200 FDL	4 minutes
0.900 FDL	4 minutes
0.600 FDL	4 minutes
0.300 FDL	4 minutes
AL	15 minutes

After the hold time at each load, Micropile top movement shall be measured and recorded. The verification test micropile shall be monitored for creep at the 1.000 Factored Design Load (FDL). Micropile movement during the creep test shall be measured and recorded at 1, 2, 3, 4, 5, 6, 10, 20, 30, 50, and 60 minutes. The alignment load shall not exceed 5 percent of the FDL load. Dial gauges shall be reset to zero after the initial AL is applied.

The acceptance criteria for micropile verification load tests are:

1. The micropile shall sustain the first 1.000 FDL test load with no more than the following total vertical movement at the top of the micropile, relative to the position of the top of the micropile prior to testing.

*** $$3$$ ***

2. At the end of the 1.000 FDL creep test load increment, test micropiles shall have a creep rate not exceeding 0.040 inch/log cycle time (1 to 10 minutes) or 0.080 inch/log cycle time (6 to 60 minutes). The creep rate shall be linear or decreasing throughout the creep load hold period.

3. Failure does not occur at the maximum test load of 1.005 FDL. Failure is defined as a slope of the load versus deflection curve (at end of increment) exceeding 0.025 inches/kips or at which attempts to further increase the test load simply result in continued micropile movement.

The Engineer will provide the Contractor written acceptance or rejection of the verification load tests within five working days.

Verification Test Micropile Rejection
If a verification tested micropile fails to meet the acceptance criteria, the Contractor shall modify the design, the construction procedure, or both, and shall perform another verification test incorporating the revisions. These modifications may include modifying the installation methods, increasing the bond length, or changing the micropile type. Any modification that necessitates changes to the structure will require the Engineer's review and acceptance. Any modifications of design or construction procedures or cost of additional verification test micropiles and load testing shall be at no additional expense to the Contracting Agency. At the completion of verification testing, test micropiles shall be removed down to an elevation two feet below finished ground line, except as otherwise specified in the Plans or by the Engineer.

Proof Load Tests
The Contractor shall proof load test the specified number of production micropiles at locations specified by the Engineer. Additional proof tests will be required if modifications are made in the micropile installation methods subsequent to the first production micropile, or if any of the proof tests fail.

Proof Test Loading Schedule
Proof tests shall be conducted by incrementally loading the micropile in accordance with the following schedule:

AL = Alignment Load FDL = Factored Design Load

LOAD	HOLD TIME
AL	1 minute
0.10 FDL	4 minutes
0.20 FDL	4 minutes
0.30 FDL	4 minutes
0.40 FDL	4 minutes
0.50 FDL	4 minutes
0.60 FDL	4 minutes
0.70 FDL	4 minutes
0.80 FDL	4 minutes
0.90 FDL	4 minutes
1.00 FDL	10 or 60 minutes

	(Creep Test)
0.75 FDL	4 minutes
0.50 FDL	4 minutes
0.25 FDL	4 minutes
AL	4 minutes

Depending on performance, either a 10 minute or 60 minute creep test shall be performed at the maximum test load of 1.0067 FDL. Where the micropile top movement between 1 and 10 minutes exceeds 0.040 inch, the maximum test load shall be maintained an additional 50 minutes. Movements shall be recorded at 1, 2, 3, 5, 6, 10, 20, 30, 50 and 60 minutes. The alignment load shall not exceed 5 percent of FDL. Dial gauges shall be reset to zero after the initial AL is applied.

The acceptance criteria for micropile proof load tests are:

1. The micropile shall sustain the maximum test load of 1.00 FDL with no more than the following total vertical movement at the top of the micropile, relative to the position of the top of the micropile prior to testing.

*** $$4$$ ***

2. At the end of the 1.00 FDL creep test load increment, test micropiles shall have a creep rate not exceeding 0.040 inch/log cycle time (1 to 10 minutes) or 0.080 inch/log cycle time (6 to 60 minutes). The creep rate shall be linear or decreasing throughout the creep load hold period.

Proof Test Micropile Rejection
If a proof-tested micropile fails to meet the acceptance criteria, the Contractor shall proof test another micropile as selected by the Engineer. For failed micropiles the Contractor shall submit a Type 2 Working Drawing consisting of a repair procedure. For further construction of subsequent micropiles, the Contractor shall modify the design, the construction procedure, or both. These modifications may include installing replacement micropiles, incorporating failed micropiles at not more than 50 percent of the maximum load attained, post grouting, modifying installation methods, increasing the bond length, or changing the micropile type. Any modification that necessitates changes to the structure design will require the Engineer's review and acceptance.

6-05.3(5).GR6
Manufacture of Steel Piles

6-05.3(5).INST1.GR6
Section 6-05.3(5) is supplemented with the following:

6-05.3(5).OPT1.GB6
(April 6, 2015)
Furnishing St. Piling
Welding for steel pipe piling shall conform to AWS D1.1/D1.1M, latest edition, Structural Welding Code, except that all weld filler metal shall be low hydrogen material selected from Table 4.1 in AASHTO/AWS D1.5M/D1.5:2010 Bridge Welding Code.

Welding and joint geometry for the seam, whether it be longitudinal or helical, shall be qualified in accordance with Clause 4, Qualification, of the AWS D1.1/D1.1M, latest edition, Structural Welding Code. In addition, charpy V-notch (CVN) testing in accordance with Clause 4, Part D, of the AWS D1.1/D1.1M, latest edition, Structural Welding Code, shall be performed. CVN testing shall include five tests at 0°F. The acceptance threshold for the five samples shall meet an average value of 20-foot-pounds CVN for the set of test coupons and a minimum value of 15-foot-pounds CVN for any individual test coupon. The Contractor may submit documentation of prior qualification to the Engineer to satisfy this requirement.

Dimensional tolerances shall conform to the material specification that the steel pipe piling is manufactured under, and, at a minimum, the following requirements:

1. Out-of-roundness shall be within 1-percent of the nominal outside diameter.

2. Deviation from a straight line, parallel to the centerline of the pile, shall not exceed 0.001 times the length of the pile.

3. The maximum radial offset of the strip/plate edges shall be 1/8-inch. The offset shall be transitioned with a taper weld and the slope shall not be less than a 1 in 2.5 taper.

4. The bead height of weld reinforcement shall not exceed 3/16-inch.

5. Misalignment of weld beads for double-sided welded pipe shall not exceed 1/8-inch.

6. The wall thickness shall not be less than 95-percent or greater than 110-percent of the specified nominal thickness.

All seams and skelp splices shall be complete penetration welds. Skelp splices in spiral welded (helical seam) pipe shall not be located within 12 inches of a girth shop or field weld.

All skelp splices shall be 100 percent radiographically or ultrasonically inspected in accordance with either API 5L Annex E Section E.4 or E.5, or Table 6.2 and Clause 6 Part E, F or G in AWS D1.1/D1.1M, latest edition, Structural Welding Code. Additionally, 10-percent of the total length of seam welds for both longitudinal and helical welded pipe, and one pipe diameter length of seam centered on any skelp splice intersection, shall be randomly inspected as specified above. If repairs are required in more than 10-percent of the welds examined, additional inspection shall be performed. The additional inspection shall be made on both sides of the repair for a length equal to 10-percent of the length of the pipe outside circumference. If repairs are required in more than 10-percent of welds examined in the second sample, 100-percent of the entire seam on the pile shall be inspected.

All seams and splices shall be 100 percent visually inspected in accordance with the acceptance criteria for statically loaded non-tubular connections in Table 6.1 of the AWS D1.1/D1.1M, latest edition, Structural Welding Code. Repairs shall conform to Section 5.26 of the AWS D1.1/D1.1M, latest edition, Structural Welding Code, using approved repair and weld procedures.

Each length of steel pipe pile shall be marked with paint stencil, no closer than six inches to the end of the pipe, with the name of the manufacturer, material specification and grade of pipe, steel heat number, nominal pipe diameter, and wall thickness.

6-05.3(6).GR6
Splicing Steel Casings and Steel Piles

6-05.3(6).INST1.GR6
Section 6-05.3(6) is supplemented with the following:

6-05.3(6).OPT1.GB6
(April 6, 2015)
Furnishing St. Piling
Welding for steel pipe piling shall conform to AWS D1.1/D1.1M, latest edition, Structural Welding Code, except that all weld filler metal shall be low hydrogen material selected from Table 4.1 in AASHTO/AWS D1.5M/D1.5:2010 Bridge Welding Code.

Welding and joint geometry for splices shall be qualified in accordance with Clause 4, Qualification, of the AWS D1.1/D1.1M, latest edition, Structural Welding Code. In addition, charpy V-notch (CVN) testing in accordance with Clause 4, Part D, of the AWS D1.1/D1.1M, latest edition, Structural Welding Code, shall be performed. CVN testing shall include five tests at 0°F. The acceptance threshold for the five samples shall meet an average value of 20-foot-pounds CVN for the set of test coupons and a minimum value of 15-foot-pounds CVN for any individual test coupon. The Contractor may submit documentation of prior qualification to the Engineer to satisfy this requirement.

Ends of steel pipe piling shall be prepared for splicing in accordance with AWS D1.1/D1.1M, latest edition, Structural Welding Code.

All splices shall be complete penetration groove welds using continuous backing rings of 1/4 inch minimum thickness. Tack welds shall be located in the root of the complete penetration groove weld.

Shop splices shall be 100 percent visually and ultrasonically inspected in accordance with the acceptance criteria for statically loaded non-tubular connections in Table 6.1 and the acceptance criteria in Table 6.2 in AWS D1.1/D1.1M, latest edition, Structural Welding Code. Repairs for shop and field splices shall conform to Section 5.26 of AWS D1.1/D1.1M, latest edition, Structural Welding Code, using approved repair and weld procedures.

Field splice welds and welders shall be further qualified, tested and inspected as follows:

1. Welder qualification shall be performed on sample full girth sections of steel pipe pile to be used, in the same position and using the same weld joint as for production pile splicing. At the Contractor's option, these tests may be performed on the test piles during test pile installation.

2. Weld qualification tests shall be conducted in the presence of the Contractor's CWI and a representative of the Contracting Agency.

3. Field welded test joints for welder qualification shall be inspected as specified above for shop splices.

4. Production pile field splices shall be inspected as specified above for shop splices, within the limits designated for UT inspection as shown in the Plans. All welds shall be 100 percent visually inspected. The Engineer and the Contractor's CWI reserve the right to request UT inspection of splices in any pile location.

Quality control for field welding shall be conducted by an AWS Certified Welding Inspector (CWI). The Contractor shall not begin pile splicing operations until receiving the CWI's approval of the joint fit-up. The CWI shall inspect 100 percent of all field welds in accordance with the criteria and requirements specified above. All field splices shall have received the CWI's approval prior to Engineer acceptance.

The CWI shall prepare a Type 1 Working Drawing documenting the results of the nondestructive quality control inspection of all field welds, and shall submit the report to the Engineer within five working days of the completion of the final pile splice in the project or as otherwise requested by the Engineer.

6-05.3(10).GR6
Test Piles

6-05.3(10).INST1.GR6
Section 6-05.3(10) is supplemented with the following:

6-05.3(10).OPT1.FB6
(March 6, 2000)
The Contractor shall furnish and drive *** $$1$$ *** test piles at the following locations or at locations designated by the Engineer:

*** $$2$$ ***

The *** $$3$$ *** test piles shall be driven in the location of permanent piles and the number of permanent *** $$4$$ *** piles required for this project has been reduced by the appropriate number.

6-05.3(11).GR6
Driving Piles

6-05.3(11)D.GR6
Achieving Minimum Tip Elevation and Bearing

6-05.3(11)D.INST1.GR6
Section 6-05.3(11)D is supplemented with the following:

6-05.3(11)D.OPT1.FB6
(March 6, 2000)
The *** $$1$$ *** piling shall be driven to at least the following tip elevation:

*** $$2$$ ***

6-05.3(11)D.OPT2.GB6
(March 6, 2000)
The areas where piles are to be driven are adjacent to highly developed areas. It is essential that vibration and noise resulting from pile driving be held to a minimum. Unless otherwise approved by the Engineer, pile driving shall be done during regular daytime working hours. The Contractor shall select pile driving equipment which will minimize noise and vibration. When, in the opinion of the Engineer, noise or vibration are excessive, the Contractor will be required to use a hammer that does not exceed the minimum specifications by more than 10 percent for the type and capacity of piling being driven. If pre-boring, jetting, or other special methods are not specified elsewhere in the contract and are ordered by the Engineer to reduce noise or vibration, such change in method shall be considered a change, subject to the terms of Section 1-04.4.

6-05.3(11)D.OPT3.FB6
(March 6, 2000)
The *** $$1$$ *** piles *** $$2$$ *** shall be placed in prebored holes drilled to elevation ***$$3$$***.

The holes shall be of adequate diameter to isolate the pile from skin friction. The hole around the pile due to oversize boring shall be filled with dry sand or pea gravel as approved by the Engineer after the pile is placed.

6-05.3(11)D.OPT4.FB6
(March 6, 2000)
The *** $$1$$ *** piles ***$$2$$*** shall be prebored to elevation *** $$3$$ ***.

The diameter of the preboring shall be adjusted to provide for full contact between the pile casing and the surrounding soil without shattering the soil formation. It is estimated that the required diameter for preboring will be approximately 1 inch less than the pile diameter; however, the diameter shall be adjusted by the Contractor as directed by the Engineer to accomplish the results described above. Jetting will not be permitted. The Contractor shall follow preboring immediately with the placing of the pile casing to prevent sloughing into the excavated hole.

6-05.3(11)D.OPT9.FB6
(April 6, 2015)
The Contractor is advised that overdriving is anticipated for piles driven at the following location(s):

Approx. Magnitude of Overdriving Anticipated to Reach

Location(s)	Minimum Tip Elev.
*** $$1$$ ***	*** $$2$$ ***

The Contractor shall size the hammer and pile to accommodate overdriving of this magnitude without premature refusal or pile damage.

6-05.4.GR6
Measurement

6-05.4.INST1.GR6
Section 6-05.4 is supplemented with the following:

6-05.4.OPT1.FB6
(March 6, 2000)
Measurement for preboring for *** $$1$$ *** pile will be per linear foot of hole drilled.

6-05.4.OPT6.GB6
(April 6, 2015)
Micropiles will be measured per each, for each micropile installed and accepted.

Micropile verification load testing will be measured per each for each successfully completed and accepted micropile verification load test.

Micropile proof load testing will be measured per each for each successfully completed and accepted micropile proof load test.

6-05.5.GR6
Payment

6-05.5.INST1.GR6
Section 6-05.5 is supplemented with the following:

6-05.5.OPT1.FB6
(March 6, 2000)
“Preboring For ***$$1$$*** Pile”, per linear foot.

The unit contract price per linear foot for “Preboring For ***$$2$$*** Pile” shall be full pay for performing the work as specified, including removal and disposal of excavated soils from preboring, and backfilling.

6-05.5.OPT6.GB6
(April 6, 2015)
“Micropile”, per each.
The unit contract price per each for "Micropile" shall be full pay for performing the Work as specified.

“Micropile Verification Load Testing”, per each.
“Micropile Proof Load Testing”, per each.
The unit contract price per each for “Micropile Verification Load Testing” and “Micropile Proof Load Testing” shall be full pay for performing the Work as specified.

6-06.GR6
Bridge Railings

6-06.2.GR6
Materials

6-06.2.INST1.GR6
Section 6-06.2 is supplemented with the following:

6-06.2.OPT1.GB6
(January 5, 2004)
Chain link fence fabric shall conform to the Section 9-16.1(1)B requirements for Type 1 fence.

Fittings, fabric bands, stretcher bars, tie wire, and other fence hardware, shall conform to Section 9-16.1.

Pipe for posts and longitudinal members shall conform to ASTM A 53, Grade B, Type E or S, galvanized, and shall be Schedule 40 unless otherwise shown in the Plans.

Steel bars, plates, and shapes shall conform to ASTM A 36, and shall be galvanized in accordance with AASHTO M 111, except that structural shapes may conform to ASTM A 992.

Bolts, nuts, and washers shall conform to Section 9-06.5(3), and shall be galvanized after fabrication in accordance with AASHTO M 232.

Resin bonded anchors shall conform to Section 6-02.2 as supplemented in these Special Provisions.

6-06.2.OPT2.GB6
(March 6, 2000)
Epoxy resin shall conform to Section 9-26.1.

6-06.2.OPT7.GB6
(April 6, 2015)
Tamper Proof Nuts for steel Bridge Railing Type BP
Tamper proof nuts for steel Bridge Railing Type BP shall be one of the following products from one of the following manufacturers:

Vandlgard-Nut VCN151-6 (zinc)

Manufactured by	Local Supplier
Simi Fastening Systems	Northwest Fasteners Inc.
4615 Industrial St. Bldg. No. 1-P	15127 Washington Avenue SW
Simi Valley, CA 93063	Lakewood, WA 98498
(800) 959-8256	(253) 582-1671
FAX (805) 581-9162	FAX (253) 581-3131
www.simifast.com	

Trigroove Nut ZTRN37C (Zamak 5 zinc alloy AC41A)
Breakaway Nut ZNB37C (Zamak 5 zinc alloy AC41A)

Manufactured by	Local Supplier

Screw & Supply Inc.
1712 Church Street
Holbrook, NY 11741
(800) 223-1316
FAX (631) 567-3057
www.screwsupply.com

Tacoma Screw Products Inc.
2001 Center Street
Tacoma, WA 98409
(800) 562-8192
FAX (253) 272-2719

Spanner Nut 1N.386 (zinc alloy)
Manufactured by
TamperProof Screw Company Inc.
30 Laurel Street
Hicksville, NY 11801
(516) 931-1616
FAX (516) 931-1654
www.tamperproof.com

Trident Tamper Resistant Nut 37CNTNZ (Zamak 5 zinc alloy AC41A)
Breakaway Nut 37CNBAWZ (Zamak 5 zinc alloy AC41A)
Breakaway Nut 37CNBAWS (stainless steel alloy 304)
Manufactured by
Tanner Bolt & Nut Company
4302 Glenwood Road
Brooklyn, NY 11210
(800) 456-2658
FAX (888) 434-3215
www.tannerbolt.com

6-06.2.OPT8.FB6
(April 6, 2015)
Bridge Railing Type Snow Fence and Bridge Railing Type Wire Fabric Fence

Wire fabric shall be 6.5 gage diameter, 2 inch square wire mesh conforming to ASTM F 2453 Type 2 and galvanized after fabrication in accordance with AASHTO M 111.

HSS tubes shall conform to ASTM A 500, Grade B.

Steel bars, plates, and shapes shall conform to either ASTM A 36 or ASTM A 992.

HSS tube caps shall conform to ASTM A 53 Grade B Type E or S, or may be fabricated from material conforming to ASTM A 36.

HSS tubes, HSS tube caps, and steel bars, plates, and shapes, shall be galvanized after fabrication in accordance with AASHTO M 111.

Bolts, anchor bolts, threaded welded studs, nuts, and washers shall conform to Section 9-06.5(3), and shall be galvanized after fabrication in accordance with AASHTO M 232.

Hex head bolts shall conform to ASTM F 593, Type 304. Nuts shall conform to ASTM F 594, Type 304. Washers shall conform to ASTM A 240 Type 304 stainless steel and the geometric requirements of ASME B18.22.1.

Resin bonded anchors shall conform to Section 6-02.2 as supplemented in these Special Provisions.

Thread locking agent shall be an anaerobic single-component adhesive conforming to ASTM D 5363 Group 2 Class 1 Grade 1.

All tubes, pipes, bars, plates, shapes, wire fabric, and hardware, shall be shop painted or powder coated after galvanizing in accordance with Section 6-07.3(11). The color of the finish coat, when dry, shall match the color *** $$1$$ ***.

6-06.3.GR6
Construction Requirements

6-06.3(2).GR6
Metal Railings

6-06.3(2).INST1.GR6
Section 6-06.3(2) is supplemented with the following:

6-06.3(2).OPT1.GB6
(March 6, 2000)
Bridge Railing Type Chain Link Fence
The Contractor shall install anchor bolts for each post anchorage as shown in the Plans. Alternatively, the Contractor may install resin bonded anchors at each post anchorage, in accordance with Section 6-02 as supplemented in these Special Provisions.

Longitudinal members shall be connected to the steel posts as shown in the Plans.

The Contractor shall install the chain link fence fabric in accordance with Section 8-12.3(1)D, except as otherwise noted. The chain link fence fabric shall be fastened to the posts and longitudinal members at a maximum spacing of 14 inches.

6-06.3(2).OPT2.GB6
(March 6, 2000)
Bridge Railing Type Chain Link Fence
The post blockouts shall be formed with a steel sleeve of the diameter and thickness specified in the Plans. The steel sleeve shall be galvanized after fabrication in accordance with AASHTO M 111. The Contractor shall fill the bottom portion of the railing post with expanded polystyrene as shown in the Plans.

The Contractor shall install the steel posts in the post blockouts as shown in the Plans. The posts shall be installed vertically, set in position with epoxy resin, and braced to maintain the vertical position until the epoxy resin hardens.

Longitudinal members shall be connected to the steel posts as shown in the Plans.

The Contractor shall install the chain link fence fabric in accordance with Section 8-12.3(1)D, except as otherwise noted. The chain link fence fabric shall be fastened to the posts and longitudinal members at a maximum spacing of 14 inches.

6-06.3(2).OPT7.GB6
(April 6, 2015)
Bridge Railing Type Snow Fence and Bridge Railing Type Wire Fabric Fence
The railing shall be fabricated and installed in accordance with the shop drawings. The railing panels shall be installed level, and the railing posts shall be installed plumb.

The Contractor shall install anchor bolts for each post anchorage as shown in the Plans. Alternatively, the Contractor may install resin bonded anchors at each post anchorage, in accordance with Section 6-02.3(18) as supplemented in these Special Provisions.

Just prior to fastening the railing panels to the posts, the Contractor shall fully coat the threads of the hex head bolt with thread locking agent. The Contractor shall complete the connection by snug-tightening the nut while preventing the head from turning. “Snug-tightening” in this application is defined as the full effort of a person using a hand tool to turn the nut while the head is restrained.

After completing erection, the Contractor shall repair all metal surfaces with damaged paint or powder coatings and exposed metal with a field repair coating in accordance with Section 6-07.3(9)I and Section 6-07.3(11)A (for paint) or Section 6-07.3(11)B (for powder coating). The color of the finish coat of the field repair coating, when dry, shall match the color specified in Section 6-06.2 as supplemented in these Special Provisions.

6-06.5.GR6
Payment

6-06.5.INST1.GR6
Section 6-06.5 is supplemented with the following:

6-06.5.OPT1.FB6
(March 6, 2000)
All costs in connection with constructing Bridge Railing Type *** $$1$$ *** shall be included in the *** $$2$$ ***.

6-07.GR6
Painting

6-07.1.GR6
Description

6-07.1.INST1.GR6
Section 6-07.1 is supplemented with the following:

6-07.1.OPT1.FB6
(August 3, 2009)
This work shall consist of cleaning and painting all exposed metal surfaces of Bridge No(s). *** $$1$$ ***, in accordance with Section 6-07.3(10), except as otherwise noted below.

Portions of the structure(s) excluded from this work include:

*** $$2$$ ***

6-07.1.OPT2.FB6
(August 3, 2009)
This work shall consist of cleaning and painting the exposed timber surfaces of Bridge No(s). *** $$1$$ ***, in accordance with Section 6-07.3(13) as supplemented in these Special Provisions and as specified below:

*** $$2$$ ***

6-07.3.GR6
Construction Requirements

6-07.3(10).GR6
Painting Existing Steel Structures

6-07.3(10).INST1.GR6
Section 6-07.3(10) is supplemented with the following:

6-07.3(10).OPT1.FB6
(August 3, 2009)
The Contractor *** $$1$$ *** paint the existing utility company conduits attached to the structure, such as sewer, water, gas and telephone. The Contractor shall protect the utilities from damage due to operations on the bridges.

6-07.3(10).OPT2.GB6
(August 3, 2009)
Light fixtures and lenses, including navigation, aircraft, flag pole luminaire, and luminaire light fixtures and lenses, shall not be painted and shall be kept clean from paint. The Contractor shall remove all paint from the light fixtures and lenses due to the painting operation.

6-07.3(10).OPT3.GB6

(August 3, 2009)

A portion of the work involved in this project is located over or near railroad facilities. The Contractor shall exercise great care in all operations in order that no interruptions or damage will occur to the railroad trains or facilities. The Contractor shall contact the Railroad Company regarding the times and the conditions under which cleaning and painting work over or adjacent to railroad tracks may be accomplished.

6-07.3(10).OPT4.GB6

(August 3, 2009)

In the cleaning operation, particular attention shall be paid to cleaning the grid deck. Any means approved by the Engineer, in addition to flushing, as required to clean dirt, oil and grease from the grid surfaces in accordance with SSPC-SP 1 shall be used.

6-07.3(10)A.GR6

Containment

6-07.3(10)A.INST1.GR6

Section 6-07.3(10)A is supplemented with the following:

6-07.3(10)A.OPT1.GB6

(August 3, 2009)

The Contractor shall adequately protect all gears, machinery, mechanical equipment, electrical equipment, navigation and clearance light lenses, motors, sheaves and cables and all other equipment which might become damaged by and during the cleaning and painting operations. Should the Contractor's operation foul or otherwise contaminate the lubricated surfaces, the Contractor shall, if directed by the Engineer, clean and relubricate the surfaces at the Contractor's expense.

6-07.3(10)D.GR6

Surface Preparation Prior to Overcoat Painting

6-07.3(10)D.INST1.GR6

Section 6-07.3(10)D is supplemented with the following:

6-07.3(10)D.OPT1.FB6

(April 6, 2015~~5, 2010~~)

The following steel surfaces of Bridge No(s). *** $$1$$ *** shall receive surface preparation in accordance with SSPC SP1 followed by cleaning ~~with compressed air conforming to ASTM D 4285 only~~in accordance with this Section:

*** $$2$$ ***

6-07.3(10)E.GR6

Surface Preparation - Full Paint Removal

6-07.3(10)E.INST1.GR6

Section 6-07.3(10)E is supplemented with the following:

6-07.3(10)E.OPT1.FB6

(April 5, 2010)

The following steel surfaces of Bridge No(s). *** $$1$$ *** shall receive full paint removal surface preparation in accordance with this Section:

*** $$2$$ ***

6-07.3(10)I.GR6

Paint Color

6-07.3(10)I.INST1.GR6

Section 6-07.3(10)I is supplemented with the following:

6-07.3(10)I.OPT1.FB6

(August 3, 2009)

The color of the top coat, when dry, shall match *** $$1$$ ***.

6-07.3(10)N.GR6

Field Coating Application Methods

6-07.3(10)N.INST1.GR6

Section 6-07.3(10)N is supplemented with the following:

6-07.3(10)N.OPT1.GB6

(August 3, 2009)

Spray painting will be permitted for the application of paint to the surfaces of the steel grid roadway decking and steel grid catwalks, provided every precaution or means necessary to prevent any damage due to spraying operations or from wind borne paint is taken, provided further that if satisfactory results are not, in the opinion of the Engineer, obtained with the spraying application, the Contractor shall revert to the use of brushes. In the event spray painting is used on the steel grid roadway decking, the application shall be made only from the underside of the roadway, and then only at such times as traffic has been diverted to other lanes. A protective covering shall be placed immediately over areas of the roadway decking being spray painted to prevent damage from wind borne paint.

6-07.3(11).GR6

Painting or Powder Coating of Galvanized Surfaces

6-07.3(11).INST1.GR6

Section 6-07.3(11) is supplemented with the following:

6-07.3(11).OPT1.FB6

(August 3, 2009)

The color of the finish coat, when dry, shall match *** $$1$$ ***

6-09.GR6
Modified Concrete Overlays

6-09.2.GR6
Materials

6-09.2.INST1.GR6
Section 6-09.2 is supplemented with the following:

6-09.2.OPT7.BSP.GB6
(BSP September 9, 2002)
Special Materials for Rapid Set Latex Modified Concrete
Cement shall be Rapid Set Cement as manufactured by CTS Cement Manufacturing Company of Cypress, CA at (800) 929-3030. The material shall be of recent manufacture (within the past 12 months) and shall be free of lumps.

Latex admixture shall be DOW Modifier A as manufactured by DOW Chemical Company of Midland, MI at (800) 447-4369, conforming to the material properties specified in Section 6-09.2 for latex admixture.

Food grade citric acid may be used as a retarder admixture.

6-09.2.OPT8.BSP.GB6
(BSP June 18, 2012)
Materials for Polyester Concrete
Polyester Resin Binder
The resin shall be an unsaturated isophthalic polyester-styrene co-polymer.

Prior to adding the initiator, the resin shall conform to the following requirements:

Viscosity:	75 to 200 cps (20 rpm at 77F, RVT No. 1 spindle)	ASTM D 2196
Specific Gravity:	1.05 to 1.10 at 77F	ASTM D 1475
Styrene Content:	45% to 50% by weight of polyester styrene resin	ASTM D2369

After adding the initiator, the resin shall conform to the following requirements:

Elongation:	35% minimum w/ thickness 0.25" ± 0.04"	ASTM D 638
Tensile Strength:	2,500 psi minimum w/ thickness 0.25" ± 0.04"	ASTM D 638
Conditioning	18 hours/77F/50% + 5 hours/158F	ASTM D 618
Silane Coupler:	1.0% minimum (by weight of polyester-styrene resin)	

The silane coupler shall be an organosilane ester, gammamethacryloxypropyltrimethoxysilane. The promoter/hardeners shall be compatible with suitable methyl ethyl ketone peroxide (MEKP) and cumene hydroperoxide (CHP) initiators. MEKP initiators shall be used when the surrounding concrete temperatures are above 60F. A blend of initiators may be used as approved by the Engineer when the surrounding concrete temperature is 50F to 60F.

Polyester resin binder will be accepted based on submittal to the Engineer of a Manufacturer's Certificate of Compliance conforming to Section 1-06.3.

High Molecular Weight Methacrylate (HMWM) Resin
In addition to the viscosity and density properties, and the promoter/initiator system, already specified in this Section, the HMWM resin for polyester concrete overlays shall conform to the following requirements:

Flash Point:	180F minimum	ASTM D 3278
Tack-Free Time:	400 minutes maximum	California Test 551

Prior to adding initiator, the HMWM resin shall have a maximum volatile content of 30 percent, when tested in conformance with ASTM D 2369.

HMWM resin will be accepted based on submittal to the Engineer of a Manufacturer's Certificate of Compliance conforming to Section 1-06.3.

Aggregate
The aggregate shall be from a WSDOT approved pit site and shall be thoroughly washed and kiln dried.

The aggregate shall conform to Section 9-03, and one of the following combined aggregate gradings:

<u>Combined Aggregate</u>

Sieve Size	1/2" Max. % Passing	3/8" Max. % Passing
1/2"	100	100
3/8"	83-100	100
U.S. No. 4	65-82	62-85
U.S. No. 8	45-64	45-67
U.S. No. 16	27-48	29-50
U.S. No. 30	12-30	16-36
U.S. No. 50	6-17	5-20
U.S. No. 100	0-7	0-7
U.S. No. 200	0-3	0-3

The combined aggregate shall have a maximum of 45 percent crushed particles. Fine aggregate shall consist of natural sand only.

Aggregate absorption shall not exceed 1.0 percent. The moisture content of the aggregate shall not exceed one half of the aggregate absorption at the time of mixing with the polyester resin binder. The aggregate temperature shall be between 45F and 100F at the time of mixing.

Sand for Abrasive Finish
The sand for abrasive finish shall conform to Section 6-09.2, and the aggregate moisture content requirements specified above.

6-09.3.GR6
Construction Requirements

6-09.3(1).GR6
Equipment

6-09.3(1).INST1.GR6
Section 6-09.3(1) is supplemented with the following:

6-09.3(1).OPT1.BSP.GB6
(BSP December 2, 2002)
Mobile Mixer for Polyester Concrete
The mixer shall be equipped to be calibrated to automatically proportion and blend all components of the specified mix on a continuous or intermittent basis as required by the finishing operation, and shall discharge mixed material directly into the finishing machine.

The mixer shall be equipped with a metering device that automatically measures and records the aggregate volumes and the corresponding resin volumes. The metering device shall have a readout display gage visible at all times, and shall be capable of printing out the volumes being recorded for each material.

The aggregate and resin volumes shall be recorded at no greater than five minute intervals along with the date of each recording. A printout of the recordings shall be furnished to the Engineer at the end of each work shift.

The Contractor shall prevent any cleaning chemicals from reaching the polyester mix during the overlay applications.

6-09.3(1)H.GR1
Mobile Mixer for Latex Modified Concrete

6-09.3(1)H.INST1.GR6
Section 6-09.3(1)H is supplemented with the following:

6-09.3(1)H.OPT1.BSP.GB6
(BSP September 9, 2002)
The capacity of the mobile mixer and bulk material handling systems for rapid set latex modified concrete shall be six cubic yards per hour, minimum.

6-09.3(2).GR6
Submittals

6-09.3(2).INST1.GR6
Section 6-09.3(2) is supplemented with the following:

6-09.3(2).OPT1.BSP.GB6
(BSP April 7, 2008)
Submittals for Polyester Concrete

The Contractor shall submit the following items to the Engineer for approval in accordance with Section 6-01.9:

1. The type of shot blasting machine selected by the Contractor for use in this project to scarify concrete surfaces.

2. The method and materials used to contain, collect, and dispose of all concrete debris generated by the scarifying process, including provisions for protecting adjacent traffic from flying debris.

3. The qualifications of on-site supervisors, mobile mixer operators, and finishing machine operators, in accordance with Section 6-09.3(8) as supplemented in these Special Provisions.

4. The polyester concrete mix design in accordance with Section 6-09.3(3) as supplemented in these Special Provisions.

5. Samples, as specified below, shall be submitted to the Engineer at least 15 working days prior to placing the polyester overlay:

    a. One gallon minimum of the polyester resin binder.

    b. One pint minimum of the HMWM resin.

    c. 100 pounds minimum of aggregate.

    d. Representative samples from each lot of prepackaged deck repair material and aggregate extenders, if selected for use in this project, as specified in Section 6-09.3(3) as supplemented in these Special Provisions.

6. The method and materials used to contain HMWM resin and polyester concrete within the deck area specified to receive the overlay.

7. Paving equipment specifications and details of the screed rail support system, including details of anchoring the rails and providing rail continuity.

The Contractor shall not begin scarifying operations until receiving the Engineer's approval of Items 1 and 2. The Contractor shall not begin placing polyester concrete overlay until receiving the Engineer's approval of Items 3 through 7.

6-09.3(3).GR6
Concrete Overlay Mixes

6-09.3(3).INST1.GR6

Section 6-09.3(3) is supplemented with the following:

6-09.3(3).OPT1.GB6
(January 7, 2002)
The Contractor may use either fly ash modified concrete (FMC), latex modified concrete (LMC), or microsilica modified concrete (MMC) for the concrete overlay. The Contractor shall select one type of concrete for the overlay, provide a mix for the selected concrete to the Engineer in accordance with Item 5 of Section 6-09.3(2), and use that type for the total concrete overlay operation. Use of a combination of types will not be allowed.

6-09.3(3).OPT2.GB6
(January 7, 2002)
The Contractor may use either fly ash modified concrete (FMC), or latex modified concrete (LMC) for the concrete overlay. The Contractor shall select one type of concrete for the overlay, provide a mix for the selected concrete to the Engineer in accordance with Item 5 of Section 6-09.3(2), and use that type for the total concrete overlay operation. Use of a combination of types will not be allowed. Use of microsilica modified concrete (MMC) will not be allowed.

6-09.3(3).OPT3.GB6
(January 7, 2002)
The Contractor shall use latex modified concrete (LMC) for the total concrete overlay operation, and shall provide a concrete mix to the Engineer in accordance with Item 5 of Section 6-09.3(2). Use of fly ash modified concrete (FMC) or microsilica modified concrete (MMC) will not be allowed.

6-09.3(3).OPT8.BSP.GB6
(BSP September 9, 2002)
Rapid Set Latex Modified Concrete
The Contractor shall use rapid set latex modified concrete for the total concrete overlay operation, in accordance with the following mix design. Use of latex modified concrete (LMC), fly ash modified concrete (FMC) or microsilica modified concrete (MMC) will not be allowed.

Rapid set latex modified concrete shall be a workable mix, uniform in composition and consistency. Mix proportions per cubic yard shall be as follows:

Rapid Set Cement	658	LB.
DOW Modifier A Latex Admixture	208	LB.
Fine Aggregate	1,700	LB.
Coarse Aggregate	1,300	LB.
Water	162	LB.
Air	4 to 7	percent

The moisture content and water limit specifications for latex modified concrete in Section 6-09.3(3)E shall also apply.

6-09.3(3).OPT9.BSP.GB6
(BSP December 2, 2002)
Polyester Concrete
The Contractor shall use polyester concrete for the total concrete overlay operation. Use of latex modified concrete (LMC), fly ash modified concrete (FMC) or microsilica modified concrete (MMC) will not be allowed.

Polyester concrete shall consist of the following three components – polyester resin binder, HMWM resin, and combined aggregate, in accordance with Section 6-09.2 as supplemented in these Special Provisions. The Contractor shall submit the mix design for the polyester concrete to the Engineer for approval. The mix design shall include a recommended initiator percentage for the expected application temperature. The polyester resin binder shall be approximately 12 percent by weight of the dry combined aggregate. The Contractor shall not begin the trial overlay of the polyester concrete, as specified in Section 6-09.3(8) as supplemented in these Special Provisions, until receiving the Engineer's approval of the polyester concrete mix design.

6-09.3(3).OPT10.BSP.GB6
(BSP December 2, 2002)
Deck Repair Concrete for Polyester Concrete Overlays
Patching concrete for further deck preparation in accordance with Section 6-09.3(6) shall be the polyester concrete mix used for the overlay.

6-09.3(4).GR6
Storing and Handling

6-09.3(4).INST1.GR6
Section 6-09.3(4) is supplemented with the following:

6-09.3(4).OPT1.BSP.GB6
(BSP December 2, 2002)
Storing and Handling of Polyester Concrete Materials
All materials shall be delivered in their original containers bearing the manufacturer's label, specifying date of manufacturing, batch number, trade name brand, quantity, and mixing ratio. Each shipment of polyester resin binder and HMWM resin shall be accompanied by a Materials Safety Data Sheet (MSDS).

The material shall be stored to prevent damage by the elements and to ensure the preservation of their quality and fitness for the work. The storage space shall be kept clean and dry, and shall contain a high-low thermometer. The temperatures of the storage space shall not fall below nor rise above that recommended by the manufacturer. Every precaution shall be taken to avoid contact with flame.

Stored materials shall be inspected prior to their use, and shall meet the requirements of these Special Provisions at the time of use.

Any material which is rejected because of failure to meet the required tests or that has been damaged so as to cause rejections shall be immediately replaced at no additional expense to the Contracting Agency.

Sufficient material to perform the entire polyester concrete overlay application shall be in storage at the site prior to any field preparation, so that there shall be no delay in procuring the materials for each day's application.

Appropriate impermeable protective garments shall be used by all workers who may contact the resin or initiators to prevent skin contact. If skin contact occurs, the resin or initiators shall be immediately washed off. Clothing that becomes saturated with resin shall be removed immediately.

All personnel working with the polyester concrete shall be issued suitable approved organic vapor respirators in addition to other appropriate protection equipment.

6-09.3(5).GR6
Scarifying Concrete Surface

6-09.3(5).INST1.GR6
Section 6-09.3(5) is supplemented with the following:

6-09.3(5).OPT1.GB6
(January 7, 2002)
The Contractor may use either a rotary milling machine, hydro-demolition machine, or shot blasting machine for scarifying concrete surfaces. The Contractor shall inform the Engineer of the type of machine selected in accordance with Item 1 of Section 6-09.3(2).

6-09.3(5).OPT2.GB6
(January 7, 2002)
The Contractor may use either a hydro-demolition machine or shot blasting machine for scarifying concrete surfaces. The use of a rotary milling machine will not be allowed. The Contractor shall inform the Engineer of the type of machine selected in accordance with Item 1 of Section 6-09.3(2).

6-09.3(5).OPT7.GB6
(April 6, 2015)
The Contractor shall use a hydro-demolition machine for scarifying concrete surfaces. The use of a rotary milling or shot blasting machines will not be allowed. The Contractor shall inform the Engineer of the type of machine selected in accordance with Item 1 of Section 6-09.3(2).

6-09.3(5).OPT8.BSP.GB6
(BSP September 9, 2002)
The Contractor shall use a shot blasting machine for scarifying concrete surfaces. The use of a rotary milling or hydro-demolition machines will not be allowed. The Contractor shall inform the Engineer of the type of machine selected in accordance with Item 1 of Section 6-09.3(2).

6-09.3(5).OPT9.BSP.GB6
(BSP December 2, 2002)
The scarification depth for all concrete decks receiving polyester concrete overlay shall be 1/4 inch, and all references to scarification depth in Sections 6-09.3(5)A and 6-09.3(5)B shall be revised accordingly.

6-09.3(5).OPT10.BSP.GB6
(BSP September 9, 2002)
Steel reinforcing bars used in deck repair operations, in accordance with Sections 6-09.3(5)F and 6-09.3(6)B, shall be epoxy-coated in accordance with Section 6-02.3(24)H.

6-09.3(6).GR6
Further Deck Preparation

6-09.3(6)B.GR6
Deck Repair Preparation

6-09.3(6)B.INST1.GR6
Section 6-09.3(6)B is supplemented with the following:

6-09.3(6)B.OPT1.GB6
(April 6, 2015)
The Contractor shall not remove the bottom two inches of the existing concrete deck, unless otherwise directed by the Engineer. If the existing concrete bridge deck is punctured by the removal operations, the Contractor shall form the bottom surface prior to placing the patching concrete. The Contractor shall submit the method and materials to be used for such forming as a Type 2E Working Drawing in accordance with Section 6-02.3(16).

6-09.3(6)C.GR6
Placing Deck Repair Concrete

6-09.3(6)C.INST1.GR6
Section 6-09.3(6)C is supplemented with the following:

6-09.3(6)C.OPT1.BSP.GB6
(BSP September 9, 2002)
Patching concrete for bridge decks receiving rapid set latex modified concrete overlay shall be rapid set latex modified concrete only. Concrete Class M shall not be used.

6-09.3(6)C.OPT2.BSP.GB6
(BSP December 2, 2002)
Placing Patching Concrete For Polyester Concrete Overlay
Patching concrete shall be polyester concrete, as specified in Section 6-09.3(3) as supplemented in these Special Provisions. Concrete Class M shall not be used.

Polyester concrete for deck repair shall be placed and cured in accordance with Sections 6-09.3(11) and 6-09.3(13), respectively, as supplemented in these Special Provisions.

All deck repair material that fails to achieve a minimum compressive strength of 3,000 psi in six hours as verified by the rebound number determined in accordance with ASTM C 805 shall be removed and replaced with new deck repair material by the Contractor, at no additional expense to the Contracting Agency.

6-09.3(8).GR6
Quality Assurance

6-09.3(8).INST1.GR6
Section 6-09.3(8) is supplemented with the following:

6-09.3(8).OPT1.BSP.GB6
(BSP September 9, 2002)
Quality assurance for all rapid set latex modified concrete work shall conform to Section 6-09.3(8)B, and the following:

Rapid set latex modified concrete will not be tested for slump.

The Contractor shall make arrangements to have a qualified technical representative of CTS Cement Manufacturing Company present at the bridge site throughout all rapid set latex modified concrete overlay work, including surface preparation, mixing, placing, screeding, and curing. The qualified technical representative shall be an employee of CTS Cement Manufacturing Company.

The Contractor shall submit the name, current phone number, and experience qualifications of the qualified technical representative of CTS Cement Manufacturing Company to the Engineer for approval, along with the other submittals specified in Section 6-09.3(2). The submittal shall include a listing of the rapid set latex modified concrete overlay project on which the individual has served as a qualified technical representative, and shall include a description of the project, the name of the project's Owner or Contracting Agency, and the name and current phone number of the project's Owner's or Contracting Agency's contact person.

The Contractor shall not begin rapid set latex modified concrete operations until receiving the Engineer's approval of the qualified technical representative submittal.

All recommendations made by the qualified technical representative, and approved by the Engineer, shall be adhered to by the Contractor.

6-09.3(8).OPT2.BSP.GB6
(BSP September 9, 2002)
Rapid Set Latex Modified Concrete Trial Overlay
The Contractor shall place a trial overlay of rapid set latex modified concrete using the equipment selected by the Contractor and the production mix and procedure specified in Section 6-09.3 as supplemented in these Special Provisions. The Contractor shall notify the Engineer of the time and location of the trial overlay at least seven calendar days prior to the scheduled trial overlay.

The trial overlay shall be placed on a previously cast and cured concrete pad at a location selected by the Contractor. The plan area of the concrete pad shall be 12 feet minimum in width and 15 feet minimum in length.

The Contractor shall clean the concrete pad surface, mix, place, finish, and cure the rapid set latex modified concrete overlay, and check the trial overlay for bond, in accordance with Section 6-09.3 as supplemented in these Special Provisions, except as otherwise noted. The Contractor need not scarify the concrete surface and perform further deck preparation on the concrete pad surface provided that all other conditions of Section 6-09.3(7) are satisfied. The trial overlay shall be 12 feet wide, 15 feet long, and 1-1/2 inches thick.

The Contractor shall not begin construction operations at the bridge site receiving the rapid set latex modified concrete overlay until receiving the Engineer's approval of the completed trial overlay.

After receiving the Engineer's approval of the completed trial overlay, the concrete pad and trial overlay shall become the Contractor's property and shall be removed and disposed of in accordance with Section 2-02.3.

6-09.3(8).OPT3.BSP.GB6
(BSP December 2, 2002)
Quality Assurance For Polyester Concrete Overlay

The Contractor shall arrange to have the suppliers of the polyester resin binder and HMWM resin furnish technical service relating to application of material and health and safety training for personnel who are to handle the polyester concrete and the HMWM resin prime coat.

On-site supervisors, and all personnel operating the mobile mixer and finishing machines, shall have successful previous experience in mixing and placing polyester concrete overlay. Documentation of project experience with polyester concrete overlay shall include the name and location of the project, the Contracting Agency of the project, the area quantity of overlay placed, and the name and current phone number of the Contracting Agency's contact person for the referenced project.

6-09.3(8).OPT4.BSP.GB6
(BSP January 27, 2003)
Polyester Concrete Trial Overlay

The Contractor shall place a trial overlay of polyester concrete using the equipment selected by the Contractor and the production mix and procedure as approved by the Engineer in accordance with Section 6-09.3(3). The Contractor shall notify the Engineer of the time and location of the trial overlay at least seven calendar days prior to the scheduled trial overlay.

The trial overlay shall be placed on a previously cast and cured concrete pad at a location selected by the Contractor. The plan area of the concrete pad shall be 12 feet minimum in width and 15 feet minimum in length.

The Contractor shall clean the concrete pad surface, mix, place, finish, and cure the polyester concrete overlay, and check the trial overlay for bond, in accordance with Section 6-09.3 as supplemented in these Special Provisions, except as otherwise noted. The Contractor need not scarify the concrete surface and perform further deck preparation on the concrete pad surface provided that all other conditions of Section 6-09.3(7) are satisfied. The trial overlay shall be 12 feet wide, 15 feet long, and 3/4 inches thick.

The Contractor shall perform three pull-off tests on the trial overlay in accordance with American Concrete Institute 503R - Appendix A. The Contractor shall record the pull-off test results and the amount of (if any) failure into the base concrete, and shall provide written documentation of the test results to the Engineer.

The Contractor shall not begin placing polyester concrete overlay at the bridge site(s) receiving the polyester concrete overlay until receiving the Engineer’s approval of the completed trial overlay.

After receiving the Engineer’s approval of the completed trial overlay, the concrete pad and trial overlay shall become the Contractor’s property and shall be removed and disposed of in accordance with Section 2-02.3.

6-09.3(9).GR6
Mixing Concrete for Concrete Overlay

6-09.3(9).INST1.GR6
Section 6-09.3(9) is supplemented with the following:

6-09.3(9).OPT1.BSP.GB6
(BSP September 9, 2002)
Mixing of concrete for rapid set latex modified concrete work shall conform to Section 6-09.3(9)B, and the following:

If food grade citric acid is used as a retarder, it shall be mixed into a solution with water. The solution shall not be added directly to the latex admixture. The solution shall be added to a separate admixture tank for dispensing into the rapid set latex modified overlay mix.

6-09.3(9).OPT2.BSP.GB6
(BSP January 27, 2003)
Mixing Polyester Concrete
Polyester concrete shall be mixed in mobile mixers conforming to Section 6-09.3(1) as supplemented in these Special Provisions, and in accordance with the mix design approved by the Engineer.

The polyester resin binder in the polyester concrete shall be approximately 12 percent by weight of the dry aggregate. The Contractor shall determine the exact percentage as approved by the Engineer.

The amount of peroxide initiator used shall result in a polyester concrete set time between 30 and 120 minutes during placement as determined by California Test 551, Part 2, “Method of Test For Determination of Set Time of Concrete Overlay and Patching Materials”, by Gilmore Needles. Accelerators or inhibitors may be required as recommended by the polyester resin binder supplier and as approved by the Engineer.

The polyester resin binder shall be initiated and thoroughly blended just prior to mixing the aggregate and binder. The polyester concrete shall be thoroughly mixed prior to placing.

6-09.3(10).GR6
Overlay Profile and Screed Rails

6-09.3(10).INST1.GR6
Section 6-09.3(10) is supplemented with the following:

6-09.3(10).OPT1.BSP.GB6
(BSP January 27, 2003)
The minimum thickness of polyester concrete overlay shall be 3/4 inches, except as otherwise shown in the Plans or adjusted by the Engineer.

6-09.3(11).GR6
Placing Concrete Overlay

6-09.3(11).INST1.GR6
Section 6-09.3(11) is supplemented with the following:

6-09.3(11).OPT1.BSP.GB6
(BSP September 9, 2002)
Placing Rapid Set Latex Modified Concrete Overlay
Placing rapid set latex modified concrete overlay shall conform to all requirements of this section, including those specific for latex modified concrete overlay, except as otherwise noted.

After the lane or strip to be overlaid with rapid set latex modified concrete overlay has been prepared and immediately before placing the concrete, it shall be thoroughly soaked and kept continuously wet with water for a minimum period of two hours prior to placement of the concrete.

The allowable temperature range of the concrete deck receiving the rapid set latex modified concrete shall be between 45F and 70F.

The Contractor shall conform to the transverse bulkhead placement requirements whenever rapid set latex modified concrete placement is stopped for a period of 20 minutes or more. Further placement is permitted only after a period of 24 hours unless a gap is left in the lane or strip.

Rapid set latex modified concrete shall not be placed against the edge of an adjacent lane or strip that is less than four hours old.

6-09.3(11).OPT2.BSP.GB6
(BSP April 7, 2008)
Placing Polyester Concrete Overlay
Application of the HMWM prime coat and the polyester concrete overlay shall not begin if rain is expected. The area receiving the prime coat shall be dry and had no rain for at least 24 hours. Immediately prior to applying the prime coat, the surface receiving the prime coat shall be swept clean by compressed air to remove accumulated dust and any other loose material. If the surface receiving the HMWM prime coat and polyester concrete has been exposed to moisture within the previous 12 hours, it shall be thoroughly dried using a heat lance prior to placement of the HMWM prime coat.

The concrete bridge deck surface temperature shall be between 50F and 85F when the prime coat is applied.

The prepared concrete surface shall receive one coat of promoted/initiated wax-free HMWM resin. The promoted/initiated HMWM resin primer shall be worked into the concrete in a manner to effect complete coverage of the area. A one pint sample of each batch of promoted/initiated HMWM resin shall be retained and submitted to the Engineer at the time of primer application to verify proper catalyzation. Under no circumstances shall any resin be allowed to run into drains and expansion joints, or otherwise escape the Contractor's collection and containment system.

If the HMWM primed surface becomes contaminated, the contaminated area shall be cleaned by abrasive blasting and reprimed at no additional expense to the Contracting Agency.

The HMWM prime coat shall cure for a minimum of 30 minutes before placing the polyester concrete overlay. Placement of the polymer concrete shall not proceed until the Engineer verifies that the HMWM resin was properly promoted and initiated, as evidenced by the HMWM batch sample.

The polyester concrete shall be placed on the liquid or hardened HMWM prime coat within two hours of placing the prime coat. Polyester concrete shall be placed prior to gelling and within 15 minutes following initiation, whichever occurs first. Polyester concrete that is not placed within this time shall be discarded.

If, for any reason, polyester concrete is not placed over the prime coat within the two hour time limit, the Contractor shall apply a fresh coat of HMVM resin primer immediately followed by an abrasive sand finish coating. The abrasive sand finish shall be broadcast onto the surface to affect a uniform coverage of a minimum of 0.8 pounds per square yard. Prior to applying the polyester concrete overlay, the surface shall be re-cleaned in accordance with Section 6-09.3(7).

Expansion joints shall be adequately isolated prior to placing the overlay as approved by the Engineer. Saw cutting at bridge expansion joints will not be allowed.

The surface temperature of the area receiving the polyester concrete shall be the same as specified above for the HMWM prime coat.

The polyester concrete shall be consolidated to a relative compaction of not less than 97 percent.

6-09.3(12).GR6
Finishing Concrete Overlay

6-09.3(12).INST1.GR6
Section 6-09.3(12) is supplemented with the following:

6-09.3(12).OPT1.BSP.GB6
(BSP September 9, 2002)
Neither latex admixture nor water shall be applied to the surface of the rapid set latex modified concrete overlay to assist in finishing the top surface.

6-09.3(12).OPT2.BSP.GB6
(BSP August 1, 2005)
Finishing Polyester Concrete Overlay

The finished surface of the polyester concrete overlay shall conform to Section 6-02.3(10).

The polyester concrete shall be struck off to the established grade and cross section and consolidated to the required compaction. No further texturing and grooving of the finish overlay surface will be required. Forms shall be coated with suitable bond release agent to permit ready release of forms.

The polyester concrete overlay shall receive an abrasive sand finish. The sand finish shall be applied immediately after overlay strike-off and before gelling occurs.

The surface texture of polyester concrete surface shall be uniform and shall have a friction number of not less than 35 as determined by ASTM E 274.

After initial finishing, the polyester overlay may require grinding of rough areas as determined by the Engineer. The grinding shall be done in a manner that will not damage the existing bridge deck. Rotary milling machines are not allowed.

The Contractor shall demonstrate to the satisfaction of the Engineer that the method and equipment for grinding the polyester overlay are adequate for the intended purpose and will provide satisfactory results. The removal shall not commence until the Contractor receives the Engineer's approval of the grinding equipment.

The bridge deck areas specified by the Engineer to receive grinding shall be ground in a longitudinal direction. The grinding equipment shall use diamond tipped saw blades mounted on a power driven, self-propelled machine that is specifically designed to texture concrete surfaces. The grinding equipment shall have a blade spacing to provide grooves that are between 0.10 and 0.15 inches wide. The land area between the grooves shall be approximately 0.125 inches.

The Contractor shall contain, collect, and dispose of all concrete debris generated by the grinding operation in accordance with Item 2 of the polyester concrete submittal in Section 6-09.3(2) as supplemented in these Special Provisions.

Prior to opening the overlay area to vehicular traffic the finished overlay shall be power swept to remove excess loose aggregate and abrasive sand. The Contractor shall demonstrate to the satisfaction of the Engineer that the power broom equipment will not damage the finished overlay. Any damage to the finished overlay caused by the power broom shall be repaired at no additional expense to the Contracting Agency.

6-09.3(13).GR6
Curing Concrete Overlay

6-09.3(13).INST1.GR6

Section 6-09.3(13) is supplemented with the following:

6-09.3(13).OPT1.BSP.GB6
(BSP September 9, 2002)
Special Curing Requirements For Rapid Set Latex Modified Concrete

Once in place the burlap shall be lightly fog sprayed with water. A separate layer of white, reflective type polyethylene sheeting shall immediately be placed over the wet burlap. The concrete shall then be wet cured by keeping the burlap wet until the concrete reaches the specified minimum compressive strength for traffic load of 3,000 psi. Upon reaching the specified minimum compressive strength for traffic load, the polyethylene sheeting shall be removed and the bridge opened to traffic.

6-09.3(13).OPT2.BSP.GB6
(BSP December 2, 2002)
Curing Polyester Concrete

Traffic and equipment shall not be permitted on the polyester overlay for at least four hours and until the polyester overlay has reached a minimum compressive strength of 3,000 psi as verified by the rebound number determined in accordance with ASTM C 805.

Areas in the polyester concrete that do not totally cure, or that fail to attain the minimum compressive strength specified above, shall be removed and replaced with new polyester concrete material by the Contractor, at no additional expense to the Contracting Agency.

6-09.3(14).GR6
Checking For Bond

6-09.3(14).INST1.GR6

Section 6-09.3(14) is supplemented with the following:

6-09.3(14).OPT1.BSP.GB6
(BSP December 2, 2002)
Checking Polyester Concrete For Bond

After the requirements for curing have been met, the entire overlaid surface shall be sounded by the Contractor, in a manner approved by and in the presence of the Engineer, to ensure total bond of the concrete to the bridge deck. Polyester concrete in unbonded areas shall be removed and replaced with polyester concrete by the Contractor, at no additional expense to the Contracting Agency.

All cracks, except those that are significant enough to require removal as determined by the Engineer, shall be thoroughly filled and sealed with HMWM resin. Cracks 1/16 inch and greater in width shall receive two applications of HMWM resin. Immediately following the application of HMWM resin, the wetted surface shall be coated with sand for abrasive finish.

6-09.3(14).OPT2.GB6

(April 6, 2015)

For this project, after the requirements for curing have been met, the entire overlaid surface shall be sounded by the Contractor, in a manner approved by and in the presence of the Engineer, to ensure total bond of the concrete to the bridge deck. Concrete in unbonded areas shall be removed and replaced by the Contractor with the same modified concrete as used in the overlay at no additional expense to the Contracting Agency. All cracks, except those that are significant enough to require removal, shall be thoroughly filled and sealed as specified in Section 6-09.3(12).

6-09.4.GR6
Measurement

6-09.4.INST1.GR6

Section 6-09.4 is supplemented with the following:

6-09.4.OPT1.BSP.GB6

(BSP September 9, 2002)

All specifications for measurement and waste of latex modified concrete shall also apply to rapid set latex modified concrete.

6-09.4.OPT2.BSP.GB6

(BSP December 2, 2002)

Polyester concrete overlay will be measured by the square yard of overlay surface actually placed, finished, and cured.

6-09.5.GR6
Payment

6-09.5.INST1.GR6

The second bid item under Section 6-09.5 is supplemented with the following:

6-09.5.OPT1.BSP.GB6

(BSP September 9, 2002)

All costs in connection with providing the services of the qualified technical representative of CTS Cement Manufacturing Company shall be included in the unit contract price per cubic foot for “Modified Conc. Overlay”.

6-09.5.INST2.GR6

Section 6-09.5 is supplemented with the following:

6-09.5.OPT6.BSP.GB6

(BSP September 9, 2002)

“Rapid Set Latex Modified Concrete Trial Overlay”, lump sum.

The lump sum contract price for “Rapid Set Latex Modified Concrete Trial Overlay” shall be full pay for performing the work as specified, including establishing a location for the trial overlay, and construction, removal, and disposal of the concrete pad and trial overlay.

6-09.5.OPT7.BSP.GB6

(BSP December 2, 2002)

“Polyester Concrete Trial Overlay”, lump sum.

The lump sum contract price for “Polyester Concrete Trial Overlay” shall be full pay for performing the work as specified, including establishing a location for the trial overlay, and construction, removal, and disposal of the concrete pad and trial overlay.

6-09.5.OPT8.BSP.GB6

(BSP December 2, 2002)

“Force Account Grinding Polyester Conc. Overlay”, force account.

Grinding polyester concrete overlay as specified will be paid by force account in accordance with Section 1-09.6. For the purpose of providing a common proposal for all bidders, the Contracting Agency has entered an amount for the item "Force Account Grinding Polyester Conc. Overlay" in the bid proposal to become a part of the total bid by the Contractor.

6-09.5.OPT9.BSP.GB6

(BSP December 2, 2002)

“Polyester Concrete Overlay”, per square yard.

The unit contract price per square yard for “Polyester Concrete Overlay” shall be full pay for performing the work as specified, including placing, finishing, and curing the overlay, and checking for bond.

6-09.5.OPT11.GB6

(April 6, 2015)

"Force Account Forms For Full Depth Deck Repair", force account

Payment for "Force Account Forms For Full Depth Deck Repair" will be by force account in accordance with Section 1-09.6. For the purpose of providing a common proposal to all bidders, the Contracting Agency has entered an amount for the item "Force Account Forms For Full Depth Deck Repair" in the bid proposal to become a part of the total bid by the Contractor.

6-13.GR6
Structural Earth Walls

6-13.2.GR6
Materials

6-13.2.INST1.GR6
Section 6-13.2 is supplemented with the following:

6-13.2.OPT1.GB6
(April 1, 2013)
Welded Wire Faced Structural Earth Wall Materials

Welded Wire Mats and Backing Mats

Welded wire fabric for welded wire mats, welded wire form facing units, and backing mats shall conform to AASHTO M 32, and shall be fabricated from smooth wire fabric conforming to AASHTO M 55.

The minimum clear opening dimension of the backing mat, or the combination of welded wire form facing unit with geosynthetic wall facing wrap, shall not exceed the minimum particle size of the wall facing backfill as specified below.

Welded wire fabric for welded wire mats, welded wire form facing units, and backing mats shall be galvanized after fabrication in accordance with either ASTM A 641 (two ounces minimum per square foot) or AASHTO M 111. All damage to the galvanizing shall be repaired with one coat of paint conforming to Section 9-08.1(2)B.

Backfill for Welded Wire Faced Structural Earth Wall

The coarse, granular material used for the wall facing backfill placed immediately behind the wall face, as shown in the Plans, shall conform to the following gradation requirements:

1. The minimum particle size shall be no less than the width of the minimum opening dimension in the backing mat or the geosynthetic wall facing wrap.

2. The maximum particle size shall be no greater than six inches for welded wire reinforced walls, and no greater than four inches for geosynthetic reinforced walls.

Proprietary Materials

Hilfiker Welded Wire Retaining Wall (WWW) System

Welded wire fabric wire size for backing mats shall be W2.1 minimum for wall face backing layers of 1’-6” maximum thickness, and shall be W2.9 minimum for wall face backing layers between 1’-6” and 2’-0”.

Construction geotextile for wall facing shall conform to the requirements in Section 9-33.1 for Construction Geotextile for Underground Drainage, Moderate Survivability, Class A.

Tensar Wire Form Retaining Wall System
Wire support struts shall conform to AASHTO M 32, and shall be galvanized after fabrication in accordance with either ASTM A 641 (two ounces minimum per square foot) or AASHTO M 111. All damage to the galvanizing shall be repaired with one coat of paint conforming to Section 9-08.1(2)B.

Geosynthetic connection rods shall be manufactured from high-density polyethylene with either fiberglass inclusions or oriented polypropylene, as recommended by Tensar Earth Technologies, Inc.

Geosynthetic separating the wall facing backfill from the welded wire faced structural earth wall backfill shall conform to the requirements in Section 9-33.1 for Construction Geotextile for Underground Drainage, Moderate Survivability, Class A.

Tensar Geogrid Materials
Geogrid reinforcement and geosynthetic wall facing wrap shall conform to Section 9-33.1, and shall be a product listed in Appendix D of the current WSDOT Qualified Products List (QPL). The values of T_{al} and T_{ult} as listed in the QPL for the products used shall meet or exceed the values required for the wall manufacturer's reinforcement design as specified in the structural earth wall design calculation and working drawing submittal.

The minimum ultimate tensile strength of the geogrid shall be a minimum average roll value (the average test results for any sampled roll in a lot shall meet or exceed the values shown in Appendix D of the current WSDOT QPL). The strength shall be determined in accordance with ASTM D 6637 for multi-rib specimens.

For geogrid reinforcement and geosynthetic wall facing wrap, the ultraviolet (UV) radiation stability, in accordance with ASTM D 4355, shall be a minimum of 70 percent strength retained after 500 hours in the weatherometer.

The longitudinal (i.e., in the direction of loading) and transverse (i.e., parallel to the wall or slope face) ribs that make up the geogrid shall be perpendicular to one another.

The Engineer will take random samples of the geogrid materials at the job site. Approval of the geogrid materials will be based on testing of samples from each lot. A "lot" shall be defined as all geogrid rolls sent to the project site produced by the same manufacturer during a continuous period of production at the same manufacturing plant having the same product name. The Contracting Agency will require 14 calendar days maximum for testing the samples after their arrival at the WSDOT Materials Laboratory in Tumwater, WA.

The geogrid samples will be tested for conformance to the specified material properties. If the test results indicate that the geogrid lot does not meet the specified properties, the roll or rolls which were samples will be rejected. Two additional rolls for each roll tested which failed from the lot previously tested will then be selected at random by the Engineer for sampling and retesting. If the retesting shows that any of the additional rolls tested do not meet the specified properties, the entire lot will be rejected. If the test results from all the rolls retested meet the specified properties, the entire lot minus the roll(s) which failed will be accepted.

All geogrid materials which have defects, deterioration, or damage, as determined by the Engineer, will be rejected. All rejected geogrid materials shall be replaced at no expense to the Contracting Agency.

Except as otherwise noted, geogrid identification, storage and handling shall conform to the requirements specified in Section 2-12.2. The geogrid materials shall not be exposed to temperatures less than –20F and greater than 122F.

6-13.2.OPT2.GB6
(August 5, 2013)
Precast Concrete Panel Faced Structural Earth Wall Materials

General Materials

Concrete Leveling Pad

Leveling pad concrete shall be commercial concrete in accordance with Section 6-02.3(2)B.

Proprietary Materials

ARES Modular Panel Wall System

Tensar Geogrid Materials

Geogrid reinforcement shall conform to Section 9-33.1, and shall be a product listed in Appendix D of the current WSDOT Qualified Products List (QPL). The values of T_{al} and T_{ult} as listed in the QPL for the products used shall meet or exceed the values required for the wall manufacturer's reinforcement design as specified in the structural earth wall design calculation and working drawing submittal.

The minimum ultimate tensile strength of the geogrid shall be a minimum average roll value (the average test results for any sampled roll in a lot shall meet or exceed the values shown in Appendix D of the current WSDOT QPL). The strength shall be determined in accordance with ASTM D 6637 for multi-rib specimens.

The ultraviolet (UV) radiation stability, in accordance with ASTM D 4355, shall be a minimum of 70 percent strength retained after 500 hours in the weatherometer.

The longitudinal (i.e., in the direction of loading) and transverse (i.e., parallel to the wall or slope face) ribs that make up the geogrid shall be perpendicular to one another. The maximum deviation of the cross-rib from being perpendicular to the longitudinal rib (skew) shall be no more than 1 inch in 5 feet of geogrid width. The maximum deviation of the cross-rib at any point from a line perpendicular to the longitudinal ribs located at the cross-rib (bow) shall be 0.5 inches.

The Engineer will take random samples of the geogrid materials at the job site. Approval of the geogrid materials will be based on testing of samples from each lot. A “lot” shall be defined as all geogrid rolls sent to the project site produced by the same manufacturer during a continuous period of production at the same manufacturing plant having the same product name. The Contracting Agency will require 14 calendar days maximum for testing the samples after their arrival at the WSDOT Materials Laboratory in Tumwater, WA.

The geogrid samples will be tested for conformance to the specified material properties. If the test results indicate that the geogrid lot does not meet the specified properties, the roll or rolls which were samples will be rejected. Two additional rolls for each roll tested which failed from the lot previously tested will then be selected at random by the Engineer for sampling and retesting. If the retesting shows that any of the additional rolls tested do not meet the specified properties, the entire lot will be rejected. If the test results from all the rolls retested meet the specified properties, the entire lot minus the roll(s) which failed will be accepted.

All geogrid materials which have defects, deterioration, or damage, as determined by the Engineer, will be rejected. All rejected geogrid materials shall be replaced at no expense to the Contracting Agency.

Except as otherwise noted, geogrid identification, storage and handling shall conform to the requirements specified in Section 2-12.2. The geogrid materials shall not be exposed to temperatures less than –20F and greater than 122F.

Rubber bearing pads shall be a type and grade as recommended by Tensar Earth Technologies, Inc.

Geosynthetic joint cover for all horizontal and vertical joints shall be a non-woven geosynthetic as recommended by Tensar Earth Technologies, Inc. Adhesive used to attach the geosynthetic to the rear of the precast concrete facing panel shall be as recommended by Tensar Earth Technologies, Inc.

Reinforced Earth Wall

Reinforcing strips shall be shop fabricated from hot rolled steel conforming to ASTM A 572 Grade 65 or approved equal, and shall be galvanized after fabrication in accordance with AASHTO M 111. Damage to the galvanizing shall be repaired with one coat of Formula A-9-73 paint conforming to Section 9-08.2.

Bolts and nuts shall conform to Section 9-06.5(3), and shall be galvanized in accordance with AASHTO M 232.

Rubber bearing pads shall be a type and grade as recommended by the Reinforced Earth Company.

Vertical joint filler between panels, when specified in the structural earth wall working drawings, shall be two inch square, flexible open cell polyether foam strips, Grade UU-34, as recommended by the Reinforced Earth Company.

Filter fabric joint cover for all horizontal and vertical joints, when specified in the structural earth wall working drawings, shall be a pervious woven polypropylene filter fabric as recommended by the Reinforced Earth Company. Adhesive used to attach the fabric material to the rear of the precast concrete facing panel shall be as recommended by the Reinforced Earth Company.

Reinforced Soil Wall

Reinforcing mesh shall be shop fabricated of cold drawn steel wire conforming to AASHTO M 32, and shall be welded into finished mesh fabric conforming to AASHTO M 55. Reinforcing mesh shall be galvanized after fabrication in accordance with AASHTO M 111. Damage to the galvanizing shall be repaired with one coat of paint conforming to Section 9-08.1(2)B.

MSE Plus Wall

Pins connecting the soil reinforcing mesh to the precast concrete panels shall conform to AASHTO M 32 and shall be galvanized after fabrication in accordance with AASHTO M 111. Damage to the galvanizing shall be repaired with one coat of paint conforming to Section 9-08.1(2)B.

Bearing pads shall be serrated high-density polyethylene (HDPE) copolymer pads as recommended by SSL, LLC.

Filter fabric joint cover for all horizontal and vertical joints shall be non-woven geosynthetic conforming to AASHTO M 288. Adhesive used to bond the geosynthetic to the rear of the precast concrete facing panel shall be as recommended by SSL, LLC.

Retained Earth Wall

Tie strips shall be shop fabricated from hot rolled steel conforming to ASTM A 570 Grade 50 or approved equal, and shall be galvanized after fabrication in accordance with AASHTO M 111. Damage to the galvanizing shall be repaired with one coat of paint conforming to Section 9-08.1(2)B.

The embed loops and connector bars shall be fabricated of steel wire conforming to AASHTO M 32, and shall be galvanized after fabrication in accordance with AASHTO M 111.

Filter fabric joint cover for all horizontal and inclined joints shall be a monofilament filter fabric as recommended by Foster Geotechnical. Adhesive used to attach the fabric to the rear of the precast concrete facing panel shall be as recommended by Foster Geotechnical.

6-13.2.OPT3.GB6

(~~April 1, 2013~~April 6, 2015)

Concrete Block Faced Structural Earth Wall Materials

General Materials

Concrete Block

Acceptability of the blocks will be determined based on the following:

1. Visual inspection.

2. Compressive strength tests, conforming to Section 6-13.3(4).

3. Water absorption tests, conforming to Section 6-13.3(4).

4. Manufacturer's Certificate of Compliance in accordance with Section 1-06.3.

5. Freeze-thaw tests conducted on the lot of blocks produced for use in this project, as specified in Section 6-13.3(4).

6. Copies of results from tests conducted on the lot of blocks produced for this project by the concrete block fabricator in accordance with the quality control program required by the structural earth wall manufacturer.

The blocks shall be considered acceptable regardless of curing age when compressive test results indicate that the compressive strength conforms to the 28-day requirements, and when all other acceptability requirements specified above are met.

Testing and inspection of dry cast concrete blocks shall conform to ASTM C 140, and shall include block fabrication plant approval by WSDOT prior to the start of block production for this project.

Mortar
Mortar shall conform to ASTM C 270, Type S, with an integral water repellent admixture as approved by the Engineer. The amount of admixture shall be as recommended by the admixture manufacturer. To ensure uniform color, texture, and quality, all mortar mix components shall be obtained from one manufacturer for each component, and from one source and producer for each aggregate.

Metallic Soil Reinforcement
Reinforcing strips shall be composed of welded wire fabric strips conforming to AASHTO M 55 with wire conforming to AASHTO M 32, and attached to block connector plates conforming to ASTM A 36. Reinforcing strips and block connector plates shall be galvanized after fabrication in accordance with AASHTO M 111. Damage to galvanizing shall be repaired with one coat of paint conforming to Section 9-08.1(2)B.

Geosynthetic Soil Reinforcement
Geogrid reinforcement shall conform to Section 9-33.1, and shall be a product listed in Appendix D of the current WSDOT Qualified Products List (QPL). The values of T_{al} and T_{ult} as listed in the QPL for the products used shall meet or exceed the values required for the wall manufacturer's reinforcement design as specified in the structural earth wall design calculation and working drawing submittal.

The minimum ultimate tensile strength of the geogrid shall be a minimum average roll value (the average test results for any sampled roll in a lot shall meet or exceed the values shown in Appendix D of the current WSDOT QPL). The strength shall be determined in accordance with ASTM D 6637, for multi-rib specimens.

The ultraviolet (UV) radiation stability, in accordance with ASTM D 4355, shall be a minimum of 70 percent strength retained after 500 hours in the weatherometer.

The longitudinal (i.e., in the direction of loading) and transverse (i.e., parallel to the wall or slope face) ribs that make up the geogrid shall be perpendicular to one another. The maximum deviation of the cross-rib from being perpendicular to the longitudinal rib (skew) shall be no more than 1 inch in 5 feet of geogrid width. The maximum deviation of the cross-rib at any point from a line perpendicular to the longitudinal ribs located at the cross-rib (bow) shall be 0.5 inches.

The gap between the connector and the bearing surface of the connector tab cross-rib shall not exceed 0.5 inches. A maximum of 10 percent of connector tabs may have a gap between 0.3 inches and 0.5 inches. Gaps in the remaining connector tabs shall not exceed 0.3 inches.

The Engineer will take random samples of the geogrid materials at the job site. Approval of the geogrid materials will be based on testing of samples from each lot. A "lot" shall be defined as all geogrid rolls sent to the project site produced by the same manufacturer during a continuous period of production at the same manufacturing plant having the same product name. The Contracting Agency will require 14 calendar days maximum for testing the samples after their arrival at the WSDOT Materials Laboratory in Tumwater, WA.

The geogrid samples will be tested for conformance to the specified material properties. If the test results indicate that the geogrid lot does not meet the specified properties, the roll or rolls which were sampled will be rejected. Two additional rolls for each roll tested which failed from the lot previously tested will then be selected at random by the Engineer for sampling and retesting. If the retesting shows that any of the additional rolls tested do not meet the specified properties, the entire lot will be rejected. If the test results from all the rolls retested meet the specified properties, the entire lot minus the roll(s) which failed will be accepted.

All geogrid materials which have defects, deterioration, or damage, as determined by the Engineer, will be rejected. All rejected geogrid materials shall be replaced at no expense to the Contracting Agency.

Except as otherwise noted, geogrid identification, storage and handling shall conform to the requirements specified in Section 2-12.2. The geogrid materials shall not be exposed to temperatures less than –20F and greater than 122F.

Drainage Geosynthetic Fabric

Drainage geosynthetic fabric shall be a non-woven geosynthetic conforming to the requirements in Section 9-33.1, for Construction Geotextile for Underground Drainage, Moderate Survivability, Class B.

Proprietary Materials

Allan Block Wall

Wall backfill material placed in the open cells of the precast concrete blocks and placed in the one to three foot zone immediately behind the precast concrete blocks shall be crushed granular material conforming to Section 9-03.9(3).

KeySystem I Wall

Block alignment pins shall be fiberglass conforming to the requirements of Keystone Retaining Wall Systems, Inc.

Block connector pins shall conform to AASHTO M 32, and shall be galvanized after fabrication in accordance with AASHTO M 111.

Landmark Retaining Wall

Lock bars shall be made of a rigid polyvinyl chloride polymer conforming to the following requirements:

Property	Value	Specification
Specific Gravity	1.4 minimum	ASTM D 792
Tensile Strength at yield	2,700 psi minimum	ASTM D 638

Lock bars shall remain sealed in their shipping containers until placement into the wall. Lock bars exposed to direct sunlight for a period exceeding two months shall not be used for construction of the wall.

Mesa Wall

Block connectors for block courses with geogrid reinforcement shall be glass fiber reinforced high-density polypropylene conforming to the following minimum material specifications:

Property	Specification	Value
Polypropylene	ASTM D 4101	
	Group 1 Class 1 Grade 2	73 ± 2 percent
Fiberglass Content	ASTM D 2584	25 ± 3 percent
Carbon Black	ASTM D 4218	2 percent minimum
Specific Gravity	ASTM D 792	1.08 ± 0.04
Tensile Strength	ASTM D 638	
at yield		8,700 ± 1,450 psi
Melt Flow Rate	ASTM D 1238	0.37 ± 0.16 ounces/10 min.

Block connectors for block courses without geogrid reinforcement shall be glass fiber reinforced high-density polyethylene (HDPE) conforming to the following minimum material specifications:

Property	Specification	Value
HDPE	ASTM D 1248	
	Type III Class A Grade 5	68 ± 3 percent
Fiberglass Content	ASTM D 2584	30 ± 3 percent
Carbon Black	ASTM D 4218	2 percent minimum
Specific Gravity	ASTM D 792	1.16 ± 0.06
Tensile Strength	ASTM D 638	

at yield 8,700 ± 725 psi
Melt Flow Rate ASTM D 1238 0.11 ± 0.07 ounces/10 min.

~~**6-13.2.OPT3(A).GB6**~~
~~**(January 4, 2010)**~~
~~**Allan Block Wall**~~
~~Wall backfill material placed in the open cells of the precast concrete blocks and placed in the one to three foot zone immediately behind the precast concrete blocks shall conform to Section 9-03.12(4).~~

~~Geogrid reinforcement shall conform to Section 9-33.1, and shall be a product listed in Appendix D of the current WSDOT Qualified Products List (QPL). The values of T_{al} and T_{ult} as listed in the QPL for the products used shall meet or exceed the values required for the wall manufacturer's reinforcement design as specified in the structural earth wall design calculation and working drawing submittal.~~

~~The minimum ultimate tensile strength of the geogrid shall be a minimum average roll value (the average test results for any sampled roll in a lot shall meet or exceed the values shown in Appendix D of the current WSDOT QPL). The strength shall be determined in accordance with ASTM D 6637, for multi-rib specimens.~~

~~The ultraviolet (UV) radiation stability, in accordance with ASTM D 4355, shall be a minimum of 70 percent strength retained after 500 hours in the weatherometer.~~

~~The Engineer will take random samples of the geogrid materials at the job site. Approval of the geogrid materials will be based on testing of samples from each lot. A "lot" shall be defined as all geogrid rolls sent to the project site produced by the same manufacturer during a continuous period of production at the same manufacturing plant having the same product name. The Contracting Agency will require 14 calendar days maximum for testing the samples after their arrival at the WSDOT Materials Laboratory in Tumwater, WA.~~

~~The geogrid samples will be tested for conformance to the specified material properties. If the test results indicate that the geogrid lot does not meet the specified properties, the roll or rolls which were samples will be rejected. Two additional rolls for each roll tested which failed from the lot previously tested will then be selected at random by the Engineer for sampling and retesting. If the retesting shows that any of the additional rolls tested do not meet the specified properties, the entire lot will be rejected. If the test results from all the rolls retested meet the specified properties, the entire lot minus the roll(s) which failed will be accepted.~~

~~All geogrid materials which have defects, deterioration, or damage, as determined by the Engineer, will be rejected. All rejected geogrid materials shall be replaced at no expense to the Contracting Agency.~~

~~Except as otherwise noted, geogrid identification, storage and handling shall conform to the requirements specified in Section 2-12.2. The geogrid~~

~~materials shall not be exposed to temperatures less than 20°F and greater than 122°F.~~

6-13.3.GR6
Construction Requirements

6-13.3.INST1.GR6
Section 6-13.3 is supplemented with the following:

6-13.3.OPT1.GB6
(April 4, 2011)
Welded Wire Faced Structural Earth Wall
Welded wire faced structural earth walls shall be constructed of only one of the following wall systems.

The Contractor shall make arrangements to purchase the welded wire mats, welded wire form facing units, geogrid reinforcement, backing mats, facing elements, fasteners, geosynthetic connection rods, construction geotextile for wall facing, and all necessary incidentals from the source identified for each wall system:

Hilfiker Welded Wire Retaining Wall (WWW) System
Hilfiker is a registered trademark of Hilfiker Retaining Walls.

Hilfiker Retaining Walls
1902 Hilfiker Lane
Eureka, CA 95503-5711
(707) 443-5093
FAX (707) 443-2891
www.hilfiker.com

Tensar Wire Form Retaining Wall System
Tensar is a registered trademark of Tensar Corporation

Tensar Corporation
2500 Northwinds Parkway Suite 500
Atlanta, GA 30009
(770) 344-2090
FAX (678) 281-8546
www.tensarcorp.com

6-13.3.OPT2.GB6
(April 12, 2012)
Precast Concrete Panel Faced Structural Earth Wall
Precast concrete panel faced structural earth walls shall be constructed of only one of the following wall systems. The Contractor shall make arrangements to purchase the precast concrete panels, soil reinforcement, attachment devices, joint filler, and all necessary incidentals from the source identified with each wall system:

ARES Modular Panel Wall System
ARES Modular Panel Wall System is a registered trademark of Tensar Corporation

Tensar Corporation
2500 Northwinds Parkway Suite 500
Atlanta, GA 30009
(770) 344-2090
FAX (678) 281-8546
www.tensarcorp.com

MSE Plus Wall

MSE Plus Wall is a registered trademark of SSL, LLC

SSL, LLC
4740 Scotts Valley Drive Suite E
Scotts Valley, CA 95066
(831) 430-9300
FAX (831) 430-9340
www.mseplus.com

Reinforced Earth Wall

Reinforced Earth is a registered trademark of the Reinforced Earth Company.

The Reinforced Earth Company
88 Inverness Circle East Suite E-101
Englewood, CO 80112
(303) 790-1481
FAX (303) 790-1461
www.reinforcedearth.com

Reinforced Soil Wall

Reinforced Soil is a registered trademark of Hilfiker Retaining Walls.

Hilfiker Retaining Walls
1902 Hilfiker Lane
Eureka, CA 95503-5711
(707) 443-5093
FAX (707) 443-2891
www.hilfiker.com

Retained Earth Wall

Retained Earth is a registered trademark of Reinforced Earth Company.

The Reinforced Earth Company
88 Inverness Circle East Suite E-101
Englewood, CO 80112
(303) 790-1481
FAX (303) 790-1461
www.reinforcedearth.com

6-13.3.OPT3.GB6
(~~April 2, 2012~~April 6, 2015)
Concrete Block Faced Structural Earth Wall

Concrete block faced structural earth walls shall be constructed of only one of the following wall systems. The Contractor shall make arrangements to purchase the concrete blocks, soil reinforcement, attachment devices, joint filler, and all necessary incidentals from the source identified with each wall system:

Allan Block Wall

Allan Block Wall is a registered trademark of the Allan Block Corporation

Allan Block Corporation
7424 W 78th Street
Bloomington, MN 55439
(800) 899-5309
FAX (952) 835-0013
www.allanblock.com

Mesa Wall

Mesa Wall is a registered trademark of Tensar Corporation

Tensar Corporation
2500 Northwinds Parkway Suite 500
Atlanta, GA 30009
(770) 334-2090
FAX (678) 281-8546
www.tensarcorp.com

Landmark Retaining Wall System

Landmark Retaining Wall System is a registered trademark of Anchor Wall Systems, Inc.

Anchor Wall Systems, Inc.
5959 Baker Road, Suite 390
Minnetonka, MN 55345-5996
(877) 295-5415
FAX (952) 979-8454
www.anchorwall.com

KeySystem I Wall

KeySystem I is a registered trademark of Keystone Retaining Wall Systems, Inc.

Keystone Retaining Wall Systems, Inc.
4444 West 78th Street
Minneapolis, MN 55435
(952) 897-1040
FAX (952) 897-3858
www.keystonewalls.com

~~**6-13.3.OPT3(A).GB6**~~
~~(January 7, 2013)~~
~~Allan Block Wall~~

~~Allan Block Wall is a registered trademark of the Allan Block Corporation~~

~~Allan Block Corporation~~
~~7424 W 78th Street~~

~~Bloomington, MN 55439~~
~~(800) 899-5309~~
~~(FAX (952) 835-0013~~

6-13.3(2).GR6
Submittals

6-13.3(2).INST1.GR6
Section 6-13.3(2) is supplemented with the following:

6-13.3(2).OPT1.FB6
(January 3, 2011)
The following geotechnical design parameters shall be used for the design of the structural earth wall(s):

Wall Name or No.: *** $$1$$ ***

Soil Properties	Wall Backfill	Retained Soil	Foundation Soil
Unit Weight (pcf)	***$$2$$***	***$$3$$***	***$$4$$***
Friction Angle (deg)	***$$5$$***	***$$6$$***	***$$7$$***
Cohesion (psf)	***$$8$$***	***$$9$$***	***$$10$$***

For the Service Limit State, the wall shall be designed to accommodate a differential settlement of *** $$11$$ *** per 100 feet of wall length.

For the Extreme Event I Limit State, the wall shall be designed for a horizontal seismic acceleration coefficient k_h of *** $$12$$ *** g and a vertical seismic acceleration coefficient k_v of *** $$13$$ *** g.

~~**6-13.3(2).OPT1(A).GB6**~~
~~(January 4, 2010)~~
~~For construction of Allan Block Walls, the Contractor shall submit working drawings with supporting design calculations in accordance with Section 6-01.9, and conforming to the following design specifications:~~

1. ~~AASHTO LRFD Bridge Design Specifications, current edition and latest interims.~~

2. ~~WSDOT Bridge Design Manual LRFD, current edition.~~

3. ~~WSDOT Geotechnical Design Manual, current edition.~~

~~The submittal shall identify the geosynthetic reinforcement product, selected from those listed in Appendix D of the current WSDOT QPL and conforming to Section 6-13.2 as supplemented in these Special Provisions, for use as geosynthetic reinforcement for the wall.~~

6-13.3(4).GR6
Precast Concrete Facing Panel and Concrete Block Fabrication

6-13.3(4).INST1.GR6
Section 6-13.3(4) is supplemented with the following:

6-13.3(4).OPT1.GB6
(April 12, 2012)
Specific Fabrication Requirements for Precast Concrete Panel Faced Structural Earth Walls

ARES Modular Panel Wall System

The concrete mix for precast concrete facing panels shall be a Contractor mix design in accordance with Section 6-02.3(2)A, producing a minimum compressive strength at 28 days of 4,500 psi. The Contractor mix design for precast concrete facing panels shall not include Type III cement unless otherwise approved by the Engineer.

The slot opening for geogrid attachment in precast concrete facing panels shall be 1/8 inch minimum. The Contractor shall test the slot opening of each concrete panel using a feeler gauge furnished by Tensar Earth Technologies, Inc. Concrete panels with slot dimension deviations that allow the feeler gauge to be pulled out of the slot shall be rejected.

6-13.3(5).GR6
Precast Concrete Facing Panel and Concrete Block Erection

6-13.3(5).INST1.GR6
Section 6-13.3(5) is supplemented with the following:

6-13.3(5).OPT2.GB6
(April 2, 2012)
Specific Erection Requirements for Precast Concrete Block Faced Structural Earth Walls

Landmark Retaining Wall

When placing each course of concrete blocks, the Contractor shall pull the blocks towards the front face of the wall until the male key of the bottom face of the upper block contacts and fits into the female key of the top face of the supporting block below.

A maximum gap of 1/8-inch is allowed between adjacent concrete blocks, except for the base course set of concrete blocks placed on the leveling pad. A maximum gap of 1-inch is allowed between adjacent base course concrete blocks, provided geosynthetic reinforcement for drains is in place over the gap at the back face of the concrete blocks.

Lock bars shall be installed in the female key of the top face of all concrete block courses receiving geogrid reinforcement. Gaps between adjacent lock bars in the key shall not exceed 3-inches. The lock bar shall be installed flat side up, with the angled side to the back of the concrete block, as shown in the shop drawings.

Geogrid reinforcement shall be placed and connected to concrete block courses specified to receive soil reinforcement. The leading edge of the geogrid reinforcement shall be maintained within 1-inch of the front face of the supporting concrete blocks below. Geogrid panels shall be abutted for 100 percent backfill coverage with less than a 4-inch gap between adjacent panels.

Backfill shall be placed and compacted level with the top of each course of concrete blocks, and geogrid reinforcement placed and connected to concrete block courses specified to receive soil reinforcement, before the Contractor may continue placing the next course of concrete blocks.

Mesa Wall

For all concrete block courses receiving geogrid reinforcement, the fingers of the block connectors shall engage the geogrid reinforcement apertures, both in the connector slot in the block, and across the block core. For all concrete block courses with intermittent geogrid coverage, a #3 steel reinforcing bar shall be placed, butt end to butt end, in the top block groove, with the butt ends being placed at a center of a concrete block.

DIVISION8.GR8 Miscellaneous Construction

8-01.GR8 Erosion Control and Water Pollution Control

8-01.2.GR8 Materials

8-01.2(9-14.4(8)).GR8 Compost
(Section 9-14.4(8) is supplemented with the following)

8-01.2(9-14.4(8)).OPT1.GR8 (April 7, 2014)
May be used to allow biosolids compost on projects that do not use compost on stormwater BMPs. Use with concurrence of the Hydraulics Engineer.

8-01.3.GR8 Construction Requirements

8-01.3(1).GR8 General

8-01.3(1).INST1.GR8 (The tenth paragraph of Section 8-01.3(1) is revised to read)
Must use once preceding any of the following:

8-01.3(1).OPT1.GR8 (Erodible Soil Central Basin)
(January 25, 2010)
Use for projects east of the Cascade range in areas receiving 12 inches or less annual precipitation. Do not use if any portion of the project lies in areas that receive more than 12 inches of annual precipitation. See http://www.wsdot.wa.gov/publications/fulltext/Hydraulics/WaMeanAnnPrecip.pdf for precipitation map.

8-01.3(1).INST2.GR8 (Section 8-01.3(1) is supplemented with the following)
Must use once preceding any of the following:

8-01.3(1).OPT2.GR8 (January 5, 2015)
Use in all projects that require a Construction Stormwater General Permit (CSWGP) unless the Assistant State Construction Engineer for your region authorizes a project to forgo transferring the permit. Contracts with high to moderate erosion related risks as defined in section 2-1.1 of the Temporary Erosion and Sediment Control (TESC) Manual M 3109 should include the "TESC Compliance Incentive" bid item. Must use with **1-02.4.OPT1.GR1, 1-03.3.OPT2.GR1, 1-03.5.OPT1.GR1, 1-07.5(3).OPT1.GR1, 1-07.6.OPT1.FR1, 1-08.5.OPT12.GR1, 8-01.3(1).OPT3.GR8, 8-01.3(1)A.OPT2.GR8, 8-01.3(1)B.OPT2.GR8, 8-01.3(15).OPT1.GR8, 8-01.3(16).OPT1.GR8, 8-01.4.OPT1.GR8, and 8-01.5.OPT2.GR8.**

8-01.3(1).OPT8.FR8 (Side Slope Treatment)
(April 1, 2002)

Use on projects where erodible soils are anticipated and it is desired to have the newly exposed slopes walked before final erosion control can be accomplished, in accordance with recommendation from environmental office.
(1 fill-in)

8-01.3(1).INST3.GR8 (The first through eighth paragraphs of 8-01.3(1) are deleted and replaced with the following)
Must use once preceding any of the following:

8-01.3(1).OPT3.GR8 (January 5, 2015)
Use in all projects that require a Construction Stormwater General Permit (CSWGP) unless the Assistant State Construction Engineer for your region authorizes a project to forgo transferring the permit.
Must use with **1-02.4.OPT1.GR1, 1-03.3.OPT2.GR1, 1-03.5.OPT1.GR1, 1-07.5(3).OPT1.GR1, 1-07.6.OPT1.FR1, 1-08.5.OPT12.GR1, 8-01.3(1).OPT2.GR8, 8-01.3(1)A.OPT2.GR8, 8-01.3(1)B.OPT2.GR8, 8-01.3(15).OPT1.GR8, 8-01.3(16).OPT1.GR8, 8-01.4.OPT1.GR8, and 8-01.5.OPT2.GR8.**

8-01.3(1)A.GR8 Submittals

8-01.3(1)A.INST1.GR8 (Section 8-01.3(1)A is supplemented with the following)
Must use once preceding any of the following:

8-01.3(1)A.OPT1.GR8 (April 3, 2006)
Must include with **8-01.5.OPT1.GR8, 5-01.3(1)A.OPT1.GR5, 5-01.5.OPT1.GR5, 5-05.3(1).OPT7.GR5, 5-05.5.OPT1.GR5, 6-02.3.OPT3.GR6, and 6-02.5.OPT3.GR6.**

8-01.3(1)A.INST2.GR8 (Section 8-01.3(1)A is revised to read)
Must use once preceding any of the following:

8-01.3(1)A.OPT2.GR8 (January 5, 2015)
Use in all projects that require a Construction Stormwater General Permit (CSWGP) unless the Assistant State Construction Engineer for your region authorizes a project to forgo transferring the permit.
Must use with **1-02.4.OPT1.GR1, 1-03.3.OPT2.GR1, 1-03.5.OPT1.GR1, 1-07.5(3).OPT1.GR1, 1-07.6.OPT1.FR1, 1-08.5.OPT12.GR1, 8-01.3(1).OPT2.GR8, 8-01.3(1).OPT3.GR8, 8-01.3(1)B.OPT2.GR8, 8-01.3(15).OPT1.GR8, 8-01.3(16).OPT1.GR8, 8-01.4.OPT1.GR8, and 8-01.5.OPT2.GR8.**

8-01.3(1)B.GR8 Erosion and Sediment Control (ESC) Lead

8-01.3(1)B.INST1.GR8 (The second and third paragraphs in Section 8-01.3(1)B are revised to read)
Must use once preceding any of the following:

~~8-01.3(1)B.OPT1.GR8 (January 7, 2013)~~
~~For use on projects where the project has a high risk of soil erosion due to soil type, slope gradiant and work in or has proximity to waters of the State (Hydraulics Runoff Manual (HRM) defines projects susceptible for high risk soil erosion). Also for use on projects where there is extensive monitoring of environmental permit compliance. The Region Construction Engineer and Region Environmental Office should be consulted for use as the provision introduces an Environmental Compliance Lead person that incorporates, expands and replaces the duties of the ESC Lead person.~~
~~Must include **8-SA3.GR8.**~~
~~Do not use with **8-01.3(1)B.OPT2.GR8**.~~

8-01.3(1)B.OPT2.GR8 (January 5, 2015)
Use in all projects that require a Construction Stormwater General Permit (CSWGP) unless the Assistant State Construction Engineer for your region authorizes a project to forgo transferring the permit.
Must use with **1-02.4.OPT1.GR1, 1-03.3.OPT2.GR1, 1-03.5.OPT1.GR1, 1-07.5(3).OPT1.GR1, 1-07.6.OPT1.FR1, 1-08.5.OPT12.GR1, 8-01.3(1).OPT2.GR8, 8-01.3(1).OPT3.GR8, 8-01.3(1)A.OPT2.GR8, 8-01.3(15).OPT1.GR8, 8-01.3(16).OPT1.GR8, 8-01.4.OPT1.GR8, and 8-01.5.OPT2.GR8.**
~~Do not use with **8-01.3(1)B.OPT1.GR8**.~~

8-01.3(1)C.GR8 Water Management

8-01.3(1)C.INST1.GR8 (Section 8-01.3(1)C is supplemented with the following)
Must use once preceding any of the following:

8-01.3(1)C.OPT1.FR8 (Off-site stormwater routed through or around Project site)
(August 6, 2012)
Use when there are known locations where stormwater enters the project site and it is desired to prevent this stormwater from flowing uncontrolled through the project site.
(1 fill-in)

8-01.3(2).GR8 Seeding, Fertilizing, and Mulching

8-01.3(2)B.GR8 Seeding and Fertilizing

8-01.3(2)B.INST1.GR8 (Section 8-01.3(2)B is supplemented with the following)
Must use once preceding any of the following:

8-01.3(2)B.OPT1.FR8 (Composition, proportion, quality and application rate of grass seed)
(August 4, 2014)
Use on projects where a common, non-native or non-source-identified seed can be used. This mix will generally be used within urban areas on small areas of disturbance. The fill-ins for the seed should be provided by the Region Landscape Architect or Headquarters Roadside and Site Development for regions without a Landscape Architect.
(2 fill-ins) (Fill-ins with dollar signs only are to be used as required)

8-01.3(2)B.OPT2.FR8 (Composition, proportion, quality and application rate of grass seed)
(August 4, 2014)
Use in projects where the Region Landscape Architect recommends source identified (local genetics) native seed. The fill-ins should be provided by the Region Landscape Architect or Headquarters Roadside and Site Development for regions without a Landscape Architect.
(3 fill-ins) (Fill-ins with dollar signs only are to be used as required.)

8-01.3(2)B.OPT3.GR8 (Seeding by hand)
(January 3, 2006)
Must also use **8-01.3(2)B.OPT6.GR8**.
Use in projects with seeding and fertilizing of less than 1 acre, the use of mechanical equipment would not be cost effective, or on remote projects with many small areas.

8-01.3(2)B.OPT4.FR8 (One application of fertilizer)
(January 3, 2006)
Use in projects requiring only one application of fertilizer.
(4 fill-ins) (The fill-ins for the fertilizer itself should be by consulting the State Horticulturist, the Region Landscape Architect, or Headquarters Roadside and Site Development. Fill-in $$4$$ should be 2/3 the amount of nitrogen in fill-in $$1$$.)

8-01.3(2)B.OPT5.FR8 (More than one application of fertilizer)
(January 3, 2006)

Use in projects when the Region Landscape Arch. recommends more than one fertilizer application.
(7 fill-ins) (The fill-ins for the fertilizer itself should be by consulting the Region Landscape Architect, or Headquarters Roadside and Site Development. Fill-in $$7$$ should be 2/3 the amount of nitrogen in fill-in $$4$$.)

8-01.3(2)B.OPT6.GR8 (Fertilizing by hand)
(January 3, 2006)
Must include with **8-01.3(2)B.OPT3.GR8**.
Use in projects with seeding and fertilizing of less than 1 acre, the use of mechanical equipment would not be cost effective, or on remote projects with many small areas.

8-01.3(2)B.OPT7.FR8 (Fertilizer Application in Eastern Washington)
(January 3, 2006)
Use this GSP for projects in eastern Washington where soils tests show excess potassium and phosphorous and high pH.

8-01.3(2)B.OPT8.FR8 (Composition, proportion, quality and application rate of grass seed)
(August 4, 2014)
Use in projects where the Region Landscape Architect recommends native seed that is not source identified. The fill-ins should be provided by the Region Landscape Architect or Headquarters Roadside and Site Development for regions without a Landscape Architect.
(3 fill-ins)

8-01.3(2)C.GR8 Liming

8-01.3(2)C.INST1.GR8 (Section 8-01.3(2)C is supplemented with the following)
Must use once preceding any of the following:

8-01.3(2)C.OPT1.FR8 (Rate of application of lime)
(January 3, 2006)
Use in projects requiring the application of lime.
(1 fill-in)

8-01.3(2)D.GR8 Mulching

8-01.3(2)D.INST1.GR8 (Section 8-01.3(2)D is supplemented with the following)
Must use once preceding any of the following:

8-01.3(2)D.OPT1.FR8 (Type and rate of application of mulch)
(January 5, 2015)

Use in projects requiring the application of mulch when the application rate per acre or the allowable pounds in any single lift are revised from the Standard Specifications.
(3 fill-ins)

8-01.3(15).GR8 **Maintenance**

8-01.3(15).OPT1.GR8 (January 5, 2015)
(The fifth paragraph of Section 8-01.3(15) is deleted)
Use in all projects that require a Construction Stormwater General Permit (CSWGP) unless the Assistant State Construction Engineer for your region authorizes a project to forgo transferring the permit.
Must use with **1-02.4.OPT1.GR1, 1-03.3.OPT2.GR1, 1-03.5.OPT1.GR1, 1-07.5(3).OPT1.GR1, 1-07.6.OPT1.FR1, 1-08.5.OPT12.GR1, 8-01.3(1).OPT2.GR8, 8-01.3(1).OPT3.GR8, 8-01.3(1)A.OPT2.GR8, 8-01.3(1)B.OPT2.GR8, 8-01.3(16).OPT1.GR8, 8-01.4.OPT1.GR8, and 8-01.5.OPT2.GR8.**

8-01.3(16).GR8 **Removal**

8-01.3(16).INST1.GR8 (Section 8-01.3(16) is revised to read)
Must use once preceding any of the following:

8-01.3(16).OPT1.GR8 (January 5, 2015)
Use in all projects that require a Construction Stormwater General Permit (CSWGP) unless the Assistant State Construction Engineer for your region authorizes a project to forgo transferring the permit.
Must use with **1-02.4.OPT1.GR1, 1-03.3.OPT2.GR1, 1-03.5.OPT1.GR1, 1-07.5(3).OPT1.GR1, 1-07.6.OPT1.FR1, 1-08.5.OPT12.GR1, 8-01.3(1).OPT2.GR8, 8-01.3(1).OPT3.GR8, 8-01.3(1)A.OPT2.GR8, 8-01.3(1)B.OPT2.GR8, 8-01.3(15).OPT1.GR8, 8-01.4.OPT1.GR8, and 8-01.5.OPT2.GR8.**

8-01.4.GR8 **Measurement**

8-01.4.INST1.GR8 (Section 8-01.4 is supplemented with the following)
Must use once preceding any of the following:

8-01.4.OPT1.GR8 (January 5, 2015)
Use in all projects that require a Construction Stormwater General Permit (CSWGP) unless the Assistant State Construction Engineer for your region authorizes a project to forgo transferring the permit.
Must use with **1-02.4.OPT1.GR1, 1-03.3.OPT2.GR1, 1-03.5.OPT1.GR1, 1-07.5(3).OPT1.GR1, 1-07.6.OPT1.FR1, 1-08.5.OPT12.GR1, 8-01.3(1).OPT2.GR8, 8-01.3(1).OPT3.GR8, 8-01.3(1)A.OPT2.GR8, 8-**

01.3(1)B.OPT2.GR8, 8-01.3(15).OPT1.GR8, 8-01.3(16).OPT1.GR8, and 8-01.5.OPT2.GR8

8-01.5.GR8 Payment

8-01.5.INST1.GR8 (Section 8-01.5 is supplemented with the following) Must use once preceding any of the following:

8-01.5.OPT1.GR8 (April 3, 2006) Must include with **8-01.3(1)A.OPT1.GR8, 5-01.3(1)A.OPT1.GR5, 5-01.5.OPT1.GR5, 5-05.3(1).OPT2.GR5, 5-05.5.OPT1.GR5, 6-02.3.OPT3.GR6, and 6-02.5.OPT3.GB6.**

8-01.5.OPT2.GR8 (~~January 5~~April 6, 2015) Use in all projects that require a Construction Stormwater General Permit (CSWGP) unless the Assistant State Construction Engineer for your region authorizes a project to forgo transferring the permit.
Contracts with high to moderate erosion related risks as defined in section 2-1.1 of the Temporary Erosion and Sediment Control (TESC) Manual M 3109 should include the "TESC Compliance Incentive" bid item.
Must use with **1-02.4.OPT1.GR1, 1-03.3.OPT2.GR1, 1-03.5.OPT1.GR1, 1-07.5(3).OPT1.GR1, 1-07.6.OPT1.FR1, 1-08.5.OPT12.GR1, 8-01.3(1).OPT2.GR8, 8-01.3(1).OPT3.GR8, 8-01.3(1)A.OPT2.GR8, 8-01.3(1)B.OPT2.GR8, 8-01.3(15).OPT1.GR8, 8-01.3(16).OPT1.GR8, and 8-01.4.OPT1.GR8.**

8-02.GR8 Roadside Restoration

8-02.1.GR8 Description

8-02.1.INST1.GR8 (Section 8-02.1 is supplemented with the following) Must use once preceding any of the following:

8-02.1.OPT1.GR8 (Removal of Buried Man-Made Debris)
(August 4, 2014)
Use on projects that include soil amendment, and/or irrigation systems, and where man-made construction debris is known or suspected to exist. Requires the approval of the Region Construction Manager. Must include **8-02.3(5).OPT4.GR8** and **8-02.5.OPT2.GR8**.

8-02.2.GR8 Materials

8-02.2.INST1.GR8 (Section 8-02.2 is supplemented with the following) Must use once preceding the following:

8-02.2.OPT1.GR8 (Conservation Grade Plant Material)
(January 3, 2011)
Use in projects that include "conservation grade" plant material in the plant list. Use requires approval of the

Region Landscape Architect or HQ Region Liaison Landscape Architect.

8-02.2(9-14).GR8 (Erosion Control and Roadside Planting)

8-02.2(9-14).INST1.GR8 (Section 9-14 is supplemented with the following)
Must use once preceding the following:

8-02.2(9-14).OPT1.FR8 (Weed Barrier Mats)
(April 7, 2008)
Use in projects requiring weed barrier mats.
(1 fill-in) Fill-in is the staple length.
Contact the Region Landscape Architect or HQ Region Liaison Landscape Architect for fill-in information.

8-02.2(9-14.4).GR8 (Mulch and Amendments)

8-02.2(9-14.4(8)).GR8 (Compost)
(Section 9-14.4(8) is supplemented with the following)
Must use once preceding any of the following:

8-02.2(9-14.4(8)).OPT1.GR8 (January 3, 2010)
Use when the contract has less than100 yards of compost, or less than 30 working days and 100 yards of compost or greater.

8-02.3.GR8 Construction Requirements

8-02.3(5).GR8 Planting Area Preparation

8-02.3(5).INST1.GR8 (Section 8-02.3(5) is supplemented with the following)
Must use once preceding any of the following:

8-02.3(5).OPT1.FR8 (Application of Compost)
(August 5, 2013)
Include when no incorporation of compost is required.
(1 fill-in)

8-02.3(5).OPT2.FR8 (Application of Compost)
(August 5, 2013)
Include when compost is to be incorporated into the soil and irrigation lines are included in the Contract.
(2 fill-ins)

8-02.3(5).OPT3.FR8 (Application of Compost)
(August 5, 2013)
Include when compost is to be incorporated onto the soil and there are no irrigation lines included in the Contract.
(2 fill-ins).

8-02.3(5).OPT4.GR8 (Removal of Buried Man-Made Debris)
(August 4, 2014)

Must include with **8-02.1.OPT1.GR8 and 8-02.5.OPT2.GR8.**

8-02.3(8).GR8 Planting

8-02.3(8).INST1.GR8 (Section 8-02.3(8) is supplemented with the following) Must use once preceding any of the following:

8-02.3(8).OPT1.FR8 (February 25, 2013) Must use when the project requires a U.S. Army Corps of Engineers Nationwide Permit. Use the Environmental Commitment Meeting to determine applicability of this provision for the project. (1 fill-in)

8-02.3(11).GR8 Bark or Wood Chip Mulch

8-02.3(11).INST1.GR8 (Section 8-02.3(11) is supplemented with the following) Must use once preceding any of the following:

8-02.3(11).OPT1.FR8 (Placement of Bark or Wood Chip Mulch) (April 2, 2012) Use in projects requiring bark and wood chip mulch. Use requires approval of the Region Landscape Architect or HQ Region Liaison Landscape Architect. (1 fill-in)

8-02.3(13).GR8 Plant Establishment

8-02.3(13).INST1.GR8 (Section 8-02.3(13) is supplemented with the following) Must use once preceding any of the following:

8-02.3(13).OPT1.GR8 (January 5, 2015) Use in projects with multiple year plant establishment. Must include with **8-02.5.OPT1.GR8**.

8-02.4.GR8 Measurement

8-02.4.INST1.GR8 (Section 8-02.4 is supplemented with the following) Must use once preceding any of the following:

8-02.4.OPT1.GR8 (January 5, 2015) Use in projects where Topsoil, Compost, Soil Amendments, or Bark or Wood Chip Mulch is applied around trees or shrub beds, or in areas of less than one acre. Must include with **8-02.5.OPT3.GR8.**

8-02.5.GR8 Payment

8-02.5.INST1.GR8 (Section 8-02.5 is supplemented with the following) Must use once preceding any of the following:

8-02.5.OPT1.GR8 (January 5, 2015)

Must include with **8-02.3(13).OPT1.GR8**.

8-02.5.OPT2.GR8 (Removal of Buried Man-Made Debris)
(August 4, 2014)
Must include with **8-02.1.OPT1.GR8** and **8-02.3(5).OPT4.GR8**.

8-02.5.OPT3.GR8 (January 5, 2015)
Use in projects where Topsoil, Compost, Soil Amendments, or Bark or Wood Chip Mulch is applied around trees or shrub beds, or in areas of less than one acre. Must include with **8-02.4.OPT1.GR8.**

8-10.GR8 Guide Posts

8-10.1.GR8 Description

8-10.1.INST1.GR8 (Section 8-10.1 is supplemented with the following)
Must use once preceding any of the following:

8-10.1.OPT1.GR8 (Barrier Delineators)
(April 1, 2002)
Must also use **8-10.2.OPT1.GR8, 8-10.3.OPT1.GR8** or **8-10.3.OPT2.GR8, 8-10.4.OPT1.GR8,** and **8-10.5.OPT1.GR8.**

8-10.2.GR8 Materials

8-10.2.INST1.GR8 (Section 8-10.2 is supplemented with the following)
Must use once preceding any of the following:

8-10.2.OPT1.GR8 (Barrier Delineators)
(April 1, 2002)
Must also use **8-10.1.OPT1.GR8, 8-10.3.OPT1.GR8** or **8-10.3.OPT2.GR8, 8-10.4.OPT1.GR8,** and **8-10.5.OPT1.GR8.**

8-10.3.GR8 Construction Requirements

8-10.3.INST1.GR8 (Section 8-10.3 is supplemented with the following)
Must use once preceding any of the following:

8-10.3.OPT1.GR8 (Barrier Delineators)
(April 1, 2002)
Delineators placed 6" down from top.
Must also use **8-10.1.OPT1.GR8, 8-10.2.OPT1.GR8 8-10.4.OPT1.GR8,** and **8-10.5.OPT1.GR8.**

8-10.3.OPT2.GR8 (Barrier Delineators)
(April 1, 2002)
Delineators placed on top of barrier.
Must also use **8-10.1.OPT1.GR8, 8-10.2.OPT1.GR8 8-10.4.OPT1.GR8,** and **8-10.5.OPT1.GR8.**

8-10.4.GR8 Measurement

8-10.4.INST1.GR8 (Section 8-10.4 is supplemented with the following)
Must use once preceding any of the following:

8-10.4.OPT1.GR8 (Barrier Delineators)
(April 1, 2002)
Must also use **8-10.1.OPT1.GR8, 8-10.2.OPT1.GR8 8-10.3.OPT1.GR8,** or **8-10.3.OPT2.GR8,** and **8-10.5.OPT1.GR8.**

8-10.5.GR8 Payment

8-10.5.INST1.GR8 (Section 8-10.5 is supplemented with the following)
Must use once preceding any of the following:

8-10.5.OPT1.GR8 (Barrier Delineators)
(April 1, 2002)
Must also use **8-10.1.OPT1.GR8, 8-10.2.OPT1.GR8 8-10.3.OPT1.GR8,** or **8-10.3.OPT2.GR8,** and **8-10.4.OPT1.GR8.**

8-11.GR8 Guardrail

8-11.1.GR8 Description

8-11.1.INST1.GR8 (Section 8-11.1 is supplemented with the following)
Must use once preceding any of the following:

8-11.1.OPT1.GR8 (High-Tension Cable Barrier System 3 and 4 Cable)
(April 6, 2009)
Must also use **8-11.2.OPT1.GR8 or 8-11.2.OPT2.GR8 (or both), 8-11.3.OPT2.FR8, 8-11.4.OPT2.GR8**, **8-11.5.OPT7.GR8,** and **8-11.5.OPT8.GR8.**

8-11.2.GR8 Materials

8-11.2.INST1.GR8 (Section 8-11.2 is supplemented with the following)
Must use once preceding any of the following:

8-11.2.OPT1.GR8 (High-Tension Cable Barrier System 3 Cable)
(April 6, 2009)
Must also use **8-11.1.OPT1.GR8, 8-11.3.OPT2.FR8, 8-11.4.OPT2.GR8, 8-11.5.OPT7.GR8,** and **8-11.5.OPT8.GR8**.

8-11.2.OPT2.GR8 (High-Tension Cable Barrier System 4 Cable)
(August 3, 2009)
Must also use **8-11.1.OPT1.GR8, 8-11.3.OPT2.FR8, 8-11.4.OPT2.GR8, 8-11.5.OPT7.GR8,** and **8-11.5.OPT8.GR8**.

8-11.2.OPT3.GR8 (~~January 5~~April 6, 2015)

Use in projects with Weathering Steel Beam Guardrail. Must also use **8-11.2(9-16.3(1)).OPT1.GR8, 8-11.2(9-16.3(2)).OPT5.GR8, 8-11.2(9-16.3(5)).OPT1.GR8, 8-11.3(1)B.OPT2.GR8, 8-11.4.OPT3.GR8, 8-11.5.OPT9.GR8.**

8-11.2(9-16.3).GR8 (Beam Guardrail)

8-11.2(9-16.3(1)).GR8 (Rail Element)

8-11.2(9-16.3(1)).INST1.GR8 (Section 9-16.3(1) is supplemented with the following)
Must use once preceding any of the following:

8-11.2(9-16.3(1)).OPT1.GR8 (Weathering Steel Beam Guardrail)
(August 4, 2014)
Use in projects with Weathering Steel Beam Guardrail. Include with **8-11.2.OPT3.GR8, 8-11.2(9-16.3(2)).OPT5.GR8, 8-11.2(9-16.3(5)).OPT1.GR8, 8-11.3(1)B.OPT2.GR8, 8-11.4.OPT3.GR8, 8-11.5.OPT9.GR8.**

8-11.2(9-16.3(2)).GR8 (Posts and Blocks)

8-11.2(9-16.3(2)).INST1.GR8 (Section 9-16.3(2) is supplemented with the following)
Must use once preceding any of the following:

8-11.2(9-16.3(2)).OPT1.~~BSP.~~GB8 (Steel shear plates and backing plates)
(~~BSP February 22, 2001~~April 6, 2015)
Use in thrie beam retrofit projects with beam guardrail Type Thrie Beam using timber blockouts wedged between openings in existing concrete baluster rails. Include with **6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, 8-11.2(9-16.3(4)).OPT1.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8, 8-11.3(1)A.OPT1.~~BSP.~~GB8, and 8-11.3(1)B.OPT7.~~BSP.~~GB8**.

8-11.2(9-16.3(2)).OPT2.~~BSP.~~GB8 (Grout)
(~~BSP January 4, 2010~~April 6, 2015)
Use in thrie beam retrofit projects with beam guardrail Type Thrie Beam using a steel post connection to the existing concrete curb or railbase. Include with **6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, 8-11.2(9-16.3(4)).OPT1.~~BSP.~~GB8, and 8-11.3(1)A.OPT2.~~BSP.~~GB8**.

8-11.2(9-16.3(2)).OPT3.~~BSP.~~GB8 (Steel Angles for Timber Blockout Connection to Truss)
(~~BSP October 13, 2003~~April 6, 2015)
Use in thrie beam retrofit projects with beam guardrail Type Thrie Beam requiring timber blockout connection to existing steel truss members. Include with **8-11.2(9-**

16.3(4)).OPT2.~~BSP.~~GB8 and other appropriate GSPs supplementing Sections 8-11.2 and 8-11.3(1).

8-11.2(9-16.3(2)).OPT4.~~BSP.~~GB8 (Beam Guardrail Type WP Thrie Beam)
(~~BSP January 7, 2013~~April 6, 2015)
Use in thrie beam retrofit projects with weak post thrie beam guardrail retrofit (beam guardrail Type WP Thrie Beam). Include with **1-07.1.OPT2.FR1, 8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8, 8-11.3(1)A.OPT3.~~BSP.~~GB8, 8-11.3(1)B.OPT9.~~BSP.~~GB8, 8-11.3(1)G.OPT1.~~BSP.~~GB8, and 8-11.3(1)D.OPT1.~~BSP.~~GB8**.

8-11.2(9-16.3(2)).OPT5.GR8 (Weathering Steel Beam Guardrail Posts)
(~~January 5~~April 6, 2015)
Use in projects with Weathering Steel Beam Guardrail. Include with **8-11.2.OPT3.GR8, 8-11.2(9-16.3(1)).OPT1.GR8, 8-11.2(9-16.3(5)).OPT1.GR8, 8-11.3(1)B.OPT2.GR8, 8-11.4.OPT3.GR8, 8-11.5.OPT9.GR8**.

8-11.2(9-16.3(4)).GB8 (Hardware)
(Section 9-16.3(4) is supplemented with the following)
Must use once preceding any of the following:

8-11.2(9-16.3(4)).OPT1.~~BSP.~~GB8 (Resin bonded anchors)
(~~BSP July 12, 2000~~April 6, 2015)
Use in thrie beam retrofit projects requiring resin bonded anchors for connection to concrete baluster railing end posts, and concrete curbs and railbases. Include with **6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, and either 8-11.2(9-16.3(2)).OPT1.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8, 8-11.3(1)A.OPT1.~~BSP.~~GB8, and 8-11.3(1)B.OPT7.~~BSP.~~GB8, or 8-11.2(9-16.3(2)).OPT2.~~BSP.~~GB8 and 8-11.3(1)A.OPT2.~~BSP.~~GB8**.

8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8 (Lag screws)
(~~BSP July 12, 2000~~April 6, 2015)
Use in thrie beam retrofit projects requiring connections with lag screws to timber members and blockouts.

8-11.2(9-16.3(5)).GR8 (Anchors)

8-11.2(9-16.3(5)).INST1.GR8 (Section 9-16.3(5) is supplemented with the following)
Must use once preceding any of the following:

8-11.2(9-16.3(5)).OPT1.GR8 (Weathering Steel Beam Guardrail)
(August 4, 2014)
Use in projects with Weathering Steel Beam Guardrail.

Include with **8-11.2.OPT3.GR8, 8-11.2(9-16.3(1)).OPT1.GR8, 8-11.2(9-16.3(2)).OPT5.GR8, 8-11.3(1)B.OPT2.GR8, 8-11.4.OPT3.GR8, 8-11.5.OPT9.GR8**.

8-11.3.GR8 Construction Requirements

8-11.3.INST1.GR8 (Section 8-11.3 is supplemented with the following)
Must use once preceding any of the following:

8-11.3.OPT1.GR8 (Box Culvert Guardrail Steel Posts)
(January 4, 2010)
Must also use **8-11.4.OPT1.GR8** and **8-11.5.OPT6.GR8**.
Use in projects requiring the construction of steel guardrail posts on top of existing concrete box culverts.

8-11.3.OPT2.FR8 (High-Tension Cable Barrier System 3 and 4 Cable)
(April 6, 2009)
Must also use **8-11.1.OPT1.GR8, 8-11.2.OPT1.GR8 or 8-11.2.OPT2.GR8 (or both), 8-11.4.OPT2.GR8, 8-11.5.OPT7.GR8, and 8-11.5.OPT8.GR8.**
Fill-in is the location(s) of Contracting Agency sites to deliver complete sets of Additional High-Tension Cable Barrier Components.
(1 fill-in)

8-11.3.OPT3.GR8 (Beam Guardrail Type 31 NB)
(August 6, 2007)
Use in projects that contain Type 31 NB Guardrail.

8-11.3(1).GR8 Beam Guardrail

8-11.3(1).INST1.GR8 (Section 8-11.3(1) is supplemented with the following)
Must use once preceding any of the following:

8-11.3(1).OPT1.GR8 Post Selection
(April 5, 2010)
Use in all projects with guardrail.

8-11.3(1)A.GR8 Erection of Posts

8-11.3(1)A.INST1.GR8 (Section 8-11.3(1)A is supplemented with the following)
Must use once preceding any of the following:

8-11.3(1)A.OPT1.~~BSP.~~GB8 (Timber Blockouts for Beam Guardrail Type Thrie Beam)
(~~BSP February 9, 2009~~April 6, 2015)
Use in thrie beam retrofit projects with beam guardrail Type Thrie Beam using timber blockouts wedged between openings in existing concrete baluster rails. Include with **6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, 8-11.2(9-16.3(2)).OPT1.~~BSP.~~GB8, 8-11.2(9-**

16.3(4)).OPT1.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8, and 8-11.3(1)B.OPT7.~~BSP.~~GB8.

8-11.3(1)A.OPT2.~~BSP.~~GB8 (Steel Posts for Beam Guardrail Type Thrie Beam)
(~~BSP January 16, 2012~~April 6, 2015)
Use in thrie beam retrofit projects with beam guardrail Type Thrie Beam using a steel post connection to the existing concrete curb or railbase. Include with **6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, 8-11.2(9-16.3(2)).OPT2.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT1.~~BSP.~~GB8, and 8-11.3(1)A.OPT2.~~BSP.~~GB8**.

8-11.3(1)A.OPT3.~~BSP.~~GB8 (Beam Guardrail Type WP Thrie Beam)
(~~BSP August 3, 2009~~April 6, 2015)
Include in thrie beam retrofit projects with weak post thrie beam guardrail retrofit (beam guardrail Type WP Thrie Beam). Include with **1-07.1.OPT2.FR1, 8-11.2(9-16.3(2)).OPT4.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8, 8-11.3(1)B.OPT9.~~BSP.~~GB8, 8-11.3(1)G.OPT1.~~BSP.~~GB8, and 8-11.3(1)D.OPT1.~~BSP.~~GB8**.

8-11.3(1)B.GR8 Erection of Rail

8-11.3(1)B.INST1.GR8 (Section 8-11.3(1)B is supplemented with the following)
Must use once preceding any of the following:

8-11.3(1)B.OPT1.GR8 (August 6, 2007)
Use in projects requiring snow load washers. Consult Region Operations for determination of need.

8-11.3(1)B.OPT2.GR8 (Weathering Steel Beam Guardrail)
(August 4, 2014)
Use in projects with Weathering Steel Beam Guardrail.
Include with **8-11.2.OPT3.GR8, 8-11.2(9-16.3(1)).OPT1.GR8, 8-11.2(9-16.3(2)).OPT5.GR8, 8-11.2(9-16.3(5)).OPT1.GR8, 8-11.4.OPT3.GR8, 8-11.5.OPT9.GR8**.

8-11.3(1)B.OPT6.~~BSP.~~GB8 (Field Measuring to Existing Type 3 Anchors)
(~~BSP July 12, 2000~~April 6, 2015)

Include in thrie beam retrofit projects when existing Type 3 anchors are being salvaged for reuse as part of the retrofitted guardrail system.

8-11.3(1)B.OPT7.~~BSP.~~GB8 (Attaching Beam Guardrail Type Thrie Beam to Timber Blockouts)
(~~BSP August 3, 2009~~April 6, 2015)
Use in thrie beam retrofit projects with beam guardrail Type Thrie Beam using timber blockouts wedged between openings in existing concrete baluster rails. Include with **6-02.2.OPT1.GR6, 6-02.3(18).OPT1.GR6, 8-11.2(9-16.3(2)).OPT1.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT1.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8, and 8-11.3(1)A.OPT1.~~BSP.~~GB8**.

8-11.3(1)B.OPT8.~~BSP.~~GB8 (Thrie Beam Expansion Joint Element)
(~~BSP July 12, 2000~~April 6, 2015)
Use in thrie beam retrofit projects where the beam guardrail elements are continuous across interior bridge expansion joints.

8-11.3(1)B.OPT9.~~BSP.~~GB8 (Beam Guardrail Type WP Thrie Beam)
(~~BSP August 3, 2009~~April 6, 2015)
Include in thrie beam retrofit projects with weak post thrie beam guardrail retrofit (beam guardrail Type WP Thrie Beam). Include with **1-07.1.OPT2.FR1, 8-11.2(9-16.3(2)).OPT4.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8, 8-11.3(1)A.OPT3.~~BSP.~~GB8, 8-11.3(1)G.OPT1.~~BSP.~~GB8, and 8-11.3(1)D.OPT1.~~BSP.~~GB8**.

8-11.3(1)D.GR8 Removing Guardrail

8-11.3(1)D.INST1.GR8 (Section 8-11.3(1)D is supplemented with the following)
Must use once preceding any of the following:

8-11.3(1)D.OPT1.~~BSP.~~GB8 (Beam Guardrail Type WP Thrie Beam)
(~~BSP July 12, 2000~~April 6, 2015)
Include in thrie beam retrofit projects with weak post thrie beam guardrail retrofit (beam guardrail Type WP Thrie Beam). Include with **1-07.1.OPT2.FR1, 8-11.2(9-16.3(2)).OPT4.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8, 8-11.3(1)A.OPT3.~~BSP.~~GB8, 8-11.3(1)B.OPT9.~~BSP.~~GB8, and 8-11.3(1)G.OPT1.~~BSP.~~GB8**.

8-11.3(1)H.GR8 Guardrail Construction Exposed to Traffic

8-11.3(1)H.INST1.GR8 (Section 8-11.3(1)H is supplemented with the following)
Must use once preceding any of the following:

8-11.3(1)~~G~~H.OPT1.~~BSP.~~GB8 (Beam Guardrail Type WP Thrie Beam)
(~~BSP July 12, 2000~~April 6, 2015)
Include in thrie beam retrofit projects with weak post thrie beam guardrail retrofit (beam guardrail Type WP Thrie Beam). Include with **1-07.1.OPT2.FR1, 8-11.2(9-16.3(2)).OPT4.~~BSP.~~GB8, 8-11.2(9-16.3(4)).OPT2.~~BSP.~~GB8, 8-11.3(1)A.OPT3.~~BSP.~~GB8, 8-11.3(1)B.OPT9.~~BSP.~~GB8, and 8-11.3(1)D.OPT1.~~BSP.~~GB8**.

8-11.4.GR8 Measurement

8-11.4.INST1.GR8 (Section 8-11.4 is supplemented with the following)
Must use once preceding any of the following:

8-11.4.OPT1.GR8 (Box Culvert Guardrail Steel Posts)
(March 13, 1995)
Must include with 8-11.3.OPT1.GR8 and 8-11.5.OPT6.GR8.
Use in projects requiring the construction of steel guardrail posts on top of concrete box culverts.

8-11.4.OPT2.GR8 (High-Tension Cable Barrier System 3 and 4 Cable)
(August 6, 2012)
Must also use **8-11.1.OPT1.GR8, 8-11.2.OPT1.GR8 or 8-11.2.OPT2.GR8 (or both), 8-11.3.OPT2.FR8, 8-11.5.OPT7.GR8,** and **8-11.5.OPT8.GR8.**

8-11.4.OPT3.GR8 (Weathering Steel Beam Guardrail)
(~~August 4, 2014~~April 6, 2015)
Must also use **8-11.2.OPT3.GR8, 8-11.2(9-16.3(1)).OPT1.GR8, 8-11.2(9-16.3(2)).OPT5.GR8, 8-11.2(9-16.3(5)).OPT1.GR8, 8-11.3(1)B.OPT2.GR8, 8-11.5.OPT9.GR8.**

8-11.5.GR8 Payment

8-11.5.INST2.GR8 (Section 8-11.5 is supplemented with the following)
Must use once preceding any of the following:

8-11.5.OPT6.GR8 (Box Culvert Guardrail Steel Posts)
(September 30, 1996)
Must include with 8-11.3.OPT1.GR8 and 8-11.4.OPT1.GR8.
Use in projects requiring the construction of steel guardrail posts on top of concrete box culverts.

8-11.5.OPT7.GR8 (High-Tension Cable Barrier)
(April 6, 2009)

Must also use **8-11.1.OPT1.GR8, 8-11.2.OPT1.GR8, 8-11.3.OPT2.FR8, 8-11.4.OPT2.GR8** and **8-11.5.OPT8.GR8.**

8-11.5.OPT8.GR8 (Additional High-Tension Cable Barrier Components)
(April 6, 2009)
Must also use **8-11.1.OPT1.GR8, 8-11.2.OPT1.GR8, 8-11.3.OPT2.FR8, 8-11.4.OPT2.GR8** and **8-11.5.OPT7.GR8**. No Federal funding participation. Must be in state funds group.

8-11.5.OPT9.GR8 (Weathering Steel Beam Guardrail)
(~~August 4, 2014~~April 6, 2015)
Must also use **8-11.2.OPT3.GR8, 8-11.2(9-16.3(1)).OPT1.GR8, 8-11.2(9-16.3(2)).OPT5.GR8, 8-11.2(9-16.3(5)).OPT1.GR8, 8-11.3(1)B.OPT2.GR8, 8-11.4.OPT3.GR8.**

8-12.GR8 Chain Link Fence and Wire Fence

8-12.2.GR8 Materials

8-12.2.INST1.GR8 (Section 8-12.2 is supplemented with the following)
Must use once preceding any of the following:

8-12.2.OPT1.FR8 (Coated chain link fence)
(August 3, 2009)
Use in projects requiring the construction of coated chain link fence. Must include **8-12.5.OPT1.GR8**.
(1 fill-in)

8-12.2.OPT6.~~BSP.~~GB8 (Cable Fence)
(~~BSP September 8, 2003~~April 6, 2015)
Use in projects with cable fence. Include with **8-12.3.OPT1(B).~~BSP.~~GB8, 8-12.4.OPT1.~~BSP.~~GB8, and 8-12.5.OPT6.~~BSP.~~GB8**. Include with **8-12.3.OPT1(A).~~BSP.~~GB8** when anchoring the cable fence posts to existing concrete structures. Include with **8-12.3.OPT1(C).~~BSP.~~GB8** when painting of the galvanized fence posts is required.

8-12.3.GR8 Construction Requirements

8-12.3.INST1.GR8 (Section 8-12.3 is supplemented with the following)
Must use once preceding any of the following:

8-12.3.OPT1.~~BSP.~~GB8 **(**Cable Fence**)**
Use once preceding the following:

8-12.3.OPT1(A).~~BSP.~~GB8 (Field Measuring For Cable Fence)
(~~BSP September 8, 2003~~April 6, 2015)
Use in projects with cable fence when anchoring the cable fence posts to existing concrete structures.
Include with **8-12.2.OPT6.~~BSP.~~GB8, 8-**

12.3.OPT1(B).~~BSP.~~GB8, 8-12.4.OPT1.~~BSP.~~GB8, and 8-12.5.OPT6.~~BSP.~~GB8. Include with **8-12.3.OPT1(C).~~BSP.~~GB8** when painting of the galvanized fence posts is required.

8-12.3.OPT1(B).~~BSP.~~GB8 (Cable Fence)
(~~BSP September 8, 2003~~April 6, 2015)
Use in projects with cable fence. Include with **8-12.2.OPT6.~~BSP.~~GB8, 8-12.4.OPT1.~~BSP.~~GB8, and 8-12.5.OPT6.~~BSP.~~GB8**. Include with **8-12.3.OPT1(A).~~BSP.~~GB8** when anchoring the cable fence posts to existing concrete structures. Include with **8-12.3.OPT1(C).~~BSP.~~GB8** when painting of the galvanized fence posts is required.

8-12.3.OPT1(C).~~BSP.~~GB8 (Cable Fence)
(~~BSP August 3, 2009~~April 6, 2015)
Use in projects with cable fence. Include with **8-12.2.OPT6.~~BSP.~~GB8, 8-12.4.OPT1.~~BSP.~~GB8, and 8-12.5.OPT6.~~BSP.~~GB8**. Include with **8-12.3.OPT1(A).~~BSP.~~GB8** when anchoring the cable fence posts to existing concrete structures.

8-12.4.GR8 Measurement

8-12.4.INST1.GR8 (Section 8-12.4 is supplemented with the following)
Must use once preceding any of the following:

8-12.4.OPT1.~~BSP.~~GB8 (Cable Fence)
(~~BSP September 8, 2003~~April 6, 2015)
Use in projects with cable fence. Include with **8-12.2.OPT6.~~BSP.~~GB8, 8-12.3.OPT1(B).~~BSP.~~GB8, and 8-12.5.OPT6.~~BSP.~~GB8**. Include with **8-12.3.OPT1(A).~~BSP.~~GB8** when anchoring the cable fence posts to existing concrete structures. Include with **8-12.3.OPT1(C).~~BSP.~~GB8** when painting of the galvanized fence posts is required.

8-12.5.GR8 Payment

8-12.5.INST1.GR8 (Section 8-12.5 is supplemented with the following)
Must use once preceding any of the following:

8-12.5.OPT1.GR8 (Coated chain link fence)
(April 1, 2002)
Use in projects requiring the construction of coated chain link fence.

8-12.5.OPT6.~~BSP.~~GB8 (Cable Fence)
(~~BSP September 8, 2003~~April 6, 2015)
Use in projects with cable fence. Include with **8-12.2.OPT6.~~BSP.~~GB8, 8-12.3.OPT1(B).~~BSP.~~GB8, and 8-12.4.OPT1.~~BSP.~~GB8**. Include with **8-**

12.3.OPT1(A).~~BSP.~~GB8 when anchoring the cable fence posts to existing concrete structures. Include with **8-12.3.OPT1(C).~~BSP.~~GB8** when painting of the galvanized fence posts is required.

8-13.GR8 Monument Cases

8-13.1.GR8 Description

8-13.1.INST1.GR8 (Section 8-13.1 is deleted and replaced by the following)
Must use once preceding any of the following:

8-13.1.OPT1.GR8 (Monument pipes included in work)
(March 13, 1995)
Must also use **8-13.2.OPT1.GR8, 8-13.3.OPT1.GR8, 8-13.4.OPT1.GR8** and **8-13.5.OPT1.GR8**.
Use in projects requiring that the monument pipes be installed by the Contractor.

8-13.2.GR8 Materials

8-13.2.INST1.GR8 (Section 8-13.2 is supplemented with the following)
Must use once preceding any of the following:

8-13.2.OPT1.GR8 (Monument pipes included in work)
(March 13, 1995)
Must include with **8-13.1.OPT1.GR8**.
Use in projects requiring that the monument pipes be installed by the Contractor.

8-13.3.GR8 Construction Requirements

8-13.3.INST1.GR8 (The last paragraph of Section 8-13.3 is revised to read)
Must use once preceding any of the following:

8-13.3.OPT1.GR8 (Monument pipes included in work)
(March 13, 1995)
Must include with **8-13.1.OPT1.GR8**.
Use in projects requiring that the monument pipes be installed by the Contractor.

8-13.4.GR8 Measurement

8-13.4.INST1.GR8 (Section 8-13.4 is deleted and replaced by the following)
Must use once preceding any of the following:

8-13.4.OPT1.GR8 (Monument pipes included in work)
(March 13, 1995)
Must include with **8-13.1.OPT1.GR8**.
Use in projects requiring that the monument pipes be installed by the Contractor.

8-13.5.GR8 Payment

8-13.5.INST1.GR8 (Section 8-13.5 is supplemented with the following)
Must use once preceding any of the following:

8-13.5.OPT1.GR8 (Monument pipes included in work)
(April 28, 1997)
Must include with **8-13.1.OPT1.GR8**.
Use in projects requiring that the monument pipes be installed by the Contractor.

8-14.GR8 Cement Concrete Sidewalks

8-14.3.GR8 Construction Requirements

8-14.3.INST1.GR8 (Section 8-14.3 is supplemented with the following)
Must use once preceding any of the following:

8-14.3.OPT1.GR8 (Pre-meeting for cement concrete sidewalks, curb ramps or other pedestrian access routes to discuss ADA issues before Work begins)
(April 4, 2011)
Use in projects where pedestrian access route Work (cement concrete sidewalks, curb ramps other pedestrian access) is proposed and it is felt that a pre-meeting on ADA compliance is needed by Region Construction Office.

8-15.GR8 Riprap

8-15.4.GR8 Measurement

8-15.4.INST1.GR8 (Section 8-15.4 is supplemented with the following)
Must use once preceding any of the following:

8-15.4.OPT3.GR8 (Special excavation)
(March 13, 1995)
Must also use **8-15.5.OPT8.GR8**.
Use in projects requiring excavation outside the limits of structure excavation for riprap at bridge piers located within streams.

8-15.4.OPT5.GR8 (Excavation for riprap is included in cost of riprap)
(February 5, 2001)
Must also use **8-15.5.OPT1.GR8**.
Use in projects with small quantities of riprap or upon recommendation of the Construction and Materials Division.

8-15.5.GR8 Payment

8-15.5.INST1.GR8 (The first sentence of the second paragraph of Section 8-15.5 is revised to read)
Must use once preceding any of the following:

8-15.5.OPT1.GR8 (Excavation for riprap is included in cost of riprap)
(March 13, 1995)
Must include with **8-15.4.OPT5.GR8**.
Use in projects with small quantities of riprap or upon recommendation of the Construction and Materials Division.

8-15.5.INST2.GR8 (Section 8-15.5 is supplemented with the following)
Must use once preceding the following:

8-15.5.OPT8.GR8 (Special excavation)
(September 30, 1996)
Must include with **8-15.4.OPT3.GR8**.
Use in projects requiring excavation outside the limits of structure excavation for riprap at bridge piers located within streams.

8-16.GR8 Concrete Slope Protection

8-16.3.GR8 Construction Requirements

8-16.3(2).GR8 Placing Semi-Open Concrete Masonry Units

8-16.3(2).INST1.GR8 (Section 8-16.3(2) is supplemented with the following)
Must use once preceding any of the following:

8-16.3(2).OPT1.GR8 (Requirements for semi-open precast masonry units)
(December 19, 2005)
Must include with **8-16.5.OPT1.GR8**.
Use in projects requiring semi-open concrete masonry slope protection.

8-16.5.GR8 Payment

8-16.5.INST1.GR8 (Section 8-16.5 is supplemented with the following)
Must use once preceding any of the following:

8-16.5.OPT1.GR8 (Semi-open Conc. Masonry Slope Protection)
(September 30, 1996)
Must include with **8-16.3(2).OPT1.GR8**.
Use in projects requiring semi-open concrete masonry slope protection.

8-20.GR8 Illumination, Traffic Signal Systems, Intelligent Transportation Systems, and Electrical

8-20.2.GR8 Materials

8-20.2.INST1.GR8 (Section 8-20.2 is supplemented with the following)
Must use once preceding any of the following:

8-20.2.OPT1.~~BSP.~~GB8 (Traffic Signal Shaft Foundation Shaft Casing and

Slurry)
(~~BSP August 3, 2009~~April 6, 2015)
Use in traffic signal projects with shaft foundations in weak soils, with the concurrence of the Materials Laboratory Geotechnical Branch. Include with **8-20.3(4).OPT1.~~BSP.~~FB8 and 8-20.5.OPT1.~~BSP.~~GB8**.

8-20.2(9-29.2).GR8 (Junction Boxes, Cable Vaults, and Pull Boxes)

8-20.2(9-29.2(1)A).GR8 (Standard Duty Junction Boxes)
(Section 9-29.2(1)A is supplemented with the following)
Must use once preceding any of the following:

8-20.2(9-29.2(1)A).OPT1.GR8 (January 7, 2013)
Use in projects with Concrete Junction Boxes requiring slip-resistant lids.

8-20.2(9-29.2(2)A).GR8 (Standard Duty Cable Vaults and Pull Boxes)
(Section 9-29.2(2)A is supplemented with the following)
Must use once preceding any of the following:

8-20.2(9-29.2(2)A).OPT1.GR8 (January 7, 2013)
Use in projects with Standard Duty Cable Vaults and Pull Boxes.

8-20.2(9-29.6).GR8 (Light and Signal Standards)
(Section 9-29.6 is supplemented with the following)
Must use once preceding any of the following:

8-20.2(9-29.6).OPT1.GR8 Light Standards With Type 1 Luminaire Arms
(~~January 5~~April 6, 2015)
Use in projects requiring Type 1 luminaire arms and the Engineer is not required to verify the H1 distances shown in the Plans.

8-20.2(9-29.6).OPT2.GR8 Light Standards With Type 1 Luminaire Arms
(~~January 5~~April 6, 2015)
Use in projects requiring Type 1 luminaire arms and H1 distances are not shown in the Plans or the Engineer is required to verify the H1 distances shown in the Plans.

8-20.2(9-29.6).OPT3.GR8 Light Standards With Type 2 Luminaire Arms
(~~January 5~~April 6, 2015)
Use in projects requiring Type 2 luminaire arms and the Engineer is not required to verify the H1 distances shown in the Plans.

8-20.2(9-29.6).OPT4.GR8 Light Standards With Type 2 Luminaire Arms
(~~January 5~~April 6, 2015)
Use in projects requiring Type 2 luminaire arms and H1 distances are not shown in the Plans or the

Engineer is required to verify the H1 distances shown in the Plans.

8-20.2(9-29.6).OPT5.GR8 Traffic Signal Standards
(~~January 5~~April 6, 2015)
Use in projects requiring traffic signal standards, or combination traffic signal/light standards with Type 1 luminaire arms, or both.

8-20.2(9-29.6).OPT6.GR8 Traffic Signal Standards
(~~January 5~~April 6, 2015)
Use in projects requiring traffic signal standards, or combination traffic signal/light standards with Type 2 luminaire arms, or both.

8-20.2(1).GR8 Equipment List and Drawings

8-20.2(1).INST1.GR8 (Section 8-20.2(1) is supplemented with the following)
Must use once preceding any of the following:

8-20.2(1).OPT1.GR8 (Light standards when H1 dimension is shown on the Plans)
(March 13, 1995)
Use in projects with illumination systems and the lighting standard H1 dimension is shown in the Plans and verification by the Engineer is not required prior to fabrication.

8-20.2(1).OPT2.GR8 (Light standards when H1 dimension is not Shown on the Plans or must be verified prior to fabrication)
(March 13, 1995)
Use in projects with illumination systems and the lighting standard H1 dimension is not shown in the Plans or the dimension shown in the Plans must be verified by the Engineer prior to fabrication.

8-20.2(1).OPT3.GR8 (Traffic signal standards, strain pole standards or combination traffic signal/lighting standards)
(March 13, 1995)
Use in projects with traffic signal systems when standards are to be installed.

8-20.3.GR8 Construction Requirements

8-20.3(4).GR8 Foundations

8-20.3(4).INST1.GR8 (Section 8-20.3(4) is supplemented with the following)
Must use once preceding any of the following:

8-20.3(4).OPT1.~~BSP.~~FB8 (Shafts for Signal Standard Foundations)
(~~BSP August 1, 2011~~April 6, 2015)

Use in traffic signal projects with shaft foundations in weak soils, with the concurrence of the Materials Laboratory Geotechnical Branch. The fill-in specifies the location(s) of the shaft(s) requiring construction under these construction requirements. Include with **8-20.2.OPT1.~~BSP.~~GB8 and 8-20.5.OPT1.~~BSP.~~GB8**. (One fill-in).

8-20.3(8).GR8 **Wiring**

8-20.3(8).INST1.GR8 (Section 8-20.3(8) is supplemented with the following)
Must use once preceding any of the following:

8-20.3(8).OPT1.GR8 Field Wiring Chart
(March 13, 1995)
Use in projects with traffic signal systems.

8-20.3(14).GR8 Signal Systems

8-20.3(14).INST1.GR8 (Section 8-20.3(14) is supplemented with the following)
Must use once preceding any of the following:

8-20.3(14).OPT1.GR8 Uninterruptible Power Supply (UPS)
(January 3, 2011)
With Region Traffic Engineer approval use in projects where Uninterruptible Power Supply (UPS) cabinets are required.

8-20.3(14)A.GR8 Signal Controllers

8-20.3(14)A.INST1.GR8 (Supplemental Instructions)
Must use once preceding any of the following:

8-20.3(14)A.OPT1.GR8 Testing
(August 2, 2010)
Use in projects with Contractor furnished signal controllers.

8-20.5.GR8 Payment

8-20.5.INST1.GR8 (Section 8-20.5 is supplemented with the following)
Must use once preceding any of the following:

8-20.5.OPT1.~~BSP.~~GB8 (Removing Traffic Signal Shaft Obstructions)
(~~BSP September 8, 2003~~April 6, 2015)
Use in traffic signal projects with shaft foundations in weak soils, with the concurrence of the Materials Laboratory Geotechnical Branch. Include with **8-20.2.OPT1.~~BSP.~~GB8 and 8-20.3(4).OPT1.~~BSP.~~FB8**.

8-21.GR8 Permanent Signing

8-21.2.GR8 Materials

8-21.2(9-06.16).GR8 (Roadside Sign Structures)
(Section 9-06.16 is supplemented with the following)
Must use once preceding the following:

8-21.2(9-06.16).OPT1.GR8 (January 3, 2011)
Use in projects with perforated steel square sign posts.

8-21.2(9-28.14).GR8 (Sign Support Structures)
(Section 9-28.14 is supplemented with the following)
Must use once preceding any of the following:

8-21.2(9-28.14).OPT1.~~BSP.~~GB8 (Shafts for Sign Structure Foundations)
(~~BSP August 1, 2011~~April 6, 2015)
Use in sign structure projects with shaft foundations where the shaft diameter is 48 inches or greater, or where the shaft depth is 15 feet or greater, or where the Materials Laboratory Geotechnical Branch identifies the foundation soils as sufficiently weak to require use of this specification. Include with **8-21.3(9)F.OPT2.~~BSP.~~FB8 and 8-21.5.OPT1.~~BSP.~~GB8**.

8-21.2(9-28.14).OPT6.GR8 (Roadside Signing Material and Fabrication)
(January 3, 2011)
Use in all projects that have steel sign support structures

8-21.2(9-28.14(2)).GR8 (Steel Structures and Posts)
(Section 9-28.14(2) is supplemented with the following)
Must use once preceding any of the following:

8-21.2(9-28.14(2)).OPT1.~~BSP.~~GB8 (Monotube Sign Structures)
(~~BSP August 4, 2014)~~April 6, 2015
Use in projects with monotube sign bridges and/or monotube cantilever sign structures. Include with either **8-21.3(9)A.OPT1.GB8 or 8-21.3(9)A.OPT2.FB8, and 8-21.4.OPT1.~~BSP.~~FB8. Include with 8-21.2(9-28.14(2)).OPT2.~~BSP.~~GB8** when sign structures are constructed with round tube or pipe.

8-21.2(9-28.14(2)).OPT2.~~BSP.~~GB8 (Monotube Sign Structures of round tube or pipe)
(~~BSP August 5, 2002~~April 6, 2015)
Use in projects with monotube sign bridges and/or monotube cantilever sign structures, constructed with round tube or pipe. Include with **8-21.2(9-28.14(2)).OPT1.~~BSP.~~GB8,** either **8-21.3(9)A.OPT1.GB8** or **8-21.3(9)A.OPT2.FB8, and 8-21.4.OPT1.~~BSP.~~FB8**.

8-21.3.GR8 Construction Requirements

8-21.3(9).GR8 Sign Structures

8-21.3(9)A.GR8 Fabrication of Sign Structures

8-21.3(9)A.INST1.GR8 (Section 8-21.3(9)A is supplemented with the following)
Must use once preceding any of the following:

8-21.3(9)A.OPT1.GB8 (Monotube Sign Structures)
(January 5, 2015)
Use in projects with monotube sign bridges and/or monotube cantilever sign structures painted with the conventional gray color (Federal Standard 595B No. 35247). Include with **8-21.2(9-28.14(2)).OPT1.~~BSP.~~GB8 and 8-21.4.OPT1.~~BSP.~~FB8**. Include with **8-21.2(9-28.14(2)).OPT2.~~BSP.~~GB8** when sign structures are constructed with round tube or pipe.

8-21.3(9)A.OPT2.FB8 (Monotube Sign Structures)
(January 5, 2015)
Use in projects with monotube sign bridges and/or monotube cantilever sign structures painted a color other than the conventionally specified gray color. Include with **8-21.2(9-28.14(2)).OPT1.~~BSP.~~GB8 and 8-21.4.OPT1.~~BSP.~~FB8**. Include with **8-21.2(9-28.14(2)).OPT2.~~BSP.~~GB8** when sign structures are constructed with round tube or pipe. The fill-in specifies the Federal Standard 595B color number, or the color name if no number.
(1 fill-in)

8-21.3(9)E.GR8 Bridge Mounted Sign Brackets

8-21.3(9)E.INST1.GR8 (Section 8-21.3(9)E is supplemented with the following)
Must use once preceding any of the following:

8-21.3(9)E.OPT1.~~BSP.~~FB8 (Bridge Mounted Sign Brackets)
(~~BSP December 14, 2000~~April 6, 2015)
Use in projects with bridge mounted sign brackets. The first and third fill-ins specify the sign bracket number(s). The second fill-in itemizes the structural carbon steel quantity for each sign bracket. The fourth fill-in specifies the quantity of hole drilling required for the resin bonded anchors for each sign bracket.
(4 fill-ins)

8-21.3(9)F.GR8 Foundations

8-21.3(9)F.INST1.GR8 (Section 8-21.3(9)F is supplemented with the following)
Must use once preceding any of the following:

8-21.3(9)F.OPT2.~~BSP.~~FB8 (Shafts for Sign Structure Foundations) (~~BSP August 4, 2014~~April 6, 2015)
Use in sign structure projects with shaft foundations where the shaft diameter is 48 inches or greater, or where the shaft depth is 15 feet or greater, or where the Materials Laboratory Geotechnical Branch identifies the foundation soils as sufficiently weak to require use of this specification. The fill-in specifies the location(s) of the shaft(s) requiring construction under these construction requirements. Include with **8-21.2(9-28.14).OPT1.~~BSP.~~GB8 and 8-21.5.OPT1.~~BSP.~~GB8**
(1 fill-in)

8-21.4.GR8 Measurement

8-21.4.INST1.GR8 (Section 8-21.4 is supplemented with the following)
Must use once preceding any of the following:

8-21.4.OPT1.~~BSP.~~FB8 (Monotube Sign Structures)
(~~BSP July 12, 2000~~April 6, 2015)
Use in projects with monotube sign bridges and/or monotube cantilever sign structures. The first fill in specifies the type of sign structure work included (sign bridge or cantilever sign structure or both). The second fill-in itemizes the quantities and work involved with each sign structure. Include with **8-21.2(9-28.14(2)).OPT1.~~BSP.~~GB8,** either **8-21.3(9)A.OPT1.~~BSP.~~GB8** or **8-21.3(9)A.OPT2.~~BSP.~~FB8**. Include with **8-21.2(9-28.14(2)).OPT2.~~BSP.~~GB8** when sign structures are constructed with round tube or pipe.
(2 fill-ins)

8-21.5.GR8 Payment

8-21.5.INST1.GR8 (Section 8-21.5 is supplemented with the following)
Must use once preceding any of the following:

8-21.5.OPT1.~~BSP.~~GB8 (Shafts for Sign Structure Foundation)
(BSP August 4, 2008)
Use in sign structure projects with shaft foundations where the shaft diameter is 48 inches or greater, or where the shaft depth is 15 feet or greater, or where the Materials Laboratory Geotechnical Branch identifies the foundation soils as sufficiently weak to require use of this specification. Include with **8-21.2(9-28.14).OPT1.~~BSP.~~GB8 and 8-21.3(9)F.OPT2.~~BSP.~~FB8**.

8-24.GR8 Rock and Gravity Block Wall, and Gabion Cribbing

8-24.2.GR8 Materials

8-24.2.INST1.GR8 (Section 8-24.2 is supplemented with the following)
Must use once preceding any of the following:

8-24.2.OPT1.GR8 (Gravity Block Wall)
(January 7, 2002)
Use in projects constructing gravity block walls. Include with **8-24.3(2).OPT1.GR8**

8-24.3.GR8 Construction Requirements

8-24.3(2).GR8 Gravity Block Wall

8-24.3(2).INST1.GR8 (Section 8-24.3(2) is supplemented with the following)
Must use once preceding any of the following:

8-24.3(2).OPT1.GR8 (Gravity Block Wall)
(January 7, 2002)
Use in projects constructing gravity block walls. Include with **8-24.2.OPT1.GR8.**

8-25.GR8 Glare Screen

8-25.1.GR8 Description

8-25.1.INST1.GR8 (Section 8-25.1 is supplemented with the following)
Must use once preceding any of the following:

8-25.1.OPT1.GR8 (April 1, 2002)
Use in projects when the work zone analysis determines the need for temporary barrier screening.
8-25.2.OPT1.GR8, 8-25.3.OPT1.GR8, 8-25.4.OPT1.GR8, and 8-25.5.OPT1.GR8.

8-25.2.GR8 Materials

8-25.2.INST1.GR8 (Section 8-25.2 is supplemented with the following)
Must use once preceding any of the following:

8-25.2.OPT1.GR8 (April 1, 2002)
Use in projects when the work zone analysis determines the need for temporary barrier screening.
Must use with **8-25.1.OPT1.GR8, 8-25.3.OPT1.GR8, 8-25.4.OPT1.GR8, and 8-25.5.OPT1.GR8**.

8-25.3.GR8 Construction Requirements

8-25.3.INST1.GR8 (Section 8-25.3 is supplemented with the following)
Must use once preceding any of the following:

8-25.3.OPT1.GR8 (April 1, 2002)
Use in projects when the work zone analysis determines the need for temporary barrier screening.
8-25.1.OPT1.GR8, 8-25.2.OPT1.GR8, 8-25.4.OPT1.GR8, and 8-25.5.OPT1.GR8.

8-25.4.GR8 Measurement

8-25.4.INST1.GR8 (Section 8-25.4 is supplemented with the following)
Must use once preceding any of the following:

8-25.4.OPT1.GR8 (April 1, 2002)
Use in projects when the work zone analysis determines the need for temporary barrier screening.
8-25.1.OPT1.GR8, 8-25.2.OPT1.GR8, 8-25.3.OPT1.GR8, and 8-25.5.OPT1.GR8.

8-25.5.GR8 Payment

8-25.5.INST1.GR8 (Section 8-25.5 is supplemented with the following)
Must use once preceding any of the following:

8-25.5.OPT1.GR8 (April 1, 2002)
Use in projects when the work zone analysis determines the need for temporary barrier screening.
8-25.1.OPT1.GR8, 8-25.2.OPT1.GR8, 8-25.3.OPT1.GR8, and 8-25.4.OPT1.GR8.

8-29.GR8 Wire Mesh Slope Protection

8-29.1.GR8 Description

8-29.1.INST1.GR8 (Section 8-29.1 is supplemented with the following)
Must use once preceding any of the following:

8-29.1.OPT1.GR8 (Cable Net Slope Protection)
(April 5, 2010)
Use in projects with cable net slope protection. Include with **8-29.2.OPT1.GR8, 8-29.3.OPT1.GR8, 8-29.4.OPT1.GR8 and 8-29.5.OPT1.GR8**.

8-29.2.GR8 Materials

8-29.2.INST1.GR8 (Section 8-29.2 is supplemented with the following)
Must use once preceding any of the following:

8-29.2.OPT1.GR8 (Cable Net Slope Protection Materials)
(April 2, 2012)
Use in projects with cable net slope protection. Include with **8-29.1.OPT1.GR8, 8-29.3.OPT1.GR8, 8-29.4.OPT1.GR8 and 8-29.5.OPT1.GR8**.

8-29.3.GR8 **Construction Requirements**

8-29.3.INST1.GR8 (Section 8-29.3 is supplemented with the following)
Must use once preceding any of the following:

8-29.3.OPT1.GR8 (Cable Net Slope Protection Construction Requirements)
(January 3, 2011)
Use in projects with cable net slope protection. Include with **8-29.1.OPT1.GR8, 8-29.2.OPT1.GR8, 8-29.4.OPT1.GR8 and 8-29.5.OPT1.GR8**.

8-29.4.GR8 **Measurement**

8-29.4.INST1.GR8 (Section 8-29.4 is supplemented with the following)
Must use once preceding any of the following:

8-29.4.OPT1.GR8 (Cable Net Slope Protection)
(April 5, 2010)
Use in projects with cable net slope protection. Include with **8-29.1.OPT1.GR8, 8-29.2.OPT1.GR8, 8-29.3.OPT1.GR8, and 8-29.5.OPT1.GR8**.

8-29.5.GR8 **Payment**

8-29.5.INST1.GR8 (Section 8-29.5 is supplemented with the following)
Must use once preceding any of the following:

8-29.5.OPT1.GR8 (Cable Net Slope Protection)
(January 3, 2011)
Use in projects with cable net slope protection. Include with **8-29.1.OPT1.GR8, 8-29.2.OPT1.GR8, 8-29.3.OPT1.GR8, and 8-29.4.OPT1.GR8**.

8-SA1.GR8 **Field Office Building**
(March 13, 1995)
Use in projects when a field office building is required.

8-SA2.GR8 **Bollards**
(April 4, 2011)
Use in projects requiring bollards.
Contact Headquarters Design Standard Plans Office for plan details on Type 3 Bollards.

8-SA3.GR8 **(Environmental Compliance)**
(January 7, 2013)
For use on projects where the project has a high risk of soil erosion due to soil type, slope gradiant and work in or has proximity to waters of the State (Hydraulics Runoff Manual (HRM) defines projects susceptible for high risk soil erosion). Also for use on projects where there is extensive monitoring of environmental permit compliance.
The Region Construction Engineer and Region Environmental Office should be consulted for use as the provision introduces an

Environmental Compliance Lead person that incorporates, expands and replaces the duties of the ESC Lead person.

~~Must include **8-01.3(1)B.OPT1.GR8**~~

8-01.GR8
Erosion Control and Water Pollution Control

8-01.2.GR8
Materials

8-01.2(9-14.4(8)).GR8
Compost

Section 9-14.4(8) is supplemented with the following:

8-01.2(9-14.4(8)).OPT1.GR8

(April 7, 2014)

The compost product may contain biosolids as a feedstock. Biosolids compost production and quality shall comply with WAC 173-308.

The Compost Submittal Requirements shall include a copy of the Coverage Under the General Permit for Biosolids Management issued to the manufacturer by the Department of Ecology in accordance with WAC 173-308 (Biosolids Management).

8-01.3.GR8
Construction Requirements

8-01.3(1).GR8
General

8-01.3(1).INST1.GR8

The tenth paragraph of Section 8-01.3(1) is revised to read:

8-01.3(1).OPT1.GR8

(January 25, 2010)

Erodible Soil Eastern Washington

Erodible soil not being worked whether at final grade or not, shall be covered within the following time period using an approved soil cover practice:

July 1 through September 30	30 days
October 1 through June 30	15 days

8-01.3(1).INST2.GR8

Section 8-01.3(1) is supplemented with the following:

8-01.3(1).OPT2.GR8

(January 5, 2015)

The Contractor shall be responsible for all Work required for compliance with the Construction Stormwater General Permit (CSWGP) including annual permit fees.

TESC Compliance Incentive

If the Proposal includes the Bid item “TESC Compliance Incentive” then an incentive has been established to provide the Contractor the opportunity to earn additional payment for carrying out well-planned and proactive implementation of the CSWGP requirements in order to protect the environment during construction.

The Contractor will earn a TESC Compliance Incentive payment in the amount of five percent of monies paid on a progress estimate for the Bid item Erosion Control and Water Pollution Prevention when all Work by the Contractor during the period of that progress estimate complies with all Contract requirements for Erosion Control and Water Pollution Prevention and the CSWGP.

8-01.3(1).OPT8.FR8
(April 1, 2002)
Side Slope Treatment
Slopes shall be compacted within *** $$1$$ *** days of exposure of a new section of cut and construction of a new portion of an embankment.

8-01.3(1).INST3.GR8
The first through eighth paragraphs of Section 8-01.3(1) are deleted and replaced with the following:

8-01.3(1).OPT3.GR8
(January 5, 2015)
The Contractor shall install a high visibility fence along the site preservation lines shown in the Plans or as instructed by the Engineer.

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

Controlling pollution, erosion, runoff, and related damage requires the Contractor to perform temporary Work items including but not limited to:

1. Providing ditches, berms, culverts, and other measures to control surface water.

2. Building dams, settling basins, energy dissipaters, and other measures, to control downstream flows.

3. Controlling underground water found during construction.

4. Covering or otherwise protecting slopes until permanent erosion-control measures are working.

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

All sediment control devices including, but not limited to, sediment ponds, perimeter silt fencing, or other sediment trapping BMPs shall be installed prior to any ground disturbing activity. Clearing, grubbing, excavation, borrow, or fill within the Right of Way shall never expose more erodible earth than as listed below:

Western Washington (West of the Cascade Mountain Crest)			**Eastern Washington (East of the Cascade Mountain Crest)**	
May 1 through September 30	17 Acres		April 1 through October 31	17 Acres
October 1 through April	5 Acres		November 1 through	5 Acres

30			March 31	

8-01.3(1)A.GR8
Submittals

8-01.3(1)A.INST1.GR8
Section 8-01.3(1)A is supplemented with the following:

8-01.3(1)A.OPT1.GR8
(April 3, 2006)
Prior to beginning any concrete or grinding work, the Contractor shall submit a plan, for the Engineer's review and approval, outlining the procedures to be used to prevent high pH stormwater or dewatering water from entering surface waters. The plan shall include how the pH of the water will be maintained between pH 6.5 and pH 8.5 prior to being discharged from the project or entering surface waters.

8-01.3(1)A.INST2.GR8
Section 8-01.3(1)A is revised to read:

8-01.3(1)A.OPT2.GR8
(January 5, 2015)
A Temporary Erosion and Sediment Control (TESC) Plan consists of a narrative section and plan sheets that meets Ecology's Stormwater Pollution Prevention Plan (SWPPP) requirement in the CSWGP. When the Contracting Agency has developed a TESC Plan for a Contract the narrative is included in the appendix to the Special Provisions and the TESC plan sheets are included in the Contract Plans.

The Contractor shall either adopt the TESC Plan in the Contract or develop a new TESC Plan. If the Contractor adopts the Contracting Agency TESC Plan the Contractor shall modify the TESC Plan to meet the Contractor's schedule and method of construction. Contractor TESC Plans shall include all high visibility fence delineation shown on the Contracting Agency Contract Plans. All TESC Plans shall meet the requirements of the current edition of the WSDOT Temporary Erosion and Sediment Control Manual M 3109 and be adapted as needed throughout construction based on site inspections and discharge samples to maintain compliance with the CSWGP. The Contractor shall develop a schedule for implementation of the TESC work and incorporate it into the Contractor's progress schedule.

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

8-01.3(1)B.GR8
Erosion and Sediment Control (ESC) Lead

8-01.3(1)B.INST1.GR8
The second and third paragraphs in Section 8-01.3(1)B are revised to read:

~~**8-01.3(1)B.OPT1.GR8**~~
~~(January 7, 2013)~~
~~The ESC Lead shall implement the TESC Plan. Implementation shall include, but is not limited to:~~

1. ~~Maintain an on-site TESC plan that reflects current site conditions and work methods. Provide weekly updates to the Project Engineer.~~

2. ~~Identify arising needs for adaptive management and/or BMPs which were not originally identified in the TESC plan. Coordinate all proposed TESC activities with the Project Engineer.~~

3. ~~Attend all weekly construction meetings and provide an update on current and planned TESC activities.~~

4. ~~Ensure that all necessary Best Management Practices (BMP) are identified, implemented and maintained throughout construction.~~

5. ~~Oversee the installation and maintenance of all TESC control BMP's to ensure continued performance of their intended function. Damaged or inadequate BMP's shall be corrected immediately through coordination with the Engineer.~~

~~When a TESC Plan is included in the contract plans, the ESC Lead shall also inspect all disturbed areas, on-site BMP's, and stormwater discharge points at least once every calendar week and within 24-hours of runoff events in which stormwater discharges from the site. Inspections of temporarily stabilized, inactive sites may be reduced to once every calendar month when approved by the Engineer. The ESC Lead shall complete an Erosion and Sediment Control Inspection Form (Form Number 220-030 EF) for each inspection and a copy shall be submitted to the Engineer no later than the end of the next working day following the inspection.~~

8-01.3(1)B.OPT2.GR8
(January 5, 2015)
The ESC Lead shall implement the TESC Plan. Implementation shall include, but is not limited to:

1. Installing and maintaining all temporary erosion and sediment control Best Management Practices (BMPs) included in the TESC Plan to assure continued performance of their intended function. Damaged or inadequate TESC BMP's shall be corrected immediately.

2. Updating the TESC Plan to reflect current field conditions.

3. Discharge sampling and submitting Discharge Monitoring Reports (DMRs) to Ecology in accordance with the CSWGP.

4. Develop and maintain the Site Log Book as defined in the CSWGP. As a part of the Site Log Book, the Contractor shall develop and maintain a BMP tracking table to show that identified TESC compliance issues are fully resolved within 10 calendar days. The table shall include the date an issue was identified, a description of how it was resolved, and the date the issue was fully resolved.

The ESC Lead shall also inspect all areas disturbed by construction activities, all on-site erosion and sediment control BMP's, and all stormwater discharge points at least once every calendar week and within 24-hours of runoff events in which stormwater discharges from the site. Inspections of temporarily stabilized, inactive sites may be reduced to once every calendar month. The Erosion and Sediment Control Inspection Form (WSDOT Form 220-030) shall be completed for each inspection and a copy shall be submitted to the Engineer no later than the end of the next working day following the inspection.

8-01.3(1)C.GR8
Water Management

8-01.3(1)C.INST1.GR8
Section 8-01.3(1)C is supplemented with the following:

8-01.3(1)C.OPT1.FR8
(August 6, 2012)
Off-site Stormwater
Stormwater is known to enter the project site at the following locations:

*** $$1$$ ***

8-01.3(2).GR8
Seeding, Fertilizing and Mulching

8-01.3(2)B.GR8
Seeding and Fertilizing

8-01.3(2)B.INST1.GR8
Section 8-01.3(2)B is supplemented with the following:

8-01.3(2)B.OPT1.FR8
(August 4, 2014)
Seed of the following mix, rate, and analysis shall be applied at the rates shown below on all areas requiring ***$$1$$*** seeding within the project:

Seed by Common Name and (Botanical name)	Pounds Pure Live Seed (PLS) Per Acre
*** $$2$$	$$
$$	$$
$$	$$

Total	$$ ***

The seed shall be certified in accordance with WAC 16-302 and meet the following requirements:

Prohibited Weed	0% max.
Noxious Weed	0% max.
Other Weed	0.20% max.
Other Crop	0.40% max.

8-01.3(2)B.OPT2.FR8

(August 4, 2014)

Seed of the following mix, rate, and analysis shall be applied at the rates shown below on all areas requiring ***$$1$$*** seeding within the project:

Seed by Common Name, (Botanical Name), and "Source Identification"	Pounds Pure Live Seed (PLS) Per Acre
*** $$2$$	$$
$$	$$
$$	$$
Total	$$ ***

Source Identified seed shall be generation four or less. Non-Source Identified seed shall meet or exceed Washington State Department of Agriculture Certified Seed Standards and be from within the appropriate genetic zones of the *** $$3$$ *** Ecoregion(s) as defined by the US Environmental Protection Agency (EPA).

The seed certification class shall be Certified (blue tag) in accordance with WAC 16-302 and meet the following requirements:

Prohibited Weed	0% max.
Noxious Weed	0% max.
Other Weed	0.20% max.
Other Crop	0.40% max.

The Contractor shall document all Source Identified seed by providing the Association of Official Seed Certifying Agents (AOSCA) yellow seed label for each species in the mix. Site Identification Logs can be supplied for collections where the AOSCA yellow label is not available.

8-01.3(2)B.OPT3.GR8

(January 3, 2006)

Grass seed shall be a commercially prepared mix, made up of low growing species which will grow without irrigation at the project location, and approved by the Engineer. The application rate shall be two pounds per 1000 square feet.

8-01.3(2)B.OPT4.FR8

(January 3, 2006)

Sufficient quantities of fertilizer shall be applied to supply the following amounts of nutrients:

Total Nitrogen as N - *** $$1$$ *** pounds per acre.

Available Phosphoric Acid as P_2O_5 - *** $$2$$ *** pounds per acre.

Soluble Potash as K_2O - *** $$3$$ *** pounds per acre.

*** $$4$$ *** pounds of nitrogen applied per acre shall be derived from isobutylidene diurea (IBDU), cyclo-di-urea (CDU), or a time release, polyurethane coated source with a minimum release time of 6 months. The remainder may be derived from any source.

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

8-01.3(2)B.OPT5.FR8

(January 3, 2006)

First Application of Fertilizer

Sufficient quantities of fertilizer shall be applied to supply the following amounts of nutrients:

Total Nitrogen as N - *** $$1$$ *** pounds per acre.

Available Phosphoric Acid as P_2O_5 - *** $$2$$ *** pounds per acre.

Soluble Potash as K_2O - *** $$3$$ *** pounds per acre.

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

Second Application of Fertilizer

A second application of fertilizer shall be applied during the period of March 1 to April 15 or November 15 to December 15. In no instance shall the second application of fertilizer occur less than 90 days after the first fertilizer application.

Sufficient quantities of fertilizer shall be applied to supply the following amounts of nutrients:

Total Nitrogen as N - *** $$4$$ *** pounds per acre.

Available Phosphoric Acid as P_2O_5 - *** $$5$$ *** pounds per acre.

Soluble Potash as K_20 - *** $$6$$ *** pounds per acre.

*** $$7$$ *** pounds of nitrogen applied per acre shall be derived from isobutylidene diurea (IBDU), cyclo-di-urea (CDU), or a time release, polyurethane coated source with a minimum release time of 6 months. The remainder may be derived from any source.

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

8-01.3(2)B.OPT6.GR8

(January 3, 2006)

Fertilizer shall be a commercially prepared mix of 10-20-20 and shall be applied at the rate of 10 pounds per 1000 square feet.

8-01.3(2)B.OPT7.FR8

(January 3, 2006)

Sufficient quantities of fertilizer shall be applied to supply the following amounts of nutrients:

Total Nitrogen as N – *** $$1$$ *** pounds per acre.

Sulfur – *** $$2 $$ ***pounds per acre.

*** $$3$$ *** pounds of nitrogen applied per acre shall be derived from isobutylidene diurea (IBDU), cyclo-di-urea (CDU), or a time release, polyurethane coated source with a minimum release time of 6 months. The remainder may be derived from any source.

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

8-01.3(2)B.OPT8.FR8

(August 4, 2014)

Seed of the following mix, rate, and analysis shall be applied at the rates shown below on all areas requiring *** $$1$$ *** seeding within the project:

Seed by Common Name, (Botanical Name), and "Source Identification"	Pure Live Seed Pounds (PLS) Per Acre
*** $$2$$	$$
$$	$$
$$	$$
Total	$$ ***

Seed shall meet or exceed Washington State Department of Agriculture Certified Seed Standards and be from within the *** $$3$$ *** Ecoregion(s) as defined by the US Environmental Protection Agency (EPA).

The seed certification class shall be Certified (blue tag) in accordance with WAC 16-302 and meet the following requirements:

Prohibited Weed	0% max.
Noxious Weed	0% max.
Other Weed	0.20% max.
Other Crop	0.40% max.

8-01.3(2)C.GR8
Liming

8-01.3(2)C.INST1.GR8
Section 8-01.3(2)C is supplemented with the following:

8-01.3(2)C.OPT1.FR8
(January 3, 2006)
Lime shall be applied at the rate of *** $$1$$ *** pounds per acre.

8-01.3(2)D.GR8
Mulching

8-01.3(2)D.INST1.GR8
Section 8-01.3(2)D is supplemented with the following:

8-01.3(2)D.OPT1.FR8
(January 5, 2015)
*** $$1$$ *** shall be applied at a rate of *** $$2$$ *** pounds per acre with no more than *** $$3$$ *** pounds per acre applied in a single lift.

8-01.3(15).GR8
Maintenance

8-01.3(15).OPT1.GR8
(January 5, 2015)
The fifth paragraph of Section 8-01.3(15) is deleted.

8-01.3(16).GR8
Removal

8-01.3(16).INST1.GR8
The first paragraph of Section 8-01.3(16) is revised to read:

8-01.3(16).OPT1.GR8
(January 5, 2015)
The Contractor shall remove all temporary BMP's and all associated hardware from the project limits prior to Physical Completion unless otherwise approved by the Engineer. At the request of the Contractor and at the sole discretion of the Engineer the CSWGP may be transferred back to the Contracting Agency. Approval of the Transfer of Coverage request will require the following:

1. All other Work required for Contract Completion has been completed.

2. All Work required for compliance with the CSWGP has been completed to the maximum extent possible. This includes removal of BMPs that are no longer needed and the site has undergone all Stabilization identified for meeting the requirements of Final Stabilization in the CSWGP.

3. An Equitable Adjustment change order for the cost of Work that has not been completed by the Contractor.

4. Submittal of the Washington State Department of Ecology Transfer of Coverage form (Ecology form ECY 020-87a) to the Engineer.

If the Engineer approves the Transfer of Coverage back to the Contracting Agency the requirement in Section 1-07.5(3) for the Contractor's submittal of the Notice of Termination form to Ecology will not apply.

8-01.4.GR8
Measurement

8-01.4.INST1.GR8
Section 8-01.4 is supplemented with the following:

8-01.4.OPT1.GR8
(January 5, 2015)
When the Bid Proposal contains the lump sum item "Erosion Control and Water Pollution Prevention" there will be no measurement of unit or force account items for Work defined in Section 8-01.

8-01.5.GR8
Payment

8-01.5.INST1.GR8
Section 8-01.5 is supplemented with the following:

8-01.5.OPT1.GR8
(April 3, 2006)
All costs associated with the treatment of pH in high pH stormwater or dewatering water shall be included in the applicable concrete, grinding or sawcutting items of work.

8-01.5.OPT2.GR8

(~~January 5~~April 6, 2015)

"Erosion Control and Water Pollution Prevention", lump sum.

The lump sum Contract price for "Erosion Control and Water Pollution Prevention" shall be full payment to perform the Work~~ as specified in Section 8-01~~. Progress payments for the lump sum item "Erosion Control and Water Pollution Prevention" will be made as follows:

1. The Contracting Agency will pay 25 percent of the bid amount for the initial set up for the item. Initial set up includes the following:

   a. Acceptance of the TESC Plan provided by the Contracting Agency or submittal of a new TESC Plan,

   b. Submittal of a schedule for the installation of the BMP's,

   c. Identifying water quality sampling locations, and

   d. Initial installation of BMP's associated with sensitive areas delineation, clearing/grubbing and perimeter control.

2. The remaining seventy-five percent of the bid amount shall be paid in accordance with Section 1-09.9.

"TESC Compliance Incentive", by calculation.

"TESC Compliance Incentive" will be calculated and paid as described in Section 8-01.3(1).

8-11.GR8
Guardrail

8-11.1.GR8
Description

8-11.1.INST1.GR8
Section 8-11.1 is supplemented with the following:

8-11.1.OPT1.GR8
(April 6, 2009)
High-Tension Cable Barrier System (3 and 4 Cable)
This work consists of supplying and constructing high-tension cable barrier systems (cable, posts, compensating devices, fittings, and hardware), terminals, and transitions in conformity with the lines and grades as staked.

8-11.2.GR8
Materials

8-11.2.INST1.GR8
Section 8-11.2 is supplemented with the following:

8-11.2.OPT1.GR8
(April 6, 2009)
High-Tension Cable Barrier System (3 Cable)
Furnish high-tension 3-cable barrier system, terminals, and transitions that meet the requirements of NCHRP Report 350 Test Level 3 that are designed for a minimum cable tension of 3,000-pounds at an ambient air temperature of 70 degrees F, and are documented as acceptable for use on the National Highway System by the Federal Highway Administration. The maximum post spacing allowed shall be 17.0-feet. All fittings and connecting hardware shall have a minimum breaking strength of 36,000-pounds. The maximum post spacing allowed shall limit vehicular dynamic deflection to the value shown in the plans. Approved high tension 3-cable barrier systems are shown on the Qualified Products List.

Furnish shop drawings and installation procedures to the Engineer a minimum of 10-days prior to the beginning of any installation work on the system. The drawings shall specify all components used in the entire cable barrier system as well as the post spacing required to achieve the required maximum vehicular deflections.

If a manufacturer’s product which is not on the QPL is proposed, furnish shop drawings and installation procedures to the Engineer a minimum of 20-days prior to the beginning of any installation work on the system. The system will be accepted based on a Supplier’s Certificate of Compliance. Provide a Supplier’s Certificate of Compliance that is a contract specific letter from the supplier stating the system is NCHRP 350 Test Level 3 compliant. Also include a copy of the FHWA acceptance letter for this product. The system will not be allowed in the project if the FHWA has not approved this system.

8-11.2.OPT2.GR8
(August 3, 2009)
High-Tension Cable Barrier System (4 Cable)

Furnish high-tension 4-cable barrier system, terminals, and transitions that meet the requirements of NCHRP Report 350 Test Level 3 or 4 that are designed for a minimum cable tension of 3,000-pounds at an ambient air temperature of 70 degrees F, and are documented as acceptable for use on the National Highway System by the Federal Highway Administration. The maximum post spacing allowed shall be 17.0-feet. All fittings and connecting hardware shall have a minimum breaking strength of 36,000-pounds. The maximum post spacing allowed shall limit vehicular dynamic deflection to the value shown in the plans. Approved high tension 4-cable barrier systems are shown on the Qualified Products List. Only 4-cable systems with a top cable height of not less than 35-inches and a bottom cable height of not more than 19-inches will be acceptable.

Furnish shop drawings and installation procedures to the Engineer a minimum of 10-days prior to the beginning of any installation work on the system. The drawings shall specify all components used in the entire cable barrier system as well as the post spacing required to achieve the required maximum vehicular deflections.

If a manufacturer's product which is not on the QPL is proposed, furnish shop drawings and installation procedures to the Engineer a minimum of 20-days prior to the beginning of any installation work on the system. The system will be accepted based on a Supplier's Certificate of Compliance. Provide a Supplier's Certificate of Compliance that is a contract specific letter from the supplier stating the system is NCHRP 350 Test Level 3 or 4 compliant. Also include a copy of the FHWA acceptance letter for this product. The system will not be allowed in the project if the FHWA has not approved this system.

8-11.2.OPT3.GR8
(~~January 5~~April 6, 2015)

Guardrail terminals utilized in runs of weathering steel beam guardrail shall be galvanized and then powder coated. The galvanizing shall be done in accordance with Section 9-16.3(3). The powder coating of the galvanized surfaces shall be done in accordance with Sections 6-07.3(11)B, 9-08.2, and 9-08.1(8), with the exception that the Engineer's approval of the surface cleaning, witnessing of quality control (QC) testing, and approval of the powder coated assembly and QC Inspection reports is not required prior to shipment. The powder coating when dry shall match that of Federal Standard 595, color number ~~20045~~30045.

8-11.2(9-16.3).GR8
Beam Guardrail

8-11.2(9-16.3(1)).GR8
Rail Element

8-11.2(9-16.3(1)).INST1.GR8

Section 9-16.3(1) is supplemented with the following:

8-11.2(9-16.3(1)).OPT1.GR8
(~~August 4, 2014~~April 6, 2015)
Weathering Steel Beam Guardrail Rail Elements
Steel for rail elements ~~and terminal sections~~ shall conform to ASTM A 606 Type 4 or ASTM A588 Grade A or B. If required, 6-inch channels and fittings shall conform to ASTM A 242.

Blast cleaning or pickling to remove mill scale will not be required. All fabricated steel parts shall be handled with care to avoid gouges, scratches, and dents. The steel shall be kept clean of all foreign material, such as paint, grease, oil, chalk marks, crayon marks, concrete spatter, or other deleterious substances. Natural oxidation of the steel will not be considered foreign material. Storage in transit, in open cars and trucks, for an extended period will not be permitted. Steel parts stored outside in yards or at job sites shall be positioned to allow free drainage and air circulation.

8-11.2(9-16.3(2)).GR8
Posts and Blocks

8-11.2(9-16.3(2)).INST1.GR8
Section 9-16.3(2) is supplemented with the following:

8-11.2(9-16.3(2)).OPT1.GB8
(April 6, 2015)
Shear plates and backing plates shall conform to ASTM A 36, and shall be galvanized after fabrication in accordance with AASHTO M 111.

8-11.2(9-16.3(2)).OPT2.GB8
(April 6, 2015)
Grout for post bases shall conform to Section 9-20.3(2).

8-11.2(9-16.3(2)).OPT3.GB8
(April 6, 2015)
Steel angles connecting the timber blockout to the existing steel truss members shall conform to either ASTM A 36 or ASTM A 992, and shall be galvanized in accordance with AASHTO M 111.

8-11.2(9-16.3(2)).OPT4.GB8
(April 6, 2015)
HSS steel tubing shall conform to ASTM A 500 Grade B, and shall be galvanized after fabrication in accordance with AASHTO M 111.

Steel bars, plates, and shapes shall conform to ASTM A 36, and shall be galvanized after fabrication in accordance with AASHTO M 111, except that structural shapes may conform to ASTM A 992.

Galvanized sheet metal shall conform to ASTM A 653, Coating Designation G 235.

Paving bulkheads, timber blocking, and custom cut shims shall be Douglas Fir-Larch No. 2 or better, and shall be treated as specified in this Section.

Rubberized asphalt shall conform to ASTM D 6690 (Type 1 for bridge locations in Western Washington, and Type 2 for bridge locations in Eastern Washington).

8-11.2(9-16.3(2)).OPT5.GR8
(~~January 5~~April 6, 2015)
Weathering Steel Beam Guardrail Posts
Steel posts for weathering steel beam guardrail shall be in accordance with one of the following two methods:

1. Galvanized Powder-Coated Steel Posts – These posts shall conform to ASTM A 36 or ASTM A 992 and be galvanized in accordance with AASHTO M 111. Powder coating of galvanized surfaces shall be done in accordance with Sections 6-07.3(11)B, 9-08.1(8) and 9-08.2 with the exception that the Engineer's approval of the surface cleaning, witnessing of quality control (QC) testing, and approval of the powder coated assembly and QC inspection reports is not required prior to shipment. Only the top 30 inches on any post length shall be powder coated. The powder coating when dry shall match that of Federal Standard 595, color number ~~20045~~30045.

2. Galvanized Weathering Steel Posts – These posts shall conform to ASTM A 588 Grade A or B steel and be galvanized in accordance with AASHTO M 111. Thirty inches, on any post length, shall not be galvanized for exposure above the ground.

8-11.2(9-16.3(4)).GB8
Hardware
Section 9-16.3(4) is supplemented with the following:

8-11.2(9-16.3(4)).OPT1.GB8
(April 6, 2015)
Resin bonded anchors shall conform to Sections 6-02.2 and 6-02.3(18) as supplemented in these Special Provisions.

8-11.2(9-16.3(4)).OPT2.GB8
(April 6, 2015)
Lag screws shall conform to Section 9-06.22.

8-11.2(9-16.3(5)).GR8
Anchors

8-11.2(9-16.3(5)).INST1.GR8
Section 9-16.3(5) is supplemented with the following:

8-11.2(9-16.3(5)).OPT1.GR8
(August 4, 2014)
Weathering Steel Beam Guardrail Anchors
Guardrail anchors may either be furnished as provided in Section 9-16.3(5) or they may be nongalvanized and fabricated from steel conforming to ASTM A 242 with the exception that all Type 1 anchors shall have galvanized cable and fittings as specified in Section 9-16.3(5).

8-11.3.GR8
Construction Requirements

8-11.3.INST1.GR8
Section 8-11.3 is supplemented with the following:

8-11.3.OPT1.GR8
(January 4, 2010)
Box Culvert Guardrail Steel Post
The Contractor shall remove surfacing materials from the top of the box culvert and shall determine the length of the posts and 7/8 inch diameter high strength bolts. The Engineer will verify the dimensions before the posts may be fabricated.

All surfacing material must be removed from the box culverts in an area extensive enough to allow installation of the baseplate. Before the grout that conforms to Section 9-20.3(2) is placed, the concrete surface shall be thoroughly cleaned of all dirt, oil and debris.

The posts shall be installed to the box culvert in accordance with Standard Plan C-10.

After the posts are installed on the box culverts, the excavated areas shall be backfilled and compacted in 6-inch lifts. Compaction shall be accomplished with three passes with a mechanical tamper.

8-11.3.OPT2.FR8
(April 6, 2009)
High-Tension Cable Barrier System (3 and 4 Cable)
A manufacturer's representative, or an installer who has been trained and certified by the unit's manufacturer, shall supervise assembly and installation at all times. Provide a copy of the installer's certification to the Engineer prior to installation.

Assemble and install high-tension cable barrier according to the manufacturer's recommendations. This shall include the connection to guardrail and the transition and terminal sections identified in the Plans. Submit any Contractor proposed modification in barrier location, type, terminal or transition to the Engineer for approval a minimum of 10-days prior to any work in the affected section.

Unless otherwise stated in the Plans, all posts shall be a socket type assembly; with the actual cable barrier post being inserted into a sleeve encased in a cast in place or precast reinforced concrete post foundation and will be installed as recommended by the manufacturer. On every 6th-post, install yellow retro-reflective sheeting that conforms to AASHTO M268 Type 4 adhesive sheeting on both sides of the post.

Terminal Placement
Unless otherwise stated in the Plans, the foundations for the high tension cable barrier terminals shall be cast in place or precast concrete and shall be installed in accordance with manufacturer's recommendations. If a precast concrete foundation is installed, the bottom of the unit shall have a full and even bearing on the surface under it. If there is a need for backfilling an excavation for the concrete foundation, backfill the excavation in accordance with Section 2-09.3(1) E. Delineate the anchor posts for approach traffic

with Type 3 lateral clearance markers (object markers) that are made with type III or type IV sheeting.

Additional High-Tension Cable Barrier Components

Furnish and deliver one complete set of High-Tension Cable Barrier to each of the Contracting Agency sites listed below:

*** $$1$$ ***

Include the following components with each complete set:

One-hundred line posts and all associated hardware including but not limited to spacers, connectors, straps, caps and covers. If the system has a special post to accommodate turnbuckles, then 5 of the line posts shall be these special posts.

Twenty sockets except when concrete sockets are used.

One 50 foot long section of cable used for the contract.

Three cable splices and 3 turnbuckle assemblies for a 3-cable system or 4 cable splices and 4 turnbuckle assemblies for a 4-cable system (1-assembly consists of a left and right hand threaded end with a turnbuckle).

One tension measuring device as recommended by the manufacturer.

One anchor post designed for use with the foundations installed.

Ten line terminal posts and all associated hardware.

Provide 48-hours notice to both the Engineer and the maintenance contact listed above prior to delivery. Damaged items will not be accepted and shall be replaced at no cost to the Contracting Agency.

8-11.3.OPT3.GR8
(August 6, 2007)
Beam Guardrail Type 31 NB

The Contractor shall furnish and install a W-beam guardrail system with a top rail height of 31 inches that does not use rail element blockouts. This system shall be documented as acceptable for use on the National Highway System by Federal Highway Administration. In addition, the system shall meet the requirements of NCHRP Report 350 test level 3, and the maximum dynamic deflection shall be 3-feet 6-inches.

Assemble and install Beam Guardrail Type 31NB according to the manufacturer's recommendations. Connect the new system to existing transitions and terminal sections identified in the Plans.

This system will be accepted based on a Manufacturer's Certificate of Compliance conforming to Section 1-06.3

8-11.3(1).GR8
Beam Guardrail

8-11.3(1).INST1.GR8
Section 8-11.3(1) is supplemented with the following:

8-11.3(1).OPT1.GR8
(April 5, 2010)
This project may contain a mixture of steel and wood posts. The bidder is advised that post selection will be as detailed in the plans and these specifications.

8-11.3(1)A.GR8
Erection of Posts

8-11.3(1)A.INST1.GR8
Section 8-11.3(1)A is supplemented with the following:

8-11.3(1)A.OPT1.GB8
(April 6, 2015)
Timber Blockouts for Beam Guardrail Type Thrie Beam
The Contractor shall cut and trim the timber blocks as necessary to conform to the shape of the existing concrete baluster rail, and to align the beam guardrail element, as shown in the Plans.

When the specified timber blockout spacing places a block at an existing concrete end post or intermediate post, the Contractor shall core drill holes into the existing concrete as shown in the Plans and as follows. The Contractor shall not shatter or damage the concrete adjacent to the holes. Location of blockout assemblies may be shifted slightly within the tolerance specified in the Plans in order to reduce the risk of damage to existing steel reinforcing bars. However, once a blockout assembly position is established, damage to existing steel reinforcing bars caused by subsequent core drilling operations at that assembly location is acceptable.

8-11.3(1)A.OPT2.GB8
(April 6, 2015)
Steel Posts for Beam Guardrail Type Thrie Beam
The Contractor shall field measure the dimension of the existing curb above the existing wearing surface at each curb line for each bridge receiving beam guardrail Type Thrie Beam. The field measured dimensions, and all adjustments to the field measurements required by planing and paving operations included in this project, shall be included in the steel post assembly shop drawings submitted in accordance with Section 8-11.3(1)F.

8-11.3(1)A.OPT3.GB8
(April 6, 2015)
Beam Guardrail Type WP Thrie Beam
The Contractor shall field measure the depth of the existing ballast and wearing course at both wheel guard lines, and shall include the dimensions at both wheel guard lines in the steel post mounting bracket shop drawings submitted in accordance with Section 8-11.3(1)F.

The Contractor shall remove the existing ballast and wearing course to the top of existing timber deck in the vicinity of the steel post anchorage locations, and shall dispose of the removed surfacing materials in accordance with Section 2-02.3.

As shown in the Plans, the Contractor shall place a timber block beneath the timber deck at each steel post anchorage location and against the existing exterior timber stringer.

The Contractor shall install the steel post anchorage assembly, including the deck plate, distribution plate, bearing plate, base plate, backing plate, and HSS steel tube post, as shown in the Plans. Timber deck shims shall be cut and trimmed as necessary to align the top of the vertical webs of the steel post anchorage 1/2 inch below the top of the surrounding wearing course surfacing, in accordance with the existing timber deck transverse slope and existing ballast and wearing course depth specified in the shop drawings.

The Contractor may field drill holes through the steel components in accordance with Section 6-03.3(27) except as otherwise noted. The Contractor shall identify all holes to be field drilled in the steel fabrication shop drawings. The Contractor may field drill the holes using hand held drills provided that the Contractor submits the method and equipment used to the Engineer for approval, and that the Contractor receives the Engineer's approval of the submittal prior to beginning hand drilling. The Contractor shall repair all galvanized steel surfaces damaged by field drilling operations by painting the damaged areas with one coat of paint conforming to Section 9-08.1(2)B.

The Contractor shall replace all existing ballast and wearing course removed in the vicinity of the steel post anchorage locations to the top of the surrounding surfacing. The Contractor shall fill the void with an HMA surfacing material approved by the Engineer.

8-11.3(1)B.GR8
Erection of Rail

8-11.3(1)B.INST1.GR8
Section 8-11.3(1)B is supplemented with the following:

8-11.3(1)B.OPT1.GR8
(August 6, 2007)
Snow load rail and post washers shall be used in construction of Type 1, Type 2, and Type 31 W-beam guardrail.

8-11.3(1)B.OPT2.GR8
(August 4, 2014)
Weathering Steel Beam Guardrail
Any Engineer approved field drilled holes to weathering steel beam guardrail shall not be painted.

After complete installation of weathering steel beam guardrail, the Contractor shall wash the rail with high pressure water meeting the requirements of Section 9-08.5(3). The rail shall be cleaned to meet the requirements of SSPC-SP 1.

8-11.3(1)B.OPT6.GB8
(April 6, 2015)
Field Measuring to Existing Type 3 Anchors

The Contractor shall field measure the dimension from the centerline of the existing Type 3 anchors specified for reuse to the end of the existing concrete curb and railbase or concrete baluster railing end blocks of the adjacent bridge. The Contractor shall submit these dimensions to the Engineer along with a Type 2 Working Drawing showing the arrangement of the thrie beam guardrail elements and approach guardrail elements relative to the existing Type 3 anchors and concrete curb and railbase or concrete baluster railing end blocks for each bridge as applicable.

8-11.3(1)B.OPT7.GB8
(April 6, 2015)
Attaching Beam Guardrail Type Thrie Beam to Timber Blockouts

The Contractor shall fasten the thrie beam element to the timber blockout assemblies such that the steel shear plates fit snug against the surface forming the opening through the concrete baluster rail.

The Contractor may field drill the holes through the thrie beam elements in accordance with Section 6-03.3(27), except as otherwise noted. The Contractor may field drill the holes using hand held drills.

The Contractor shall repair all galvanized steel surfaces damaged by field drilling operations by painting the damaged areas with one coat of paint conforming to Section 9-08.1(2)B.

8-11.3(1)B.OPT8.GB8
(April 6, 2015)
Thrie Beam Expansion Joint Element

Where beam guardrail Type Thrie Beam crosses bridge expansion joints, the Contractor shall place a thrie beam expansion section element conforming to Standard Plan C-1a.

8-11.3(1)B.OPT9.GB8
(April 6, 2015)
Beam Guardrail Type WP Thrie Beam

The Contractor may field drill the holes through the thrie beam elements in accordance with Section 6-03.3(27), except as otherwise noted. The Contractor may field drill the holes using hand held drills.

The Contractor shall repair all galvanized steel surfaces damaged by field drilling operations by painting the damaged areas with one coat of paint conforming to Section 9-08.1(2)B.

After completing the beam guardrail retrofit and replacing the surfacing at the steel post anchorage locations on the bridge up to the level of the surrounding surfacing, the Contractor shall install the sheet metal water barrier, when the water barrier is shown in the Plans. A bonding layer of rubberized asphalt shall be applied to the surfacing contact area immediately prior to installing the water barrier assembly. The direction of overlap of adjacent water barrier segments shall be as directed by the Engineer.

8-11.3(1)D.GR8
Removing Guardrail and Guardrail Anchor

8-11.3(1)D.INST1.GR8
Section 8-11.3(1)D is supplemented with the following:

8-11.3(1)D.OPT1.GB8
(April 6, 2015)
Beam Guardrail Type WP Thrie Beam
The Contractor shall remove the existing bridge guardrail posts and railing, the existing timber wheel guards, all associated fasteners, and the existing ballast and wearing course in the vicinity of the steel post anchorage assemblies of the bridges being retrofitted with beam guardrail Type WP Thrie Beam as shown in the Plans

The items specified above shall be removed as follows:

1. The Contractor shall remove the existing timber wheel guards before beginning the beam guardrail retrofit work.

2. The Contractor shall not remove any section of the existing bridge railing system on the bridge until completing the beam guardrail retrofit within that section of the bridge, except as otherwise specified. The Contractor may remove portions of the existing bridge railing system on the bridge which conflict with the anchorages, posts, and rail elements of the retrofit, provided:

    a. The Contractor installs as much of the beam guardrail retrofit as possible in the section that does not conflict with the existing bridge railing system elements.

    b. After removing the conflicting element of the existing bridge railing system, the Contractor shall immediately complete the beam guardrail retrofit in the section.

    c. The Contractor receives the Engineer's approval for removing the conflicting element of the existing bridge railing system before proceeding.

8-11.3(1)H.GR8
Guardrail Construction Exposed to Traffic

8-11.3(1)H.INST1.GR8
Section 8-11.3(1)H is supplemented with the following:

8-11.3(1)H.OPT1.GB8
(April 6, 2015)
Beam Guardrail Type WP Thrie Beam
Whenever the Contractor is not actively working on the beam guardrail retrofit, the Contractor shall ensure that all guardrail ends are securely fastened to the rail posts and existing bridge railing system, including temporary terminal end

sections as required. The Contractor shall conduct retrofit operations such that no gaps occur between the existing bridge railing system and the beam guardrail retrofit at any time.

The Contractor shall submit Type 2 Working Drawings detailing the temporary connections between the existing guardrail system and the thrie beam guardrail system, and the temporary terminal end sections.

8-11.4.GR8
Measurement

8-11.4.INST1.GR8
Section 8-11.4 is supplemented with the following:

8-11.4.OPT1.GR8
(March 13, 1995)
Box culvert guardrail steel posts will be measured per each, for each post installed.

8-11.4.OPT2.GR8
(August 6, 2012)
Measurement of either type of high-tension cable barrier (3 Cable or 4 Cable) will be by the linear foot along the line of the completed barrier from end to end including transition sections, terminals, cable barrier to guardrail terminals, foundations, sockets, concrete, compensating devices, tensioning device, slip base post, sleeves, caps, and all hardware.

8-11.4.OPT3.GR8
(~~August 4, 2014~~April 6, 2015)
Measurement of weathering steel beam guardrail will be by the linear foot measured along the line of the completed guardrail.~~, including expansion section, and will also include the end section for F connections.~~

Measurement of weathering steel beam guardrail transition sections will be per each for the type of transition section installed.

8-11.5.GR8
Payment

8-11.5.INST2.GR8
Section 8-11.5 is supplemented with the following:

8-11.5.OPT6.GR8
(September 30, 1996)
"Box Culvert Guardrail Steel Post Type ___", per each.

The unit contract price per each for "Box Culvert Guardrail Steel Post Type ___" shall be full pay for completing the installation of the posts, including furnishing, placing and compacting the backfill material.

8-11.5.OPT7.GR8
(April 6, 2009)
"High-Tension Cable Barrier System (3 Cable)", per linear foot.
"High-Tension Cable Barrier System (4 Cable)", per linear foot.
"Additional High-Tension Cable Barrier Components", lump sum.

The unit contract price per linear foot for "High-Tension Cable Barrier (3 Cable or 4 Cable)" shall be full pay to complete the work as specified.

8-11.5.OPT8.GR8
(April 6, 2009)
The lump sum contract price for "Additional High-Tension Cable Barrier Components" shall be full pay to complete the work as specified for either a 3 Cable or 4 Cable system.

8-11.5.OPT9.GR8
(~~August 4, 2014~~April 6, 2015)
"Weathering St. Beam Guardrail Type ____", per linear foot.

The unit Contract price per linear foot for "Weathering St. Beam Guardrail Type ____", shall be full payment for all costs to perform the Work.

"Weathering Steel Beam Guardrail Transition Section Type ____", per each.

The unit Contract price per each for "Weathering Steel Beam Guardrail Transition Section Type ____" shall be full payment for all costs to perform the Work as described in Sections 8-11.3(1)A and 8-11.3(1)B, including costs for connections to concrete masonry structures are required.

8-12.GR8
Chain Link Fence and Wire Fence

8-12.2.GR8
Materials

8-12.2.INST1.GR8
Section 8-12.2 is supplemented with the following:

8-12.2.OPT1.FR8
(August 3, 2009)
Coated Chain Link Fence
Chain link fence fabric shall be hot-dip galvanized with a minimum of 0.8 ounce per square foot of surface area.

Fencing materials shall be coated with an ultraviolet-insensitive plastic or other inert material at least 2 mils in thickness. Any pretreatment or coating shall be applied in accordance with the manufacturer's written instructions. The Contractor shall provide the Engineer with the manufacturer's written specifications detailing the product and method of fabrication. The color shall match Federal Standard 595 color number *** $$1$$ ***, or be as approved by the Engineer.

Samples of the coated fencing materials shall be approved by the Engineer prior to installation on the project.

The Contractor shall supply the Engineer with 10 aerosol spray cans containing a minimum of 14 ounces each of paint of the color specified above. The touch-up paint shall be compatible with the coating system used.

8-12.2.OPT6.GB8
(April 6, 2015)
Cable Fence
Steel pipe shall conform to ASTM A 53, Grade B, Type E or S.

Steel bars, plates, and shapes shall conform to ASTM A 36.

Steel components shall be galvanized after fabrication in accordance with AASHTO M 111.

Resin bonded anchors shall conform to Section 6-02.2 as supplemented in these Special Provisions.

Spelter sockets and turnbuckles shall conform to the size and breaking strength requirements specific in the Plans, shall be compatible with the wire rope selected by the Contractor, and shall be galvanized after fabrication in accordance with AASHTO M 232.

Wire rope shall conform to ASTM A 603 with Class A weight zinc-coated wires throughout.

8-12.3.GR8
Construction Requirements

8-12.3.INST1.GR8
Section 8-12.3 is supplemented with the following:

8-12.3.OPT1.GB8
Cable Fence

8-12.3.OPT1(A).GB8
(April 6, 2015)
The Contractor shall field measure the slope of the top of the existing retaining wall at each location of cable fence end post and intermediate brace. The Contractor shall submit Type 1 Working Drawings consisting of the tabulated field measured slope data.

8-12.3.OPT1(B).GB8
(April 6, 2015)
The Contractor shall submit shop drawings of the cable fence in accordance with Section 6-03.3(7). The shop drawings shall include, at a minimum, the following:

1. Plan, elevation, and section views of the cable fence and all components, with dimensions and tolerances.

2. Material designations for all components.

3. Socketing procedure for the spelter sockets.

4. Erection plan for installing the posts, installing and connecting the cable to the posts, and tensioning the cable.

The Contractor shall install resin bonded anchors in accordance with Section 6-02.3(18) as supplemented in these Special Provisions.

The cable shall be tensioned to 400 pounds with six inches minimum of take up still available in the turnbuckle.

8-12.3.OPT1(C).GB8
(April 6, 2015)
After erecting the cable fence posts, but prior to installing the cable, the Contractor shall clean, prepare, and paint all exposed galvanized surfaces in accordance with Section 6-07.3(11)A. The color of the finish coat, when dry, shall match Federal Standard 595 Color No. 20045.

8-12.4.GR8
Measurement

8-12.4.INST1.GR8
Section 8-12.4 is supplemented with the following:

8-12.4.OPT1.GB8

(April 6, 2015)

Cable fence will be measured by the linear foot along the line and slope at the base of the completed fence.

8-12.5.GR8
Payment

8-12.5.INST1.GR8

Section 8-12.5 is supplemented with the following:

8-12.5.OPT1.GR8

(April 1, 2002)

"Coated Chain Link Fence Type ___", per linear foot.

Payment for clearing of fence line for "Coated Chain Link Fence Type ___" shall be in accordance with Section 2-01.5.

"Coated End, Gate, Corner, Pull Post for Chain Link Fence", per each.

"Double 14 Ft. Coated Chain Link Gate", per each.

"Double 20 Ft. Coated Chain Link Gate", per each.

"Single 6 Ft. Coated Chain Link Gate", per each.

8-12.5.OPT6.GB8

(April 6, 2015)

"Cable Fence", per linear foot.

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8-20.GR8
Illumination, Traffic Signal Systems, Intelligent Transportation Systems, and Electrical

8-20.2.GR8
Materials

8-20.2.INST1.GR8
Section 8-20.2 is supplemented with the following:

8-20.2.OPT1.GB8
(April 6, 2015)
Traffic Signal Standard Foundation Shaft Casing
All permanent casing shall be a smooth wall non corrugated structure of steel base metal. All permanent casing shall be of ample strength to resist damage and deformation from transportation and handling, installation stresses, and all pressures and forces acting on the casing. The casing shall be clean prior to placement in the excavation. The permanent casing may be telescoped, but the outside diameter of the casing shall not be less than the specified diameter of the shaft.

8-20.2(9-29.2).GR8
Junction Boxes, Cable Vaults, and Pull Boxes

8-20.2(9-29.2(1)A).GR8
Standard Duty Junction Boxes
Section 9-29.2(1)A is supplemented with the following:

8-20.2(9-29.2(1)A).OPT1.GR8
(January 7, 2013)
Concrete Junction Boxes
Both the slip-resistant lid and slip-resistant frame shall be treated with Mebac#1 as manufactured by IKG industries, or SlipNOT Grade 3-coarse as manufactured by W.S. Molnar Co. Where the exposed portion of the frame is ½ inch wide or less the slip-resistant treatment may be omitted on that portion of the frame. The slip-resistant lid shall be identified with permanent marking on the underside indicating the type of surface treatment (“M1” for Mebac#1; or “S3” for SlipNOT Grade 3-coarse) and the year manufactured. The permanent marking shall be $^{1}/_{8}$ inch line thickness formed with a stainless steel weld bead.

8-20.2(9-29.2(2)A).GR8
Standard Duty Cable Vaults and Pull Boxes
Section 9-29.2(2)A is supplemented with the following:

8-20.2(9-29.2(2)A).OPT1.GR8

(January 7, 2013)

Both the slip-resistant lid and slip-resistant frame shall be treated with Mebac#1 as manufactured by IKG industries, or SlipNOT Grade 3-coarse as manufactured by W.S. Molnar Co. Where the exposed portion of the frame is ½ inch wide or less the slip-resistant treatment may be omitted on that portion of the frame. The slip-resistant lid shall be identified with permanent marking on the underside indicating the type of surface treatment ("M1" for Mebac#1; or "S3" for SlipNOT Grade 3-coarse) and the year manufactured. The permanent marking shall be $^{1}/_{8}$ inch line thickness formed with a stainless steel weld bead.

8-20.2(9-29.6).GR8

Light And Signal Standards

Section 9-29.6 is supplemented with the following:

8-20.2(9-29.6).OPT1.GR8

(~~January 5~~April 6, 2015)

Light Standards with Type 1 Luminaire Arms

Lighting standards shall be fabricated in conformance with the methods and materials specified on the pre-approved Plans listed below, provided the following requirements have been satisfied:

(a) Light source to pole base distance (H1) shall be as noted in the Plans. Verification of H1 distances by the Engineer, prior to fabrication, is not required. Fabrication tolerance shall be ± 6 inches.

(b) All other requirements of the Special Provisions have been satisfied.

Pre-Approved Plan	Fabricator	Mounting Hgt.
Drawing No DB00654 Rev. ~~G~~H Sheets 1, 2, 3 & 4	Valmont Ind. Inc.	30', 35', 40' & 50'
Drawing No. W3721-1 Rev. ~~I~~L & W3721-2 Rev. ~~D~~E	Ameron Pole Prod. Div.	20',25',30',35',40', 45' & 50'
Drawing No. NWS 3510 Rev. 2 or NWS 3510B Rev. 2	Northwest Signal Supply, Inc.	25', 30', 35', 40', 45' & 50'
Drawing WS-SL-01 Revision 7 Sheets 1 & 2 of 2	American Pole Structures, Inc.	25', 30', 35', 40', 45', 50'
Drawing 71035-B39 Rev. R11 Sheets 1 & 2 of 2	Union Metal Corp	40'
Drawing 71035-B50 Rev. R4 Sheets 1, 2 & 3 and B100-B335 Rev. R1	Union Metal Corp.	50'

Drawing 71035-B47 Rev. R3 Sheet 1 of 1 Elbow Mounting Detail	Union Metal Corp	40’, 50’
Drawing No. WSDOT-LP-01 Rev. 4, Sheets 1 and 2 or WSDOT - LP-01-BE Rev 3 Sheets 1 and 2 or WSDOT - LP-01-C8B Rev 2	West Coast Engineering Group	25’, 30’, 35’, 40’, 45’, and 50’
Drawing No. 10-31-RWP-1 Rev. 7 Sheets 1, 2 & 3	KW Industries	25, 30, 35, 40, 45, 50
Drawing No. 10-31-RWP-3 Rev. 2 (Bridge Mount Details)	KW Industries	

8-20.2(9-29.6).OPT2.GR8
(~~January 5~~April 6, 2015)
Light Standards with Type 1 Luminaire Arms

Lighting standards shall be fabricated in conformance with the methods and materials specified on the pre-approved plans listed below, provided the following requirements have been satisfied:

(a) Mounting heights shall be as specified in the Plans.

(b) Light source to pole base distances (H1) shall be determined or verified by the Engineer prior to fabrication. Fabrication tolerance shall be ±6 inches.

(c) All other requirements of the Special Provisions have been satisfied.

Pre-Approved Plan	Fabricator	Mounting Hgt.
Drawing No DB00654 Rev. ~~G~~H Sheets 1, 2, 3 & 4	Valmont Ind. Inc.	30', 35’, 40' & 50'
Drawing No. W3721-1 Rev. ~~I~~L & Rev. W3721-2 Rev. ~~D~~E	Ameron Pole Prod. Div.	20',25’,30’,35’,40’ 45’ & 50’
Drawing No. NWS 3510 Rev. 2 or NWS 3510B Rev. 2	Northwest Signal Supply, Inc.	25', 30', 35', 40', 45' & 50'
Drawing WS-SL-01 Revision 7 Sheets 1 & 2 of 2	American Pole Structures, Inc.	25', 30', 35', 40', 45', 50'
Drawing 71035-B39 Rev. R11 Sheets 1 & 2 of 2	Union Metal Corp	40'

Drawing 71035-B50 Rev. R4 Sheets 1, 2 & 3 and B100-B335 Rev. R1	Union Metal Corp	50’
Drawing 71035-B47 Rev. R3 Sheet 1 of 1 Elbow Mounting Detail	Union Metal Corp.	40’, 50’
Drawing No. WSDOT-LP-01 Rev. 4, Sheets 1 and 2 or WSDOT - LP-01-BE Rev 3 Sheets 1 and 2 or WSDOT - LP-01-C8B Rev 2	West Coast Engineering Group	25’, 30’, 35’, 40’, 45’, and 50’
Drawing No. 10-31-RWP-1 Rev. 7 Sheets 1,2 & 3	KW Industries	25, 30, 35, 40, 45, 50
Drawing No. 10-31-RWP-3 Rev. 2 (Bridge Mount Details)	KW Industries	

8-20.2(9-29.6).OPT3.GR8
(~~January 5~~April 6, 2015)
Light Standards with Type 2 Luminaire Arms

Lighting standards shall be fabricated in conformance with the methods and materials specified on the pre-approved Plans listed below, provided the following requirements have been satisfied:

(a) Light source to pole base distance (H1) shall be as noted in the Plans. Verification of H1 distances by the Engineer, prior to fabrication, is not required. Fabrication tolerance shall be ±6 inches.

(b) All other requirements of the Special Provisions have been satisfied.

Pre-Approved Plan	Fabricator	Mounting Hgt.
Drawing No DB00653 Rev. ~~G~~H Sheets 1, 2, 3 & 4	Valmont Ind. Inc.	30', 35’, 40' & 50'
Drawing No. W3720-1 Rev. ~~G~~ K & W3720-2 Rev. E	Ameron Pole Prod. Div.	30’, 35’ 40' 45' & 50'
Drawing No. NWS 3515 Rev. 2 or NWS 3515B Rev. 2	Northwest Signal Supply, Inc.	25', 30', 35', 40', 45' & 50'
Drawing WS-SL-02 Rev. 7 Sheets 1 & 2 of 2	American Pole Structures, Inc.	25', 30', 35', 40', 45', 50'
Drawing No. WSDOT-LP-02	West Coast	25’, 30’, 35’, 40’,

Rev. 3, Sheets 1 and 2 or WSDOT - LP-01-BE Rev 3 Sheets 1 and 2 or WSDOT - LP-01-C8B Rev 2	Engineering Group	45', and 50'
Drawing No. 10-31-RWP-2 Rev. 8 Sheet 1, 2, & 3	KW Industries	25', 30', 35', 40' 45' and 50'

8-20.2(9-29.6).OPT4.GR8
(~~January 5~~April 6, 2015)
Light Standards with Type 2 Luminaire Arms

Lighting standards shall be fabricated in conformance with the methods and materials specified on the pre-approved Plans listed below, provided the following requirements have been satisfied:

(a) Light source to pole base distance (H1) shall be as noted in the Plans. Verification of H1 distances by the Engineer, prior to fabrication, is not required. Fabrication tolerance shall be ±6 inches.

(b) All other requirements of the Special Provisions have been satisfied.

Pre-Approved Plan	Fabricator	Mounting Hgt.
Drawing No DB00653 Rev. ~~G~~H Sheets 1, 2, 3 & 4	Valmont Ind. Inc.	30',35', 40' & 50'
Drawing No. W3720-1 Rev. ~~G~~K W3720-2 Rev. E	Ameron Pole Prod. Div.	30', 35' 40' 45' & 50'
Drawing No. NWS 3515 Rev. 2 or NWS 3515B Rev. 2	Northwest Signal Supply, Inc.	25', 30', 35', 40', 45' & 50'
Drawing WS-SL-02 Rev. 7 Sheets 1 & 2 of 2	American Pole Structures, Inc.	25', 30', 35', 40', 45', 50'
Drawing No. WSDOT-LP-02 Rev. 3, Sheets 1 and 2 or WSDOT - LP-01-BE Rev 3 Sheets 1 and 2 or WSDOT - LP-01-C8B Rev 2	West Coast Engineering Group	25', 30', 35', 40', 45', and 50'
Drawing No. 10-31-RWP-2 Rev. 8 Sheet 1,2, & 3	KW Industries	25', 30', 35', 40' 45' and 50'

8-20.2(9-29.6).OPT5.GR8
(~~January 5~~April 6, 2015)
Traffic Signal Standards

Traffic signal standards shall be furnished and installed in accordance with the methods and materials noted in the applicable Standard Plans, pre-approved plans, or special design plans.

All welds shall comply with the latest AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Welding inspection shall comply with Section 6-03.3(25)A Welding Inspection.

Hardened washers shall be used with all signal arm connecting bolts instead of lockwashers. All signal arm ASTM A 325 connecting bolts tightening shall comply with Section 6-03.3(33).

Traffic signal standard types and applicable characteristics are as follows:

Type PPB Pedestrian push button posts shall conform to Standard Plan J-20.10 or to one of the following pre-approved plans:

Fabricator	Drawing No.
Northwest Signal Supply Inc.	NWS 3565
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sheet's 1, 2 & 3 of 3
Ameron Pole Prod. Div.	WA10TR-1 Rev. F and WAPPBPBA Rev. B
Union Metal Corp.	TA-10035 Rev. R8 Sht. 1
West Coast Engineering Group	WSDOT-PP-01 Rev. 1
KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type PS Pedestrian signal standards shall conform to Standard Plan J-20.16 or to one of the following pre-approved plans:

Fabricator	Drawing No.
Northwest Signal Supply Inc.	NWS 3540 Rev. 4 and NWS 3540B Rev. 4
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sht. 1, 2 & 3 of 3
Ameron Pole Prod. Div.	WA10TR-1 Rev. F and WA10TR-2 Rev. C
Union Metal Corp.	TA-10025 Rev. R18 Sht. 1 & 2
West Coast Engineering Group	WSDOT-PP-02 Rev. 1

American Pole Structures, Inc.	WS-PP-03 Rev. 1D
KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type I — Type I vehicle signal standards shall conform to Standard Plan J-21.15 or to one of the following pre-approved plans:

Fabricator	Drawing No.
Northwest Signal Supply Inc.	NWS 3540 Rev. 4 and NWS 3540B Rev. 4
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sht. 1 2 & 3 of 3
Ameron Pole Prod. Div	WA10TR-1 Rev. F and WA10TR-2 Rev. C
Union Metal Corp.	TA-10025 Rev. R18 Sht. 1 & 2
West Coast Engineering Group	WSDOT-PP-02 Rev. 1
American Pole Structures, Inc.	WS-PP-03 Rev. 1D
KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type FB — Type FB flashing beacon standard shall conform to Standard Plan J-21.16 or the following pre-approved plan:

Fabricator	Drawing No.
Union Metal Corp	50200-B58 Rev. R7 Sht. 1 & 2
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sht. 1 2 & 3 of 3
Ameron Pole Prod. Div.	WA10TR-1 Rev. F and WA10TR-2 Rev. C
Northwest Signal Supply, Inc.	NWS 3540 Rev. 4 and NWS 3540B Rev. 4
KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type RM — Type RM ramp meter standard shall conform to Standard Plan J-22.15 or the following pre-approved plan:

Fabricator	Drawing No.
Union Metal Corp	50200-B58 Rev. R7 Sht. 1 & 2
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sht. 1 2 & 3 of 3
Ameron Pole Prod. Div.	WA10TR-1 Rev. F and WA10TR-2 Rev. C
Northwest Signal Supply, Inc.	NWS 3540 Rev. 4 and NWS 3540B Rev. 4
KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type CCTV — Type CCTV camera pole standards shall conform to one of the following pre-approved Plans:

Fabricator	Drawing No.
Valmont Industries, Inc.	DB 00759 Rev. ~~L~~R Sheet 1, 2 and 3 of 3
Ameron Pole Product Div.	W6CCTV1 Rev F & W6CCTV2 Rev A
West Coast Engineering Group	AP-WSDOT-CP-01-Rev. 3
American Pole Structures, LLC	WS-CP-01 Rev. 1C Sht. 1 & 2
Union Metal Corporation	Drawing No. P33-B318, R11.1, Sheets 1, 2 of 2
Union Metal Corporation	Drawing No. P33-B323, Rev. 3 Sheets 1, 2 of 2
Northwest Signal Supply,Inc.	Drawing No. NWS 3545 (For Type CCTV) Rev. 1
KW Industries	Drawing No. 10-200-CAM-1 Rev. 9, Sheets 1 and 2

Type II — Characteristics:

Luminaire mounting height	N.A.
Luminaire arms	N.A.
Luminaire arm length	N.A.
Signal arms	One Only

Type II standards shall conform to one of the following pre-approved plans, provided all other requirements noted herein have been satisfied. Maximum (x) (y) (z) signal arm loadings in cubic feet are noted after fabricator.

Signal Arm Length (max)	Fabricator-(x) (y) (z)	Drawing No.
65 ft.	Valmont Ind. Inc.-(2894)	DB00625-Rev.~~R~~T, Shts. 1, 2,3 & 4
65 ft.	Union Metal Corp. (2900)	71026-B86 Rev. R11, Shts. 1, 2, & 3 of 3
65 ft.	Ameron Pole-(2900) Prod. Div.	W3724-1 Rev. ~~J~~ K & W3724-2 Rev.~~G~~H
65 ft.	Northwest Signal-(2802) Supply Inc.	NWS 3500 Rev. 4 or NWS 3500B Rev. 4
45 ft.	American Pole(1875) Structures, Inc.	WS-T2-L Rev. 8 Sheet 1 & 2 of 2
65 ft.	American Pole (2913) Structures, Inc.	WS-T2-H Rev. 8 Sheets 1 & 2 of 2
65 ft.	KW Industries	10-200-TSP-4 Rev. 5, Sheets 1, 2, and 3
65 ft	West Coast Engineering Group	WSDOT-TS-01 Rev. 3 Sheets 1, 2, and 3
65 ft.	Maico Industries (2894)	WSDOTMA Rev. 3 Sheets 1, 2 and 3

Type III Characteristics:

Luminaire mounting height	30 ft., 35 ft., 40 ft., or 50 ft.
Luminaire arms	One Only
Luminaire arm type	Type 1
Luminaire arm length (max.)	16 ft.
Signal arms	One Only

Type III standards shall conform to one of the following pre-approved plans, provided all other requirements noted herein have been satisfied. Maximum (x) (y) (z) signal arm loadings in cubic feet are noted after fabricator.

Signal Arm Length (max)	Fabricator-(x) (y) (z)	Drawing No.
65 ft.	Valmont Ind. Inc.-(2947)	DB00625-Rev.~~R~~T, Shts. 1, 2, 3 & 4 and"J" luminaire arm
65 ft.	Union Metal Corp. (2900)	71026-B87 Rev. R13 Shts. 1, 2 & 3
65 ft.	Ameron Pole-(2900) Prod. Div.	W3724-1 Rev. ~~J~~ K & W3724-2 Rev. ~~G~~H and "J" luminaire arm
65 ft.	Northwest Signal-(2802) Supply Inc.	NWS 3500 Rev. 4 or NWS 3500B Rev. 4
45 ft.	American Pole (1875) Structures, Inc.	WS-T3J-L, Rev. 11 Sheets 1 & 2 of 2
65 ft.	American Pole (2913) Structures, Inc.	WS-T3J-H, Rev. 10 Sheets 1 & 2 of 2
65 ft	West Coast Engineering Group	WSDOT-TS-01 Rev. 3 Sheets 1, 2, and 3
65 ft.	Maico Industries (2947)	WSDOTMA Rev. 3 Sheets 1, 2 and 3 and "J" luminaire arm
65 ft.	KW Industries	10-200-TSP-3 Rev. 5, Sheets 1, 2, and 3

Type IV — Type IV strain pole standards shall be consistent with details in the plans and Standard Plan J-27.15 or one of the following pre-approved plans:

Fabricator	Drawing No.
Northwest Signal Supply Inc.	NWS 3520 Rev. 2 or NWS 3520B Rev. 2,
Valmont Industries, Inc.	DB006885, Rev. A Sheets 1 and 2
Ameron Pole Prod. Div.	M3650 Rev. G
Union Metal Corp.	EA-10224 Rev. R13 Sheet 1 of 1

Fabricator	Drawing No.
American Pole Structures, Inc.	9000-12-037 Rev. A
Maico Industries	WA-SP-4 Rev.2, Sheets 1 and 2 of 2
KW Industries	10-200-SP-1 Rev. 4, Sheets 1 and 2
KW Industries	10-200-SP-2 Rev. 5, Sheets 1 and 2

Type V — Type V combination strain pole and lighting standards shall be consistent with details in the plans and Standard Plan J-27.15 or one of the following pre-approved plans:

Fabricator	Drawing No.
Northwest Signal Supply Inc.	NWS 3520 Rev. 2 or NWS 3520B Rev. 2
Valmont Industries, Inc.	DB006885, Rev. A Sheets 1 and 2
Ameron Pole Prod. Div.	M3650 Rev. G
Union Metal Corp.	EA-10225, Rev. R13 Shts. 1 & 2
American Pole Structures, Inc.	9020-12-007 Rev. B
Maico Industries	WA-SP-5 Rev. 2 , Sheets 1, 2 & 3 and "J" luminaire arm

The luminaire arm shall be Type 1, 16 foot maximum and the luminaire mounting height shall be 40 feet or 50 feet as noted in the plans.

Type SD — Type SD standards require special design. All special design shall be based on the latest AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and pre-approved plans and as follows:

1. A 90 mph wind loading shall be used.

2. The Design Life and Recurrence Interval shall be 50 years for luminaire support structures.

3. Fatigue design shall conform to AASHTO Section 11, Table 11-1 using fatigue category III.

Complete calculations for structural design, including anchor bolt details, shall be prepared by a Professional Engineer, licensed under Title 18 RCW, State of Washington, in the branch of Civil or Structural Engineering or by an individual holding valid registration in another state as a civil or structural Engineer.

All shop drawings and the cover page of all calculation submittals shall carry the Professional Engineer's original signature, date of signature, original seal, registration number, and date of expiration. The cover page shall include the contract number, contract title, and sequential index to calculation page numbers. Two copies of the associated design calculations shall be submitted for approval along with shop drawings.

Details for handholes and luminaire arm connections are available from the Bridges and Structures Office.

Foundations for various types of standards shall be as follows:

Type PPB	As noted on Standard Plan J-20.10
Type PS	As noted on Standard Plan J-21.10
Type I	As noted on Standard Plan J-21.10
Type FB	As noted on Standard Plan J-21.10
Type RM	As noted on Standard Plan J-21.10
Type CCTV	As noted on Standard Plan J-29.15
Type II	As noted in the Plans.
Type III	As noted in the Plans.
Type IV	As noted in the Plans and Standard Plan J-27.10
Type V	As noted in the Plans and Standard Plan J-27.10
Type SD	As noted in the Plans.

8-20.2(9-29.6).OPT6.GR8
(~~January 5~~April 6, 2015)
Traffic Signal Standards
Traffic signal standards shall be furnished and installed in accordance with the methods and materials noted in the applicable Standard Plans, pre-approved plans, or special design plans.

All welds shall comply with the latest AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Welding inspection shall comply with Section 6-03.3(25)A Welding Inspection.

Hardened washers shall be used with all signal arm connecting bolts instead of lockwashers. All signal arm ASTM A 325 connecting bolts tightening shall comply with Section 6-03-3(33).

Traffic signal standard types and applicable characteristics are as follows:

Type PPB Pedestrian push button posts shall conform to Standard Plan J-20.10 or to one of the following pre-approved plans:

Fabricator Drawing No.

Northwest Signal Supply Inc.	NWS 3565
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sheets 1, 2 and 3 of 3
Ameron Pole Div.	WA10TR-1 Rev. F andProd. WAPPBPBA Rev. B
Union Metal Corp.	TA-10035 Rev. R8 Sht. 1
West Coast Engineering Group	WSDOT-PP-01 Rev. 1
KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type PS — Pedestrian signal standards shall conform to Standard Plan J-20.16 or to one of the following pre-approved plans:

Fabricator	Drawing No.
Northwest Signal Supply Inc.	NWS 3540 Rev. 4 and NWS 3540B Rev. 4
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sheets 1 2 and 3 of 3
Ameron Pole Div.	WA10TR-1 Rev. F and Prod. WA10TR-2 Rev. C
Union Metal Corp.	TA-10025, Rev. R18 Sht. 1 & 2
West Coast Engineering Group	WSDOT-PP-02 Rev. 1
American Pole Structures, Inc.	WS-PP-03 Rev. 1D
KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type I — Type I vehicle signal standards shall conform to Standard Plan J-21.15 or to one of the following pre-approved plans:

Fabricator	Drawing No.
Northwest Signal Supply Inc.	NWS 3540 Rev. 4 and NWS 3540B Rev. 4
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sheets 1 2 and 3 of 3

Ameron Pole Div.	WA10TR-1 Rev. F and Prod. WA10TR-2 Rev. C
Union Metal Corp.	TA-10025 Rev. R18 Sht. 1 & 2
West Coast Engineering Group	WSDOT-PP-02 Rev. 1
American Pole Structures, Inc.	WS-PP-03 Rev. 1D
KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type FB Type FB flashing beacon standard shall conform to Standard Plan J-21.16 or the following pre-approved plan:

Fabricator	Drawing No.
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sheets 1 2 and 3 of 3
Union Metal Corp.	50200-B58 Rev. R7 Sheets 1 & 2
Ameron Pole Div.	WA10TR-1 Rev. F and Prod. WA10TR-2 Rev. C
Northwest Signal Supply Inc.	NWS 3540 Rev. 4 and NWS 3540B Rev. 4
KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type RM Type RM ramp meter standard shall conform to Standard Plan J-22.15 or the following pre-approved plan:

Fabricator	Drawing No.
Valmont Ind. Inc.	DB00655 Rev. ~~K~~L Sheets 1 2 and 3 of 3
Union Metal Corp.	50200-B58 Rev. R7 Sht. 1 & 2
Ameron Pole Div.	WA10TR-1 Rev. F and Prod. WA10TR-2 Rev. C
Northwest Signal Supply Inc.	NWS 3540 Rev. 4 and NWS 3540B Rev. 4

KW Industries	10-200-PED-1 Rev. 9, Sheets 1, 2 and 3

Type CCTV — Type CCTV camera pole standards shall conform to one of the following pre-approved Plans:

Fabricator	Drawing No.
Valmont Industries, Inc.	DB 00759 Rev. ~~J~~R Sheet 1, 2 and 3 of 3
Ameron Pole Product Div.	W6CCTV1 Rev. F & W6CCTV2 Rev A
West Coast Engineering Group	AP-WSDOT-CP-01 Rev. 3
American Pole Structures, LLC	WS-CP-01 Rev. 1C Sht. 1 & 2
Union Metal Corporation R11.1,	Drawing No. P33-B318, Sheets 1, 2 of 2
Union Metal Corporation 3	Drawing No. P33-B323, Rev. Sheets 1, 2 of 2
KW Industries	Drawing No. 10-200-CAM-1 Rev. 9, Sheets 1 and 2
Northwest Signal Supply, Inc.	Drawing No. NWS 3545 (For Type CCTV) Rev. 1

Type II — Characteristics:

Luminaire mounting height	N.A.
Luminaire arms	N.A.
Luminaire arm length	N.A.
Signal arms	One Only

Type II standards shall conform to one of the following pre-approved plans, provided all other requirements noted herein have been satisfied. Maximum (x) (y) (z) signal arm loadings in cubic feet are noted after fabricator.

Signal Arm Length (max)	Fabricator-(x) (y) (z)	Drawing No.
65 ft.	Valmont Ind. Inc.-(2894)	DB00625-Rev.~~R~~ T Sheets 1, 2. 3 & 4
65 ft.	Union Metal Corp. (2900)	71026-B86 Rev. R11 Sheets 1, 2 & 3 of 3
65 ft.	Ameron Pole-(2900)	W3724-1 Rev.~~J~~K & W3724-2 Rev. ~~G~~H

65 ft.	Northwest Signal-(2802) Supply Inc.	NWS 3505 Rev. 4 or NWS 3505B Rev. 4
45 ft.	American Pole (1875) Structures, Inc.	WS-T2-L Rev.8 Sheet 1 & 2 of 2
65 ft.	American Pole (2913) Structures, Inc.	WS-T2-H Rev. 8 Sheet 1 & 2 of 2
65 ft.	KW Industries	10-200-TSP-4 Rev. 5, Sheets 1, 2, and 3
65 ft	West Coast Engineering Group	WSDOT-TS-01 Rev. 3 Sheets 1, 2, and 3
65 ft.	Maico Industries (2894)	WSDOTMA Rev. 3 Sheets 1, 2 and 3

Type III Characteristics:

Luminaire mounting height	30 ft., 35 ft., 40 ft., or 50 ft.
Luminaire arms	One Only
Luminaire arm type	Type 2
Luminaire arm length (max.)	16 ft.
Signal arms	One Only

Type III standards shall conform to one of the following pre-approved plans, provided all other requirements noted herein have been satisfied. Maximum (x) (y) (z) signal arm loadings in cubic feet are noted after fabricator.

Signal Arm Length (max)	Fabricator-(x) (y) (z)	Drawing No.
45 ft.	American Pole (1875) Structures, Inc.	WS-T3J-L, Rev. 11 Sheets 1 & 2 of 2
65 ft.	Valmont Ind. Inc.-(2947)	DB00625-Rev. ~~R~~T, Sheets 1, 2, 3 & 4 and "T" luminaire arm
65 ft.	Northwest Signal-(2802) Supply Inc.	NWS 3505 Rev. 4 or NWS 3505B Rev. 4
65 ft.	Ameron Pole-(2900) Prod. Div.	W3724-1 Rev. ~~J~~K & W3724-2 Rev. ~~G~~H and "T" luminaire arm
65 ft	West Coast Engineering Group	WSDOT-TS-01 Rev. 3 Sheets 1, 2.& 3

65 ft.	Maico Industries (2947)	WSDOTMA Rev. 3 Sheets 1, 2 and 3 and "T" luminaire arm
65 ft.	KW Industries	10-200-TSP-3 Rev. 5, Sheets 1, 2, and 3
65ft	Union Metal Corp.	71026-B87 R13 Sheets 1, 2, and 3
65 ft.	American Pole (2913) Structures, Inc.	WS-T3J-H, Rev. 10 Sheets 1 & 2 of 2

Type IV — Type IV strain pole standards shall be consistent with details in the Plans and Standard Plan J-27.15 or one of the following pre-approved plans:

Fabricator	Drawing No.
Northwest Signal Supply Inc.	NWS 3525 Rev. 2 or NWS 3525B Rev. 2
Valmont Industries, Inc.	DB006885, Rev. A Sheets 1 and 2
Ameron Pole Prod. Div.	M3650 Rev. G
Union Metal Corp.	EA-10224, Rev. R13 Sheet 1 of 1
American Pole Structures, Inc.	9000-12-037 Rev. A
Maico Industries	WA-SP-4 Rev. 2, Sheets 1 and 2 of 2

Type V — Type V combination strain pole and lighting standards shall be consistent with details in the Plans and Standard Plan J-27.15 or one of the following pre-approved plans:

Fabricator	Drawing No.
Ameron Pole Prod. Div.	M3650 Rev.G
Northwest Signal Supply Inc.	NWS 3525 Rev. 2 or NWS 3525B Rev. 2
Maico Industries	WA-SP-5 Rev. 2, Sheets 1, 2 & 3 and "T" luminaire arm

Valmont Industries, Inc.	DB006885, Rev. A Sheets 1 and 2

The luminaire arm shall be Type 2, 16 foot maximum and the luminaire mounting height shall be 40 feet or 50 feet as noted in the Plans.

Type SD — Type SD standards require special design. All special design shall be based on the latest AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and pre-approved plans and as follows:

1. A 90 mph wind loading shall be used.

2. The Design Life and Recurrence Interval shall be 50 years for luminaire support structures.

3. Fatigue design shall conform to AASHTO Section 11, Table 11-1 using fatigue category III.

Complete calculations for structural design, including anchor bolt details, shall be prepared by a Professional Engineer, licensed under Title 18 RCW, State of Washington, in the branch of Civil or Structural Engineering or by an individual holding valid registration in another state as a civil or structural Engineer.

All shop drawings and the cover page of all calculation submittals shall carry the Professional Engineer's original signature, date of signature, original seal, registration number, and date of expiration. The cover page shall include the contract number, contract title, and sequential index to calculation page numbers. Two copies of the associated design calculations shall be submitted for approval along with shop drawings.

Details for handholes and luminaire arm connections are available from the Bridges and Structures Office.

Foundations for various types of standards shall be as follows:

Type PPB	As noted on Standard Plan J-20.10
Type PS	As noted on Standard Plan J-21.10
Type I	As noted on Standard Plan J-21.10
Type FB	As noted on Standard Plan J-21.10
Type RM	As noted on Standard Plan J-21.10
Type CCTV	As noted on Standard Plan J-29.15
Type II	As noted in the Plans.
Type III	As noted in the Plans.
Type IV	As noted in the Plans and Standard Plan J-27.10
Type V	As noted in the Plans and Standard Plan J-27.10
Type SD	As noted in the Plans.

8-20.2(1).GR8
Equipment List And Drawings

8-20.2(1).INST1.GR8
Section 8-20.2(1) is supplemented with the following:

8-20.2(1).OPT1.GR8
(March 13, 1995)
Pole base to light source distances (H1) for lighting standards with pre-approved plans shall be as noted in the Plans.

Pole base to light source distances (H1) for lighting standards without pre-approved plans will be furnished by the Engineer as part of the final approved shop drawings, prior to fabrication.

8-20.2(1).OPT2.GR8
(March 13, 1995)
Pole base to light source distances (H1) for lighting standards with pre-approved plans will be determined or verified by the Engineer at the request of the Contractor prior to fabrication.

Pole base to light source distances (H1) for lighting standards without pre-approved plans and for combination traffic signal and lighting standards will be furnished by the Engineer as part of the final approved shop drawings prior to fabrication.

8-20.2(1).OPT3.GR8
(March 13, 1995)
If traffic signal standards, strain pole standards, or combination traffic signal and lighting standards are required, final verified dimensions including pole base to signal mast arm connection point, pole base to light source distances (H1), mast arm length, offset distances to mast arm mounted appurtenances, and orientations of pole mounted appurtenances will be furnished by the Engineer as part of the final approved shop drawings prior to fabrication.

8-20.3.GR8
Construction Requirements

8-20.3(4).GR8
Foundations

8-20.3(4).INST1.GR8
Section 8-20.3(4) is supplemented with the following:

8-20.3(4).OPT1.FB8
(April 6, 2015)
Shafts For Signal Standard Foundations
Shaft foundations for the traffic signal standards at the following location(s) shall be constructed in accordance with the following requirements:

*** $$1$$ ***

Submittals

Contractor Project Reference and Personnel Experience Submittal

Prior to the start of shaft construction, the Contractor shall submit a Type 2 Working Drawing consisting of a project reference list verifying completion by the Contractor of at least three separate shaft foundation projects within the past five years with drilled shafts of diameters and depths similar to or larger than those shown in the Plans, and ground conditions similar to those identified in the Contract. A brief description of each listed project shall be provided along with the name and current phone number of the project owner or the owner's Contractor.

Prior to the start of shaft construction, the Contractor shall submit a Type 2 Working Drawing consisting of a list identifying the on-site supervisors, and drill rig operators potentially assigned to the project. On-site supervisors shall have a minimum two years' experience in supervising construction of shaft foundations, and drill rig operators shall have a minimum one year experience in construction of shaft foundations. The list shall contain a brief description of each individual's experience.

Shaft Installation Narrative Submittal

The Contractor shall submit a Type 3 Working Drawing consisting of a shaft installation narrative. The narrative shall reference available subsurface data provided in the contract test hole boring logs, and the geotechnical report(s) prepared for this project. This narrative shall provide the following information in a single complete submittal:

1. Proposed overall construction operation sequence.

2. Description, size and capacities of specific equipment that will be available on site, including but not limited to cranes, drills, auger, bailing buckets, final cleaning equipment and drilling unit. The narrative shall describe why the equipment was selected, and describe equipment suitability to the anticipated site conditions and work methods. The narrative shall include a project history of the drilling equipment demonstrating the successful use of the equipment on shafts of equal or greater size in similar soil/rock conditions. The narrative shall also include details of shaft excavation and cleanout methods.

3. Details of the method(s) to be used to ensure shaft stability (i.e., prevention of caving, bottom heave, etc. using casing, slurry, or other means) during excavation (including pauses and stops during excavation) and concrete placement. Casing dimensions and detailed procedures for permanent casing installation, and methods of advancing permanent casing with the excavation in accordance with this Special Provision, shall be provided.

4. Description and details of the storage and disposal plan for excavated material and slurry (if applicable).

5. Description of the method used to fill or eliminate all voids below the top of shaft between the permanent shaft casing and surrounding soil.

6. Reinforcing steel shop drawings, details of reinforcement placement, including bracing, centering, steel reinforcing bar cage centralizers, and lifting methods, and the method to assure the reinforcing cage position is maintained during construction.

7. Details of concrete placement, including operational procedures for pumping methods.

8. Description of the material (either CDF or granular material) used to temporarily backfill a shaft excavation during a stoppage of the excavation operation, as well as the method used to place and remove the material.

Quality Assurance

Shafts shall be constructed so that the center at the top of the shaft is within four inches of the Plan location. Shafts shall be within 1.5 percent of plumb. Shaft steel reinforcing bar placement tolerances shall conform to Section 6-02.3(24)C.

A shaft preconstruction conference shall be held at least five working days prior to the Contractor beginning any shaft construction work at the site to discuss construction procedures, personnel, and equipment to be used, and other elements of the approved shaft installation plan as specified elsewhere in this Special Provision. Those attending shall include the superintendent, on site supervisors, and all foremen in charge of excavating the shaft, placing the casing and slurry as applicable, placing the steel reinforcing bars, and placing the concrete, a representative of the concrete supplier, and the pump truck operator.

If the Contractor proposes a significant revision of the approved shaft installation plan, as determined by the Engineer, the Engineer may require an additional conference be held before any additional shaft construction operations are performed.

Shaft Excavation

Once the shaft excavation operation has started, the excavation shall be conducted in a continuous operation until the excavation of the shaft is completed, except for pauses and stops as noted, using approved equipment capable of excavating through the type of material expected.

Pauses, defined as momentary interruptions of the excavation operation, will be allowed only for casing splicing, tooling changes, slurry maintenance, and removal of obstructions. Shaft excavation operation interruptions not conforming to this definition shall be considered stops.

During stops, the Contractor shall stabilize the shaft excavation to prevent bottom heave, caving, head loss, and loss of ground, in accordance with item 3 of the shaft installation narrative. For stops exceeding 65 hours, the

Contractor shall stabilize the excavation by backfilling in accordance with item 8 of the shaft installation narrative. The Contractor shall backfill the hole to a minimum of five feet above the bottom of casing. Backfilling of shafts with casing fully seated into rock, as determined by the Engineer, will not be required.

If slurry is present in the shaft excavation, the Contractor shall conform to the requirements in the **Slurry** subsection of this Special Provision regarding the maintenance of the slurry and the minimum level of drilling slurry throughout the stop, and shall recondition the slurry to the required slurry properties prior to recommencing shaft excavation operations.

Permanent casing advanced during excavation operations is required full depth for all traffic signal standard shaft foundation locations specified at the beginning of this Special Provision. Excavation in advance of the casing tip shall not exceed three feet. In no case shall shaft excavation and casing placement extend below the bottom of shaft excavation as shown in the Plans.

The Contractor shall conduct casing installation operations and shaft excavation operations such that the adjacent soil outside the casing and shaft excavation for the full height of the shaft is not disturbed. Disturbed soil is defined as soil whose geotechnical properties have been changed from those of the original in-situ soil.

The Contractor shall use appropriate means such as a cleanout bucket or air lift to clean the bottom of the excavation of all shafts. No more than two inches of loose or disturbed material shall be present at the bottom of the shaft just prior to placing concrete.

The excavated shaft shall be inspected and approved by the Engineer prior to proceeding with construction. The bottom of the excavated shaft shall be sounded with an airlift pipe, a tape with a heavy weight attached to the end of the tape, or other means acceptable to the Engineer to determine that the shaft bottom meets the requirements in the Contract.

When obstructions are encountered, the Contractor shall notify the Engineer promptly. An obstruction is defined as a specific object (including, but not limited to, boulders, logs, and man made objects) encountered during the shaft excavation operation which prevents or hinders the advance of the shaft excavation. When efforts to advance past the obstruction to the design shaft tip elevation result in the rate of advance of the shaft drilling equipment being significantly reduced relative to the rate of advance for the portion of the shaft excavation in the geological unit that contains the obstruction, then the Contractor shall remove, break-up, or push aside, the obstruction under the provisions of Section 8-20.5 as supplemented in these Special Provisions. The method of dealing with such obstructions, and the continuation of excavation shall be as proposed by the Contractor and approved by the Engineer.

After the casing has been filled with concrete, all void space occurring between the casing and shaft excavation shall be filled with a material which approximates the geotechnical properties of the in-situ soils, in accordance with item 5 of the shaft installation narrative as approved by the Engineer.

Slurry

If the Contractor uses slurry in shafts installed below groundwater the slurry level in the excavation shall be maintained above the groundwater level the greater of the following dimensions, except as otherwise noted for the special requirements for all stops in shaft excavation operations:

1. Not less than ten feet,

2. Dimension as required to provide and maintain a stable hole.

The Contractor shall provide casing, or other means, as necessary to meet these requirements.

The slurry level shall be maintained above all unstable zones a sufficient distance to prevent bottom heave, caving or sloughing of those zones.

Throughout all stops in shaft excavation operations as defined in the **Shaft Excavation** subsection of this Special Provision, the Contractor shall monitor and maintain the slurry level in the excavation the greater of the following elevations:

1. No lower than the water level elevation outside the shaft.

2. Elevation as required to provide and maintain a stable hole.

If stable conditions are not being maintained, the Contractor shall immediately take action to stabilize the shaft. The Contractor shall submit a revised shaft installation narrative which addresses the problem and prevents future instability. The Contractor shall not continue with shaft construction until the damage which has already occurred is repaired in accordance with the specifications, and until receiving the Engineer's approval of the revised shaft installation narrative.

The Contractor shall dispose of the slurry and slurry-contacted spoils as specified in the shaft installation narrative and in accordance with Section 6-19.3(4)F.

Assembly And Placement Of Steel Reinforcing Bars

The steel reinforcing bar cage shall be rigidly braced to retain its configuration during handling and construction.

The reinforcement shall be carefully positioned and securely fastened to provide the minimum clearances listed below, and to ensure that no displacement of the steel reinforcing bars occurs during placement of the concrete. The reinforcing steel centralizers shall be placed at least at the quarter points around the circumference of the steel reinforcing bar cage, and located vertically at least at the 1/4 and 3/4 points of the shaft length below the shaft cap.

Placing Concrete

Shaft concrete shall be Class 4000P. Concrete placement shall commence immediately after completion of excavation by the Contractor and inspection by the Engineer. If slurry is used, testing immediately prior to commencing concrete placement shall show a maximum sand content of 1.0 percent, in accordance with API 13B-1 Section 5. Concrete placement shall be continuous until the work is complete.

During concrete placement, the Contractor shall monitor, and minimize, the difference in the level of concrete inside and outside of the steel reinforcing bar cage. The Contractor shall conduct concrete placement operations to maintain the differential concrete head as 1'-0" maximum.

When placing concrete in the dry, only the top five feet of concrete shall be vibrated. The amount and extent of vibration shall be sufficient to assure concrete flow to the outside of the shaft with full consolidation without causing segregation to occur. Vibration of the top five feet of concrete does not affect the maximum slump allowed for the concrete class specified.

If water is not present, the concrete shall be deposited through the center of the reinforcement cage by a method which prevents segregation of aggregates and splashing of concrete on the reinforcement cage. The concrete shall be placed such that the free-fall is vertical down the center of the shaft without hitting the sides, the steel reinforcing bars, or the steel reinforcing bar cage bracing. The Section 6-02.3(6) restriction for 5’-0” maximum free-fall shall not apply to placement of Class 4000P concrete into a shaft.

When placing concrete underwater, including when water in a shaft excavation exceeds three inches in depth, the Contractor shall place the concrete by pressure feed using a concrete pump with a watertight tube having a minimum diameter of four inches. The discharge end of the tube on the concrete pump shall include a device to seal out water while the tube is first filled with concrete. Alternatively, the Contractor may use a plug that is inserted in the hopper of the concrete pump and travels through the tremie to keep the concrete separated from the water and slurry. Concrete placement by gravity feed is not allowed.

Throughout the underwater concrete placement operation, the discharge end of the tube shall remain submerged in the concrete at least five feet and the tube shall always contain enough concrete to prevent water from entering. Before placing any fresh concrete against concrete deposited in water or slurry, the Contractor shall remove all scum, laitance, loose gravel and sediment on the upper surface of the concrete deposited in water or slurry and chip off any high spots on the upper surface of the existing concrete that would prevent the steel reinforcing bar cage from being placed in the position required by the Plans.

The Contractor's construction operation in the vicinity of a drilled shaft excavation with freshly placed concrete and curing concrete shall conform to Section 6-02.3(6)D.

Casing Removal
Tops of permanent casings for the shafts shall be removed to at least six inches beneath finish groundline, unless otherwise specified by the Engineer.

8-20.3(8).GR8
Wiring

8-20.3(8).INST1.GR8
Section 8-20.3(8) is supplemented with the following:

8-20.3(8).OPT1.GR8
(March 13, 1995)
Field Wiring Chart

501	AC+ Input	516-520 Railroad Pre-empt
502	AC- Input	5A1-5D5 Emergency Pre-empt
503-510	Control-Display	541-580 Coordination
511-515	Sign Lights	581-599 Spare

Movement Number	1	2	3	4	5	6	7	8	9
Vehicle Head									
Red	611	621	631	641	651	661	671	681	691
Yellow	612	622	632	642	652	662	672	682	692
Green	613	623	633	643	653	663	673	683	693
Spare	614	624	634	644	654	664	674	684	694
Spare	615	625	635	645	655	665	675	685	695
AC-	616	626	636	646	656	666	676	686	696
Red Auxiliary	617	627	637	647	657	667	677	687	697
Yellow Auxiliary	618	628	638	648	658	668	678	688	698
Green Auxiliary	619	629	639	649	659	669	679	689	699
Pedestrian Heads & Dets.									
Hand	711	721	731	741	751	761	771	781	791
Man	712	722	732	742	752	762	772	782	792
AC-	713	723	733	743	753	763	773	783	793
Detection	714	724	734	744	754	764	774	784	794
Common-Detection	715	725	735	745	755	765	775	785	795
Spare	716	726	736	746	756	766	776	786	796
Spare	717	727	737	747	757	767	777	787	797
Spare	718	728	738	748	758	768	778	788	798
Spare	719	729	739	749	759	769	779	789	799
Detection									
AC+	811	821	831	841	851	861	871	881	891
AC-	812	822	832	842	852	862	872	882	892
Common-Detection	813	823	833	843	853	863	873	883	893
Detection A	814	824	834	844	854	864	874	884	894
Detection B	815	825	835	845	855	865	875	885	895
Loop 1 Out	816	826	836	846	856	866	876	886	896
Loop 1 In	817	827	837	847	857	867	877	887	897
Loop 2 Out	818	828	838	848	858	868	878	888	898
Loop 2 In	819	829	839	849	859	869	879	889	899
Supplemental Detection									

Loop 3 Out	911	921	931	941	951	961	971	981	991
Loop 3 In	912	922	932	942	952	962	972	982	992
Loop 4 Out	913	923	933	943	953	963	973	983	993
Loop 4 In	914	924	934	944	954	964	974	984	994
Loop 5 Out	915	925	935	945	955	965	975	985	995
Loop 5 In	916	926	936	946	956	966	976	986	996
Loop 6 Out	917	927	937	947	957	967	977	987	997
Loop 6 In	918	928	938	948	958	968	978	988	998
Spare	919	929	939	949	959	969	979	989	999

8-20.3(14).GR8
Signal Systems

8-20.3(14).INST1.GR8
Section 8-20.3(14) is supplemented with the following:

8-20.3(14).OPT1.GR8
(~~January 3, 2011~~April 6, 2015)
Uninterruptible Power Supply (UPS)
The UPS system shall provide traffic signal system battery backup power in the event of loss or failure of normal utility power. The UPS system shall be constructed for full on line configuration (line interactive type), providing automatic voltage regulation and power conditioning when under normal utility power. The transfer from utility power to battery power and vice versa shall not interfere with the normal operation of the connected traffic signal controller including conflict monitor and any other peripheral devices within the traffic controller assembly.

~~The completely assembled UPS system, including enclosure, shall be obtained by the Contractor from the following manufacturer:~~

~~Alpha Technologies, Inc.~~
~~3767 Alpha Way~~
~~Bellingham, WA 98226~~
~~Phone: 360 647 2360~~
~~Email: alpha@alpha.com~~
~~http://www.alpha.com~~

The UPS system shall include the following equipment:

UPS System Equipment
UPS system cabinet assemblies shall include all necessary equipment and auxiliary equipment for controlling the operation of traffic signals and similar systems as required for the specific application. UPS system cabinets shall meet the requirements of the NEMA TS1 and TS2 specification or the California Department of Transportation “Transportation Electrical Equipment Specifications” (TEES) dated March 12, 2009 and the following requirements:

1. Cabinet shall be Model 334L, housing 1B, and mounting cage 1 per TEES.

2. Construction shall be of 0.125-inch sheet aluminum (5052 alloy), with mill finish. The aluminum shall not be anodized and the exterior shall not be painted.

3. The cabinet door(s) shall each have a three point latch system. Locks shall be spring loaded construction locks capable of accepting a Best 6 pin core. Green construction cores shall be installed for each cabinet core lock. One core removal key and two standard keys shall be included with each cabinet and delivered to the Engineer.

4. Cabinet lighting shall be LED light strips with power supply. LED rope lights are not permitted. Color temperature shall be 3000K (cool white) plus or minus 400K. LED light strips shall be approximately 12-14 inches long, and have a minimum output of 400 lumens. There shall be two light strips for each rack assembly within the cabinet. Lighting shall be ceiling mounted and oriented parallel to the door face – rack mounted lighting is not permitted. Lighting shall be positioned near the inside faces of the cabinet so that the lighting shines onto the faces of the associated rack mounted equipment, as well as into the interior of the rack. Lighting shall not interfere with the proper operation of any other ceiling mounted equipment and shall not block tool access to lifting eye attachment nuts. All lighting fixtures above a rack shall energize whenever either door to that respective rack is opened. Each door switch shall be labeled “Light”.

5. One controller unit shelf with drawer, which attaches to the front and back rails of the EIA rack, shall be provided in lieu of the two steel controller supporting angles specified in TEES 6.3.4.

6. The cabinet shall be provided with a breaker panel with two 15 amp, 120 volt, single pole breakers, one each for the fan and the lights.

7. Each cabinet shall be provided with at least 20 empty neutral connections to accommodate field wiring. The neutral bus bars shall be of the style in which a lug is not needed to be applied to the neutral field wire(s). All of the neutral bars shall be secured in accordance with the TEES. All neutral bars shall be at the same electrical potential.

8. The electric fan shall have ball or roller bearings and capacity of at least 100 cubic feet per minute and shall be installed at the top of the cabinet. The fan shall be thermostatically controlled by a manually adjusted thermostat with a range of 32°F and 140°F.

9. Three battery shelves shall be furnished. Each shelf shall be capable of supporting three AlphaCell (220 GOLD-HP) batteries without visibly flexing. A minimum of two and one half inches of side clearance and six inches of overhead clearance is required for each battery.

10. A minimum of 12 inches of clearance shall be maintained between the bottom rack and the bottom of the cabinet.

11. The cabinet shall include a Generator Transfer Switch and enclosure in accordance with Section 9-29.13(8). The Transfer Switch enclosure shall be installed at the same location normally occupied by the police panel enclosure on the right side of the cabinet, as viewed from the front. The lock shall have an aluminum rain shield cover, attached to the door with a rivet.

UPS System Internal Components

The following equipment shall be furnished and mounted to the EIA rack.

1. Alpha – Controller Power Module - FXM 2000 w/SNMP module; part number 017-232-31. FXM 2000 shall face the front of the cabinet and be installed at the top of the EIA rack.

2. Alpha FXM 2000 support – shelf kit 19” EIA rack UPS Inverter SS with hardware; part number 3610030085.

3. Alpha - Automatic Transfer Switch (UATS). Automatic Transfer Switch shall face the back of the cabinet and be installed at the top of the EIA rack; part number 020-168-25.

4. Alpha - Rack mount brackets 2 each and attachment screws; part number 740-697-21.

5. Pull out drawer; part number 3610035000. Pull out drawer shall face the front of the cabinet.

The following equipment shall be installed on the battery shelves:

1. Alpha - part number 181-233-10, which is the AlphaCell 220 GOLD-HP GXL Battery (Four batteries shall be provided).

2. Alpha - part number 012-306-21 Alpha Guard Battery Management System.

3. Alpha - part number 740-628-27 Battery Cable kit 48V 10 ft. ¼-20 termination.

4. Alpha - part number 189-236-10 Battery Heater Mats 14.25 inch 120V. One battery heater mat for each battery.

The Alpha components of the UPS system shall be manufactured by the following:

Alpha Technologies, Inc.
3767 Alpha Way
Bellingham, WA 98226
Phone: 360 647 2360
Email: alpha@alpha.com
http://www.alpha.com

Maintenance and Operations Manuals

The Contractor shall supply three Maintenance and Operations Manuals for each UPS system (each cabinet). Two Maintenance and Operations Manuals shall be in a paper format and one Maintenance and Operations Manual shall be in an electronic PDF format.

UPS System Laboratory Testing

Each UPS system shall be tested at the Washington State Department of Transportation Materials Laboratory located in Tumwater, Washington, prior to installation. The UPS system testing shall simulate the operations as installed in the field. The tests shall check the operation of each individual component as well as the overall operation of the system.

The State Materials Laboratory testing of the UPS system will consist of the following four separate stages:

1. Delivery and Assembly

2. Documentation

3. Demonstration

4. Performance Test

Testing will follow in the listed order with no time gaps between stages unless mutually agreed upon by the Contractor and State Materials Laboratory.

The Contractor shall designate a qualified representative for these tests. All communications and actions regarding testing of all equipment submitted to the State Materials Laboratory shall be made through this representative. These communications and actions shall include, but not be limited to, all notifications of failure or rejection, demonstration of the equipment, and the return of rejected equipment.

Contractor Quality Control Testing

Prior to delivery of the UPS system to the State Materials Laboratory, all components and equipment, including the batteries shall be fully installed in the cabinet and the UPS system operations shall be successfully tested by the Contractor's representative.

After the UPS system has been successfully tested, the batteries shall be removed from the cabinet and the cabinet and batteries shall be delivered, independently, to the State Materials Laboratory.

Stage 1: Delivery and Assembly

The Contractor shall provide all Work necessary to assemble the UPS system and make ready for demonstration at the State Materials Laboratory. Upon delivery, the batteries shall be reinstalled in the cabinet and the UPS system shall be made fully operational. All components for the complete UPS system, including the necessary test equipment, shall be ready for testing within 14 calendar days of delivery to the State Materials Laboratory.

Stage 2: Documentation
All documentation shall be furnished with the UPS system equipment prior to the start of testing. The documents to be supplied shall consist of the following:

1. Serial numbers when applicable.

2. Wiring diagrams for all equipment furnished. One set per cabinet.

3. Complete operations and maintenance manuals. Two sets per cabinet.

4. A description of the functions and the capabilities of individual components and of the overall UPS system.

Stage 3: Demonstration
The Contractor shall provide the following:

1. A presentation on how to operate the system.

2. A complete and thorough demonstration to show that all components of the UPS system are in good condition and operating properly.

The demonstration shall be performed by the Contractor's representative in the presence of State Materials personnel.

Stage 4: Performance Test
The performance test will be conducted by State Personnel to determine if the UPS system performs correctly. The performance test shall include the testing of the following specifications:

1. Battery Discharge Rate

2. Battery Recharge Rate

3. Power Transfer Rate

Test results shall be within the manufacturers recommended values in order for the tests to be considered successful.

Equipment Failure or Rejection
All component or system failures shall be documented. This documentation shall provide the following information:

1. A detailed description of the failure.

2. The steps undertaken to correct the failure.

3. A list of parts that were replaced, if any.

All failed or rejected equipment shall be removed from the Materials Laboratory within three calendar days following notification; otherwise, the failed or rejected equipment will be returned, freight collect, to the Contractor.

Following final approval by the State Materials Laboratory, all equipment shall be removed from the State Materials Laboratory, by the contractor and delivered to sites as designated elsewhere in this contract.

UPS System Field Testing

After installation, the Contractor shall field test the UPS system to ensure the system operates in accordance with Plans, Specifications and manufacturer's instructions. The test shall ensure that that all components are operational within manufacturer's tolerances. The Contractor shall provide a testing procedure to the Engineer for approval. The testing procedure shall provide for operational testing of the following:

1. UPS Power Module

2. Surge Suppressor

3. Automatic Transfer Switch

4. Generator Power Transfer Switch

The field test shall demonstrate the loss of utility power and the switch over to battery power without interference with the normal operation of the connected traffic signal controller including conflict monitor and any other peripheral devices within the traffic controller assembly.

~~**Type 332 Cabinet**~~

~~The enclosure cabinet shall be a CALTRANS approved Type 332 cabinet with the following:~~

~~Items 2, 4 and 5 of the first paragraph of Section 9-29.13(7)E shall be provided with the cabinet. Green construction cores shall be installed for each cabinet core lock.~~

~~The cabinet shall be provided with a breaker panel with two 15 amp, 120 volt, single pole breakers, one each for the fan and the lights.~~

~~Item M of Section 9-29.13(7)C shall be provided with the cabinet.~~

~~Construction shall be of 0.125-inch sheet aluminum (5052 alloy), with mill finish. The aluminum shall not be anodized and the exterior shall not be painted.~~

~~A thermostatically controlled cooling fan, with a minimum CFM of three times the cabinet volume shall be installed at the top of the cabinet.~~

~~Three battery shelves shall be furnished. Each shelf shall be capable of supporting two Alpha (220 GOLD-HP) batteries. A minimum of two and one half inches of side clearance and six inches of overhead clearance is required for each battery.~~

~~A minimum of 12 inches of clearance shall be maintained between the bottom rack and the bottom of the cabinet.~~

~~Generator Transfer Switch and Enclosure~~

~~The UPS Type 332 cabinet shall include a transfer switch enclosure of identical materials, dimensions and installation methods as the police panel type enclosure identified in the first paragraph of Section 9-29.13(7)E except that the enclosure door shall include a spring loaded construction core lock capable of accepting a Best 6-pin CX series core. The core lock shall be installed with a green construction core. Upon contract completion, two master keys for the construction core shall be delivered to the Engineer. The transfer switch enclosure shall be installed at the same location normally occupied by the police panel enclosure.~~

~~The transfer switch enclosure shall contain the following generator transfer switch equipment:~~

~~One NEMA L5-30P Flanged Inlet generator connector~~

~~One Utility power "ON" indicator light. The indicator light shall be labeled"Utility".~~

~~One generator power "ON" indicator light. The indicator light shall be labeled "Generator".~~

~~Two 30 amp, 120 volt, single pole, single phase, circuit breakers. One circuit breaker shall be labeled "Generator" and the other circuit breaker shall be labeled "Utility". Both labels shall be engraved phenolic name plates.~~

~~The enclosure shall include a mechanical lock out feature that prevents the Utility circuit breaker and the Generator circuit breaker from being in the ON position at the same time. The circuit breakers shall be capable of being independently switched.~~

~~The conductors from the generator transfer switch enclosure to the rack mounted automatic transfer switch shall be enclosed in nylon mesh sleeve.~~

~~The enclosure door shall be labeled with the letters "GTS".~~

~~UPS Internal Components~~

~~The following equipment shall be furnished and mounted to the EIA rack.~~

~~Alpha - #017-201-31 Controller Power Module - FXM 2000 w/SNMP module~~

~~Alpha - # 020-168-25 Automatic Transfer Switch (UATS)~~

~~Alpha – # 740-755-21 Surge Suppressor Assembly, 120/240VAC~~

~~Alpha – # 740-748-23 Receptacle Plate Assembly~~

~~The following equipment shall be installed on the battery shelves:~~

~~Alpha - # 220 GOLD-HP GXL Battery (Four batteries shall be provided)~~

~~Alpha - #012-306-21 Alpha Guard Battery Management System~~

~~Alpha - #740-648-27 Battery Cable kit~~

~~Maintenance and Operations Manual(s)~~

~~Two Maintenance and Operations Manuals from Alpha Technologies shall be provided for each cabinet.~~

~~UPS Cabinet Acceptance Testing~~

~~The UPS cabinet shall be tested at the Washington State Department of Transportation Materials Laboratory located in Tumwater, Washington, prior to final delivery. The tests shall check the operation of each individual component as well as the overall operation of the system.~~

~~The Contractor shall designate a qualified representative for these tests. Notification of this representative shall be submitted for approval, in writing, to the State Materials Laboratory, 14 calendar days prior to any equipment deliveries. The Engineer shall also receive a copy of this notification, which includes the representative's name, address, and telephone number. All communications and actions regarding testing of all equipment submitted to the State Materials Laboratory shall be made through this representative. These communications and actions shall include, but not be limited to, all notifications of failure or rejection, demonstration of the equipment, and the return of rejected equipment.~~

~~The State Materials Laboratory testing process will consist of the following three separate stages:~~

a. ~~Delivery and Assembly~~
b. ~~Demonstration and Documentation~~
c. ~~Performance Test~~

~~Testing will follow in the correct order with no time gaps between stages unless mutually agreed upon by the Contractor and State Materials Laboratory.~~

~~Stage 1 Delivery and Assembly~~

~~Prior to delivery of the UPS cabinet to the State Materials Laboratory, all components and equipment, including the batteries shall be fully installed in the cabinet and the cabinet operations shall be successfully tested by the Contractor's representative.~~

~~After the cabinet has been successfully tested, the batteries shall be removed from the cabinet and the cabinet and batteries shall be delivered, independently, to the State Materials Laboratory. Upon delivery to the State Materials Laboratory, the batteries shall be reinstalled in the cabinet and the cabinet shall be made fully operational by the Contractor's representative.~~

~~All components for the complete UPS system, including the necessary test equipment, shall be assembled and ready for demonstration within ten working days of delivery to the Materials Laboratory. The systems shall simulate the operations as installed in the field.~~

~~The Contractor shall provide labor, equipment, and materials necessary to assemble all UPS equipment, including battery installation, and make ready for demonstration.~~

~~Stage 2 Documentation and Demonstration~~

~~Documentation~~

~~All documentation shall be furnished with the UPS equipment prior to the start of testing. The documents to be supplied shall consist of the following:~~

- ~~a. A complete set of documents which shall include:~~
    - ~~1. Serial numbers when applicable.~~
    - ~~2. Wiring diagrams for all equipment furnished. One set per cabinet.~~
    - ~~3. Complete operations and maintenance manuals. Two sets per cabinet.~~
    - ~~b. A description of the functions and the capabilities of individual components and of the overall UPS system.~~

~~Demonstration~~

~~The Contractor shall provide the following:~~

- ~~a. A presentation on how to operate the system~~

- ~~b. A complete and thorough demonstration to show that all components of the UPS system are in good condition and operating properly.~~

~~The demonstration shall be performed by the Contractor's representative in the presence of State Materials personnel.~~

~~Stage 3 Unit Performance Test~~

~~The unit performance test will be conducted by State Personnel to determine if each and every UPS cabinet assembly performs correctly.~~

~~The performance test shall include the testing of the following specifications:~~

~~Battery Discharge Rate~~
~~Battery Recharge Rate~~
~~Power Transfer Rate~~

~~Test results shall be within the manufacturers recommended values in order for the tests to be considered successful.~~

~~Equipment Failure or Rejection~~

~~All component or system failures shall be documented. This documentation shall provide the following information:~~

~~a. A detailed description of the failure.~~
~~b. The steps undertaken to correct the failure.~~
~~c. A list of parts that were replaced, if any.~~

~~All failed or rejected equipment shall be removed from the Materials Laboratory within three working days following notification; otherwise, the failed or rejected equipment will be returned, freight collect, to the Contractor.~~

~~Following final approval by the State Materials Laboratory, all equipment shall be removed from the State Materials Laboratory, by the contractor and delivered to sites as designated elsewhere in this contract.~~

~~UPS Cabinet Field Testing~~
~~After installation, the Contractor shall field test the UPS system to ensure the system operates in accordance with plans, specifications and manufacturer's instructions. The test shall ensure that that all components are operational within manufacturer's tolerances. The Contractor shall provide a testing procedure to the Engineer for approval. The testing procedure shall provide for operational testing of the following:~~

~~UPS Power Module~~
~~Surge Suppressor~~
~~Automatic Transfer Switch~~
~~Generator Power Transfer Switch~~

~~The field test shall demonstrate the loss of utility power and the switch over to battery power without interference with the normal operation of the connected traffic signal controller including conflict monitor and any other peripheral devices within the traffic controller assembly.~~

8-20.3(14)A.GR8
Signal Controllers

8-20.3(14)A.INST1.GR8
Section 8-20.3(14)A is supplemented with the following:

8-20.3(14)A.OPT1.GR8
(August 2, 2010)
Testing
All signal control equipment shall be tested at the Washington State Department of Transportation Materials Laboratory located in Tumwater, Washington, prior to final delivery. The tests shall check the operation of each individual component as well as the overall operation of the system.

The Contractor shall designate a qualified representative for these tests. Notification of this representative shall be submitted for approval, in writing, to the State Materials Laboratory, 14 calendar days prior to any equipment deliveries. The Engineer shall also receive a copy of this notification, which includes the representative's name, address, and telephone number. All communications and actions regarding testing of all equipment submitted to the State Materials Laboratory shall be made through this representative.

These communications and actions shall include, but not be limited to, the following:

All notifications of failure or rejection, demonstration of the equipment, and the return of rejected equipment.

The State Materials Laboratory testing process will consist of the following four separate stages:

a. Delivery and Assembly
b. Demonstration and Documentation
c. Performance Test
d. Operational Test

Testing will follow in the correct order with no time gaps between stages unless mutually agreed upon by the Contractor and State Materials Laboratory.

Stage 1 Delivery Assembly
All components for the complete traffic control systems, including the necessary test equipment, shall be assembled and ready for demonstration within ten working days of delivery to the Materials Laboratory. The systems shall simulate the operations as installed in the field.

Equipment and prerequisites necessary to complete this stage shall include:

a. Detection Simulator:
The detection simulator shall provide at least one detector per phase and variable traffic volumes. One simulator shall be required for every two controllers tested.

b. Communications Network:
Locations, specified for coordinating communications equipment and cable, shall be completely wired to provide an operational communications system between all local and master controllers.

The Contractor shall provide labor, equipment, and materials necessary to assemble all control equipment complete and ready for demonstration. Materials and equipment used for this stage that are not required for field installation shall remain the property of the Contractor. Failure to complete this stage within ten working days will result in rejection of the entire system.

Stage 2 Demonstration and Documentation
This stage shall be completed within seven working days following the completion of Stage 1. Failure to do so shall result in rejection of the entire shipment.

All documentation shall be furnished with the control equipment prior to the start of testing. If corrections to any document are deemed necessary by the State, the Contractor shall submit this updated version prior to the final approval by the State Materials Laboratory. The documents to be supplied shall consist of or provide the following:

a. A Complete accounting of all the control and test equipment required.

b. A complete set of documents which shall include:

   1. Serial numbers when applicable.

   2. Written certification that equipment of the same make and model has been tested according to NEMA Environmental Standards and Test Procedures, and has met or exceeded these standards. The certificate shall include equipment model number and where, when, and by whom the tests were conducted. This certificate shall accompany each shipment of controllers.

   3. Reproducible mylar wiring diagrams and two blue-tone prints for each controller and cabinet supplied. The sheet size shall be 24 inches by 36 inches.

   4. Wiring diagrams for all auxiliary equipment furnished. One set per cabinet.

   5. Complete operations and maintenance manuals including complete and correct software listing and flow charts. One set of operations and maintenance manuals per cabinet; at least four but no more than ten. Five sets of software listings and flow charts.

   6. Complete operations and maintenance manuals for all auxiliary equipment. One set per cabinet.

c. A description of the functions and the capabilities of individual components and of the overall control system.

d. A presentation on how to operate the system.

e. A complete and thorough demonstration to show that all components of the control system are in good condition and operating properly, and proof that the controller and cabinet are functioning correctly.

f. Detailed instructions for installing and operating the controller(s), including explanations on the use of all features of the controller(s).

g. The operational and maintenance manuals for each traffic signal controller supplied including as a minimum, but not to be limited to the following:

1. Detailed instructions for maintaining all hardware components, controller, and auxiliary equipment.

2. A complete parts list detailing all manufacturer's identification codes.

3. Detailed wiring diagrams and schematics indicating voltage levels and pictorial description, part name, and location for all hardware components, controller, and auxiliary equipment.

The demonstration shall include the following:

a. Phasing per plans and all phase timing.

b. Detection including any special detector functions.

c. Conflict Monitor and Load Switches.

d. Special Coordination including communication equipment.

This demonstration shall be performed by the Contractor in the presence of State Materials personnel. The Contractor shall supply any item not accounted for within five working days of the accounting. Controllers and cabinets that remain incomplete five working days after notification shall be rejected and returned freight collect to the Contractor.

Stage 3 Unit Performance Test
A minimum of ten working days shall be allowed for one or two cabinet assemblies and five working days for each additional assembly.

The unit performance test will be conducted by State Personnel to determine if each and every controller cabinet assembly complies with NEMA Environmental Standards as stated in NEMA publication No. TS 1-1976, Part 2.

Any unit submitted, whose failure has been corrected, shall be retested from the beginning of this stage.

Stage 4 Operational Test
All control and auxiliary equipment shall operate without failure for a minimum of ten consecutive days. If an isolated controller is specified, it shall operate as an isolated controller. If a coordinated system is specified, it shall operate as a total coordinated system with the master and all local controllers operating in all coordinated modes.

If any failure occurs during this stage, all equipment for this stage shall be restarted following completion of repairs.

Equipment Failure Or Rejection

Equipment failures shall be defined as set forth in NEMA Publication No. TS 1-1976. Failure of load switches, detector amplifiers, and conflict monitors shall not result in rejection of the controller or cabinet. However, the Contractor shall stock, as replacements, approximately 30 percent more than the total for these three items. All excess material shall remain the property of the Contractor following completion of all tests.

If a failure occurs during Stages 3 or 4, repairs shall be made and completed within ten working days following notification of the malfunction. The Contractor shall have the option of making onsite repairs or repair them at a site selected by the Contractor. Failure to complete repairs within the allotted time shall result in rejection of the controller or cabinet assembly under test.

A total of two failures will be allowed from the start of Stage 3 to the end of Stage 4. If three failures occur during this time period, the equipment will be rejected. New equipment of different serial numbers submitted as replacement shall be received by the Materials Laboratory for testing under Stage 3 within ten working days following notification of rejection. Failure to meet this requirement within the allotted time will result in rejection of the entire system. Software errors will be considered as failures and, if not corrected within ten working days, the entire system will be subject to rejection. Following rejection of any equipment, the Contractor shall be responsible for all costs incurred. This shall include but not be limited to all shipping costs.

When the traffic control program is supplied by the State, the Contractor shall prove that any failures are, in fact, caused by that program and not the hardware.

All component or system failures, except load switches and detector amplifiers, shall be documented. This documentation shall be submitted prior to commencing the test or stage in which the failure was found and shall provide the following information:

a. A detailed description of the failure.
b. The steps undertaken to correct the failure.
c. A list of parts that were replaced, if any.

Upon completion of the tests, the equipment will be visually inspected. If material changes are observed which adversely affect the life of the equipment, the cause and conditions shall be noted. The Contractor will immediately be given notice to correct these conditions. If not repaired within ten working days of notification, the equipment will be subject to rejection. A final accounting shall be made of all equipment prior to approval.

All failed or rejected equipment shall be removed from the Materials Laboratory within three working days following notification; otherwise, the failed or rejected equipment will be returned, freight collect, to the Contractor.

Following final approval by the State Materials Laboratory, all equipment shall be removed from the State Materials Laboratory and delivered to sites as designated elsewhere in this contract.

Guarantees
Guarantees and warranties shall be in accordance with Section 1-05.10.

8-20.5.GR8
Payment

8-20.5.INST1.GR8
Section 8-20.5 is supplemented with the following:

8-20.5.OPT1.GB8
(April 6, 2015)
“Removing Traffic Signal Shaft Obstructions”, estimated.
Payment for removing obstructions, as defined in Section 8-20.3(4) as supplemented in these Special Provisions, will be made for the changes in shaft construction methods necessary to remove the obstruction. The Contractor and the Engineer shall evaluate the effort made and reach agreement on the equipment and employees utilized, and the number of hours involved for each. Once these cost items and their duration have been agreed upon, the payment amount will be determined using the rate and markup methods specified in Section 1-09.6. For the purpose of providing a common proposal for all bidders, the Contracting Agency has entered an amount for the item "Removing Traffic Signal Shaft Obstructions" in the bid proposal to become a part of the total bid by the Contractor.

If the shaft construction equipment is idled as a result of the obstruction removal work and cannot be reasonably reassigned within the project, then standby payment for the idled equipment will be added to the payment calculations. If labor is idled as a result of the obstruction removal work and cannot be reasonably reassigned within the project, then all labor costs resulting from Contractor labor agreements and established Contractor policies will be added to the payment calculations.

The Contractor shall perform the amount of obstruction work estimated by the Contracting Agency within the original time of the contract. The Engineer will consider a time adjustment and additional compensation for costs related to the extended duration of the shaft construction operations, provided:

1. the dollar amount estimated by the Contracting Agency has been exceeded, and

2. the Contractor shows that the obstruction removal work represents a delay to the completion of the project based on the current progress schedule provided in accordance with Section 1-08.3.

8-21.GR8
Permanent Signing

8-21.2.GR8
Materials

8-21.2(9-06.16).GR8
Roadside Sign Structures

Section 9-06.16 is supplemented with the following:

8-21.2(9-06.16).OPT1.GR8
(January 3, 2011)
Perforated Steel Square Sign Post System

Where noted in the Plans, steel sign post systems shall be square, pre-punched galvanized steel tubing, that are NCHRP 350 Test Level 3 Certified and FHWA approved. The steel sign post system shall include all anchor sleeves, and other hardware required for a complete sign installation.

System Acceptance

Systems listed in the current QPL will be accepted per the QPL approval code. Systems not listed in the QPL will be accepted based on a Supplier’s Certificate of Compliance. The Supplier’s Certificate of Compliance will be a contract specific letter from the supplier stating the system is NCHRP 350 Test Level 3 compliant.

8-21.2(9-28.14).GR8
Sign Support Structures

Section 9-28.14 is supplemented with the following:

8-21.2(9-28.14).OPT1.GB8
(April 6, 2015)
Sign Structure Foundation Shaft Casing And Slurry

All temporary casing shall be a smooth wall non corrugated structure of steel base metal. All temporary casing shall be of ample strength to resist damage and deformation from transportation and handling, installation and extraction stresses, and all pressures and forces acting on the casing. The temporary casing shall be capable of being removed without deforming and causing damage to the completed shaft, and without disturbing the surrounding soil.

The temporary casing shall be clean prior to placement in the excavation. The temporary casing may be telescoped, but the outside diameter of the temporary casing shall not be less than the specified diameter of the shaft.

Slurry for shaft foundations shall be either synthetic slurry or water slurry, conforming to the following requirements:

Synthetic Slurries

Synthetic slurries shall be used in conformance with the manufacturer's recommendations, and the quality control plan specified in Section 8-21.3(9)F as supplemented in these Special Provisions. The sand content of synthetic slurry prior to final cleaning and immediately prior to placing concrete shall be less than 1.0 percent, in accordance with API 13B-1, Section 5.

Water Slurry

Water without site soils may be used as slurry when casing is used for the entire length of the drilled hole. Use of water slurry without full length casing may only be used with the approval of the Engineer. Water slurry shall conform to the following requirements:

Property	Test	Requirement
Density (pcf)	Mud Weight (Density) API 13B-1, Section 1	65 max.
Sand Content (percent)	Sand API 13B-1, Section 5	1.0 max.

Slurry temperature shall be at least 40F when tested.

8-21.2(9-28.14).OPT6.GR8
(January 3, 2011)
Manufacturers for Steel Roadside Sign Supports

The Standard Plans lists several steel sign support types. These supports are patented devices and many are sole-source. All of the sign support types listed below are acceptable when shown in the Plans.

Steel Sign Support Type	Manufacturer
Type TP-A & TP-B	Transpo Industries, Inc.
Type PL, PL-T & PL-U	Northwest Pipe Co.
Type AS	Transpo Industries, Inc.
Type AP	Transpo Industries, Inc.
Type ST 1, ST 2, ST 3, & ST 4	Ultimate Highway Products, Allied Tube & Conduit, Inc., Northwest Pipe, Inc.
Type SB-1, SB-2, & SB-3	Ultimate Highway Products, Xcessories Squared Development and Manufacturing Incorporated, Northwest Pipe, Inc.

8-21.2(9-28.14(2)).GR8
Steel Structures and Posts

Section 9-28.14(2) is supplemented with the following:

8-21.2(9-28.14(2)).OPT1.GB8
(April 6, 2015)
Monotube Sign Structures

Structural steel, except for cover plates, anchor rod templates and as otherwise shown in the Plans, shall conform to either ASTM A 572 Grade 50, or ASTM A 588. Cover plates shall conform to ASTM A 36.

Handhole cover screws shall conform to ASTM F 593, Grade 1.

Sign bracket bolts, nuts, and washers shall conform to Section 9-06.5(1).

Monotube splice bolts, mounting beam rods, and associated nuts and washers, shall conform to ASTM A 325, and shall be galvanized after fabrication in accordance with AASHTO M 232. Tension control bolts conforming to ASTM F 1852 may be used as monotube splice bolts, and if used shall be galvanized after fabrication in accordance with ASTM B 695 Class 55 Type I.

Anchor rods shall conform to ASTM F 1554 Grade 105, including supplemental requirements S2, S3, and S5. Nuts shall conform to ASTM A 563 Grade DH. Washers shall conform to ASTM F 436. Anchor rods shall be galvanized a minimum of 1'-0" at the exposed end in accordance with ASTM F 2329. Nuts and washers shall be galvanized in accordance with AASHTO M 232.

8-21.2(9-28.14(2)).OPT2.GB8
(April 6, 2015)
Tubular and pipe steel shall conform to either ASTM A 53 Grade B Type E or S, or ASTM A 500 Grade B. The wall thickness or pipe schedule shall be as shown in the Plans.

8-21.3.GR8
Construction Requirements

8-21.3(9).GR8
Sign Structures

8-21.3(9)A.GR8
Fabrication of Steel Structures

8-21.3(9)A.INST1.GR8
Section 8-21.3(9)A is supplemented with the following:

8-21.3(9)A.OPT1.GB8
(January 5, 2015)
Monotube Sign Structures
Bolted Connections
All bolted connections shall be made using the direct tension indicator method in accordance with Section 6-03.3(33).

Surfaces of Bolted Connections and Base Plates
All bolted connection faying surfaces shall be flat after fabrication as required to provide a solid fit upon assembly in accordance with Section 6-03.3(33). The flatness of the faying surfaces shall be flat to within a tolerance of 1/32 inch in 12 inches and a tolerance of 1/16 inch overall. Base plates with leveling nuts shall be flat to within a tolerance of 1/8 inch in 12 inches and a tolerance of 3/16 inch overall.

In order to achieve the flatness requirements, the Contractor may need to mill or machine the plates. The Contractor shall adjust plate thicknesses as required to provide the plate thickness specified in the Plans after milling or machining operations.

At bolted connections, both faying surfaces shall be at right angles to the bolt axis, parallel to each other, and shall be in full contact in the assembled condition. Full contact is defined as 90-percent of the outside and inside perimeters of the splice plates being visually in contact. The outside surface shall be inspected just inside the shell of the monotube and the inside shall be inspected at the handhole. Splices shall be fabricated such that the required camber remains continuous and smooth across the field splice.

Shop Assembly
Prior to galvanizing, the Contractor shall shop assemble the completed structure lying on its side in an undeflected position to ensure correct alignment, accuracy of holes, fit of joints, smooth camber profile, and the specified amount of camber. The joints shall be bolted with a sufficient number of bolts tightened snug tight to close the joints as they would be in the final field assembled position and as specified in the **Surfaces of Bolted Connections and Base Plates** subsection of this Special Provision. The Contractor shall not disassemble the sign structure for galvanizing as specified until receiving the Engineer's approval of the shop assembled structure.

Zinc Coating and Painting
All galvanized surfaces exposed to view after erection shall be shop painted or shop powder coated in accordance with Section 6-07.3(11), except when the Plans or Special Provisions require field painting only in accordance with Sections 6-07.3(9)I and 6-07.3(11)A. Contact surfaces of the field bolted connections shall be left as galvanized without any overcoat.

The color of the finish coat shall match color No. 35237 Federal Standard 595 latest edition when dry.

All galvanized surfaces specified to be painted or powder coated shall be prepared for coating in accordance with the ASTM D 6386 and Section 6-07.3(11). The method of preparation shall be as agreed upon by the paint or powder coating manufacturer and the galvanizer.

After completing erection, the Contractor shall repair all metal surfaces with damaged paint or powder coatings and exposed metal with a field repair coating in accordance with Section 6-07.3(9)I and Section 6-07.3(11)A (for paint) or Section 6-07.3(11)B (for powder coating). The color of the finish coat of the field repair coating, when dry, shall match the color specified above.

Field Assembling
The Contractor shall furnish and install the vibration damper as shown in the Plans. The damper shall be installed before the sign structure is erected.

Welding Inspector Qualification

The fabricator shop will provide a Certified Welding Inspector. The inspector shall be a AWS Certified Welding Inspector (CWI) qualified and certified in accordance with the provisions of AWS QCI Standard for Qualification and Certification.

Welding Inspection

Welds for monotube sign structures shall be inspected using the methods described below.

1. Visual Inspection in accordance with Section 6-03.3(25)A1.

2. Magnetic Particle Inspection in accordance with Section 6-03.3(25)A4.

3. Ultrasonic Inspection in accordance with Section 6-03.3(25)A3.

4. Dye-Penetrant or Magnetic Particle Inspection
   The post to beam connection weld shall have 100 percent of its length inspected using dye-penetrant or magnetic-particle testing techniques. The inspection shall be performed after the root pass and after completion of the weld.

8-21.3(9)A.OPT2.FB8
(January 5, 2015)
Monotube Sign Structures

Bolted Connections

All bolted connections shall be made using the direct tension indicator method in accordance with Section 6-03.3(33).

Surfaces of Bolted Connections and Base Plates

All bolted connection faying surfaces shall be flat after fabrication as required to provide a solid fit upon assembly in accordance with Section 6-03.3(33). The flatness of the faying surfaces shall be flat to within a tolerance of 1/32 inch in 12 inches and a tolerance of 1/16 inch overall. Base plates with leveling nuts shall be flat to within a tolerance of 1/8 inch in 12 inches and a tolerance of 3/16 inch overall.

In order to achieve the flatness requirements, the Contractor may need to mill or machine the plates. The Contractor shall adjust plate thicknesses as required to provide the plate thickness specified in the Plans after milling or machining operations.

At bolted connections, both faying surfaces shall be at right angles to the bolt axis, parallel to each other, and shall be in full contact in the assembled condition. Full contact is defined as 90-percent of the outside and inside perimeters of the splice plates being visually in contact. The outside surface shall be inspected just inside the shell of the monotube and the inside shall be inspected at the handhole. Splices shall be fabricated such that the required camber remains continuous and smooth across the field splice.

Shop Assembly

Prior to galvanizing, the Contractor shall shop assemble the completed structure lying on its side in an undeflected position to ensure correct alignment, accuracy of holes, fit of joints, smooth camber profile, and the specified amount of camber. The joints shall be bolted with a sufficient number of bolts tightened snug tight to close the joints as they would be in the final field assembled position and as specified in the **Surfaces of Bolted Connections and Base Plates** subsection of this Special Provision. The Contractor shall not disassemble the sign structure for galvanizing as specified until receiving the Engineer's approval of the shop assembled structure.

Zinc Coating and Painting

All galvanized surfaces exposed to view after erection shall be shop painted or shop powder coated in accordance with Section 6-07.3(11), except when the Plans or Special Provisions require field painting only in accordance with Sections 6-07.3(9)I and 6-07.3(11)A. Contact surfaces of the field bolted connections shall be left as galvanized without any overcoat.

The color of the finish coat shall match *** $$1$$ *** when dry.

All galvanized surfaces specified to be painted or powder coated shall be prepared for coating in accordance with the ASTM D 6386 and Section 6-07.3(11). The method of preparation shall be as agreed upon by the paint or powder coating manufacturer and the galvanizer.

After completing erection, the Contractor shall repair all metal surfaces with damaged paint or powder coatings and exposed metal with a field repair coating in accordance with Section 6-07.3(9)I and Section 6-07.3(11)A (for paint) or Section 6-07.3(11)B (for powder coating). The color of the finish coat of the field repair coating, when dry, shall match the color specified above.

Field Assembling

The Contractor shall furnish and install the vibration damper as shown in the Plans. The damper shall be installed before the sign structure is erected.

Welding Inspector Qualification

The fabricator shop will provide a Certified Welding Inspector. The inspector shall be a AWS Certified Welding Inspector (CWI) qualified and certified in accordance with the provisions of AWS QCI Standard for Qualification and Certification.

Welding Inspection

Welds for monotube sign structures shall be inspected using the methods described below.

1. Visual Inspection in accordance with Section 6-03.3(25)A1.

2. Magnetic Particle Inspection in accordance with Section 6-03.3(25)A4.

3. Ultrasonic Inspection in accordance with Section 6-03.3(25)A3.

4. Dye-Penetrant or Magnetic Particle Inspection
The post to beam connection weld shall have 100 percent of its length inspected using dye-penetrant or magnetic-particle testing techniques. The inspection shall be performed after the root pass and after completion of the weld.

8-21.3(9)E.GR8
Bridge Mounted Sign Brackets

8-21.3(9)E.INST1.GR8
Section 8-21.3(9)E is supplemented with the following:

8-21.3(9)E.OPT1.FB8
(April 6, 2015)
Bridge Mounted Sign Bracket No(s). *** $$1$$ *** include the following quantities of structural carbon steel:

*** $$2$$ ***

For bridge mounted sign brackets mounted with resin bonded anchors, the Contractor shall install resin bonded anchors in accordance with Section 6-02.3(18) as supplemented in these Special Provisions. For this type of mounting, Bridge Mounted Sign Bracket No(s). *** $$3$$ *** include the following quantities of drilled holes:

*** $$4$$ ***

8-21.3(9)F.GR8
Foundations

8-21.3(9)F.INST1.GR8
Section 8-21.3(9)F is supplemented with the following:

8-21.3(9)F.OPT2.FB8
(April 6, 2015)
Shafts For Sign Structure Foundations
Shaft foundations for the sign structures at the following location(s) shall be constructed in accordance with the following requirements, except that temporary casing is not required by the Contracting Agency but is instead a Contractor option:

*** $$1$$ ***

Shaft foundations for the sign structures at the following location(s) shall be constructed in accordance with the following requirements, including required use of temporary casing:

*** $$2$$ ***

Submittals

Contractor Project Reference and Personnel Experience Submittal

Prior to the start of shaft construction, the Contractor shall submit a Type 2 Working Drawing consisting of a project reference list verifying the completion by the Contractor of at least three separate shaft foundation projects in the past five years with drilled shafts of diameters and depths similar to or larger than those shown in the Plans and ground conditions similar to those identified in the Contract. A brief description of each listed project shall be provided along with the name and current phone number of the project owner or the owner's Contractor.

Prior to the start of shaft construction, the Contractor shall submit a Type 2 Working Drawing consisting of a list identifying the on-site supervisors, and drill rig operators potentially assigned to the project. On-site supervisors shall have a minimum two years experience in supervising construction of shaft foundations, and drill rig operators shall have a minimum one year experience in construction of shaft foundations. The list shall contain a brief description of each individual's experience.

Shaft Installation Narrative Submittal

The Contractor shall submit a Type 3 Working Drawing consisting of a shaft installation narrative. The narrative shall reference available subsurface data provided in the contract test hole boring logs, and the geotechnical report(s) prepared for this project. This narrative shall provide the following information in a single complete submittal:

1. Proposed overall construction operation sequence.

2. Description, size, and capacities of specific equipment that will be available on site, including but not limited to cranes, drills, auger, bailing buckets, final cleaning equipment and drilling unit. The narrative shall describe why the equipment was selected, and describe equipment suitability to the anticipated site conditions and work methods. The narrative shall include a project history of the drilling equipment demonstrating the successful use of the equipment on shafts of equal or greater size in similar soil/rock conditions. The narrative shall also include details of shaft excavation and cleanout methods

3. Details of the method(s) to be used to ensure shaft stability (i.e., prevention of caving, bottom heave, etc. using temporary casing, slurry, and other means) during excavation (including pauses and stops during excavation) and concrete placement. Temporary casing dimensions and detailed procedures for temporary casing installation and removal, and methods of advancing temporary casing with

the excavation in accordance with this Special Provision, shall be provided.

4. Detailed procedures for mixing, using, and maintaining the slurry shall be provided. A detailed mix design (including all additives and their specific purpose in the slurry mix), and a discussion of its suitability to the anticipated subsurface conditions, shall also be provided for the proposed slurry.

   The submittal shall include a detailed plan for quality control of the selected slurry, including tests to be performed, test methods to be used, and minimum and/or maximum property requirements which shall be met to ensure that the slurry functions as intended, considering the anticipated subsurface conditions and shaft construction methods, in accordance with the slurry manufacturer's recommendations and this Special Provision. As a minimum, the slurry quality control plan shall include the following tests:

Property	Test Method
Density	Mud Weight (Density), API 13B-1, Section 1
Viscosity	Marsh Funnel and Cup,
	API 13B-1, Section 2.2
PH	Glass Electrode, pH Meter, or pH Paper
Sand Content	Sand, API 13B-1, Section 5

5. Description of the method used to fill or eliminate all voids below the top of shaft between the plan shaft diameter and excavated shaft diameter.

6. Reinforcing steel shop drawings, details of reinforcement placement, including bracing, centering, steel reinforcing bar cage centralizers, and lifting methods, and the method to assure the reinforcing cage position is maintained during construction.

7. Details of concrete placement, including operational procedures for pumping methods, and a sample uniform yield form to be used by the Contractor for plotting the approximate volume of concrete placed versus the depth of shaft for all shaft concrete placement (except concrete placement in the dry).

8. Description of the material (either CDF or granular material) used to temporarily backfill a shaft excavation during a

stoppage of the excavation operation, as well as the method used to place and remove the material.

9. Storage and disposal plan for excavated material and drilling slurry (if applicable).

Synthetic Slurry Technical Representative Submittal

If synthetic slurry is used to construct the shafts, the Contractor shall provide or arrange for technical assistance in the use of the synthetic slurry as specified in the **Slurry** subsection of this Special Provision. As part of the shaft installation narrative Working Drawing, the Contractor shall submit one of the following:

1. The name and current phone number of the synthetic slurry manufacturer's technical representative assigned to the project.

2. The name(s) of the Contractor’s personnel assigned to the project and trained by the synthetic slurry manufacturer in the proper use of the synthetic slurry. The submittal shall include a signed training certification letter from the synthetic slurry manufacturer for each trained Contractor’s employee listed, including the date of the training.

Quality Assurance

Shafts shall be constructed so that the center at the top of the shaft is within four inches of the Plan location. Shafts shall be within 1.5 percent of plumb. Shaft steel reinforcing bar placement tolerances shall conform to Section 6-02.3(24)C.

A shaft preconstruction conference shall be held at least five working days prior to the Contractor beginning any shaft construction work at the site to discuss construction procedures, personnel, and equipment to be used, and other elements of the approved shaft installation plan as specified elsewhere in this Special Provision. Those attending shall include the superintendent, on site supervisors, and all foremen in charge of excavating the shaft, placing the casing and slurry as applicable, placing the steel reinforcing bars, and placing the concrete, a representative of the concrete supplier, and the pump truck operator. If synthetic slurry is used to construct the shafts, the synthetic slurry manufacturer's representative and/or approved Contractor's employees trained in the use of the synthetic slurry shall also attend.

If the Contractor proposes a significant revision of the approved shaft installation plan, as determined by the Engineer, the Engineer may require an additional conference be held before any additional shaft construction operations are performed.

Shaft Excavation

Once the shaft excavation operation has started, the excavation shall be conducted in a continuous operation until the excavation of the shaft is completed, except for pauses and stops as noted, using approved equipment capable of excavating through the type of material expected.

Pauses, defined as momentary interruptions of the excavation operation, will be allowed only for casing splicing, tooling changes, slurry maintenance, and removal of obstructions. Shaft excavation operation interruptions not conforming to this definition shall be considered stops. Stops for uncased or partial depth cased excavations shall not exceed 16 hours in duration. Stops for fully cased excavations shall not exceed 65 hours duration.

For stops exceeding the time durations specified above, the Contractor shall stabilize the excavation using one or both of the following methods:

1. Before the end of the work day, install casing in the hole to the depth of the excavation. The outside diameter of the casing shall not be smaller than six inches less than either the Plan diameter of the shaft or the actual excavated diameter of the hole, whichever is greater. Prior to removing the casing and resumption of shaft excavation, the annular space between the casing and the excavation shall be sounded. If the sounding operation indicates that caving has occurred, the casing shall not be removed and shaft excavation shall not resume until the Contractor has stabilized the excavation in accordance with item 3 of the shaft installation narrative as approved by the Engineer.

2. Backfill the hole with CDF or granular material as specified by the Contractor and approved by the Engineer in accordance with item 8 of the shaft installation narrative. The Contractor shall backfill the hole to the ground surface if the excavation is not cased, or to a minimum of five feet above the bottom of casing if the excavation is cased. Backfilling of shafts with casing fully seated into rock, as determined by the Engineer, will not be required.

During stops, the Contractor shall stabilize the shaft excavation to prevent bottom heave, caving, head loss, and loss of ground. The Contractor bears full responsibility for selection and execution of the method(s) of stabilizing and maintaining the shaft excavation, in accordance with Section1-07.13. Shaft stabilization shall conform to item 3 of the shaft installation narrative.

If slurry is present in the shaft excavation, the Contractor shall conform to the requirements in the **Slurry** subsection of this Special Provision regarding the maintenance of the slurry and the minimum level of drilling slurry throughout the stop, and shall recondition the slurry to the required slurry properties prior to recommencing shaft excavation operations.

Temporary casing shall be advanced during excavation operations within the limits of temporary casing shown in the Plans for all sign structure shaft foundation locations specified at the beginning of this Special Provision as requiring temporary casing. Excavation in advance of the casing tip shall not exceed three feet, except that in no case shall shaft excavation and casing placement extend below the bottom of shaft excavation as shown in the Plans. Unless partial depth temporary casing is shown in the Plans, temporary casing shall be full depth of the sign bridge shaft.

The Contractor shall conduct casing installation operations and shaft excavation operations such that the adjacent soil outside the casing and shaft excavation for the full height of the shaft is not disturbed. Disturbed soil is defined as soil whose geotechnical properties have been changed from those of the original in-situ soil.

The Contractor shall use appropriate means such as a cleanout bucket, smooth mouth grab, or air lift to clean the bottom of the excavation of all shafts. No more than two inches of loose or disturbed material shall be present at the bottom of the shaft just prior to placing concrete.

The excavated shaft shall be inspected and approved by the Engineer prior to proceeding with construction. The bottom of the excavated shaft shall be sounded with an airlift pipe, a tape with a heavy weight attached to the end of the tape, or other means acceptable to the Engineer to determine that the shaft bottom meets the requirements in the Contract.

When obstructions are encountered, the Contractor shall notify the Engineer promptly. An obstruction is defined as a specific object (including, but not limited to, boulders, logs, and man made objects) encountered during the shaft excavation operation which prevents or hinders the advance of the shaft excavation. When efforts to advance past the obstruction to the design shaft tip elevation result in the rate of advance of the shaft drilling equipment being significantly reduced relative to the rate of advance for the portion of the shaft excavation in the geological unit that contains the obstruction, then the Contractor shall remove, break-up, or push aside, the obstruction under the provisions of Section 8-21.5 as supplemented in these Special Provisions. The method of dealing with such obstructions, and the continuation of excavation shall be as proposed by the Contractor and approved by the Engineer.

The Contractor shall use slurry, as specified in the **Slurry** subsection of this Special Provision, to maintain a stable excavation during excavation and concrete placement operations once water begins to enter the shaft excavation and remain present.

Slurry

If synthetic slurry is used, either a manufacturer's representative or a Contractor’s employee trained in the use of the synthetic slurry, as approved by the Engineer in accordance with the **Submittals** subsection of this Special Provision, shall provide technical assistance for the use of the synthetic slurry, shall be at the site prior to introduction of the synthetic slurry into the first drilled hole requiring slurry, and shall remain at the site during the construction of the first shaft excavated to adjust the slurry mix to the specific site conditions.

If the Contractor uses slurry in shafts installed below groundwater and in caving or sloughing soils, the slurry level in the excavation shall be maintained above the groundwater level the greater of the following dimensions, except as otherwise noted for the special requirements for all stops in shaft excavation operations:

1. Not less than ten feet,

2. Dimension as required to provide and maintain a stable hole.

The Contractor shall provide casing, or other means, as necessary to meet these requirements.

The slurry level shall be maintained above all unstable zones a sufficient distance to prevent bottom heave, caving or sloughing of those zones.

Throughout all stops in shaft excavation operations as defined in the **Shaft Excavation** subsection of this Special Provision, the Contractor shall monitor and maintain the slurry level in the excavation the greater of the following elevations:

1. No lower than the water level elevation outside the shaft.

2. Elevation as required to provide and maintain a stable hole.

Synthetic slurry shall be mixed and thoroughly hydrated in slurry tanks, ponds, or storage areas. The Contractor shall draw sample sets from the slurry storage facility and test the samples for the conformance with the specified viscosity and pH properties before beginning slurry placement in the drilled hole. Synthetic slurry shall conform to the quality control plan included in the shaft installation plan as approved by the Engineer. A sample set shall be composed of samples taken at mid-height and within two feet of the bottom of the storage area.

When synthetic slurry is used, the Contractor shall keep a written record of all additives and concentrations of the additives in the synthetic slurry. These records shall be provided to the Engineer once the slurry system has been established in the first drilled shaft on the project. The Contractor shall provide revised data to the Engineer if changes are made to the type or concentration of additives during construction.

The Contractor shall sample and test all slurry in the presence of the Engineer, unless otherwise directed. The date, time, names of the persons sampling and testing the slurry, and the results of the tests shall be recorded. A copy of the recorded slurry test results shall be submitted to the Engineer at the completion of each shaft, and during construction of each shaft when requested by the Engineer.

Sample sets of all slurry, composed of samples taken at mid-height and within two feet of the bottom of the shaft and the storage area, shall be taken and tested once every four hours minimum at the beginning and during drilling shafts and prior to cleaning the bottom of the hole to verify the control of the viscosity and pH properties of the slurry. As a minimum, sample sets of all slurry shall be taken and tested at least once every two hours if the previous sample set did not have consistent viscosity and pH properties. All slurry shall be recirculated, or agitated with the drilling equipment, when tests show that the sample sets do not have consistent specified properties. Cleaning of the bottom of the hole shall not begin until tests show the samples taken at mid-height and within two feet of the bottom of the hole have consistent viscosity and pH properties.

Sample sets of all slurry, as specified, shall be taken and tested to verify control of the viscosity, pH, density, and sand content properties after final cleaning of the bottom of the hole just prior to placing concrete. Placement of the concrete shall not start until tests show that the samples taken at mid-height and within two feet of the bottom of the hole have consistent specified properties.

The Contractor shall clean, recirculate, de-sand, or replace the slurry to maintain the required slurry properties.

If stable conditions are not being maintained, the Contractor shall immediately take action to stabilize the shaft. The Contractor shall submit a revised shaft installation narrative which addresses the problem and prevents future instability. The Contractor shall not continue with shaft construction until the damage which has already occurred is repaired in accordance with the specifications, and until receiving the Engineer's approval of the revised shaft installation narrative.

The Contractor shall dispose of the slurry and slurry-contacted spoils as specified in the shaft installation plan and in accordance with Section 6-19.3(4)F.

Assembly And Placement Of Steel Reinforcing Bars

The steel reinforcing bar cage shall be rigidly braced to retain its configuration during handling and construction.

The reinforcement shall be carefully positioned and securely fastened to provide the minimum clearances listed below, and to ensure that no displacement of the steel reinforcing bars occurs during placement of the concrete. The reinforcing steel centralizers shall be placed at least at the quarter points around the circumference of the steel reinforcing bar cage, and located vertically at least at the 1/4 and 3/4 points of the shaft length below the shaft cap.

The Contractor shall place bars as shown in the Plans with minimum concrete cover of three inches for shafts with diameters of three feet or less, and four inches for shafts with diameters greater than three feet.

Placing Concrete

Shaft concrete shall be Class 4000P. Concrete placement shall commence immediately after completion of excavation by the Contractor and inspection by the Engineer. Immediately prior to commencing concrete placement, the shaft excavation and the properties of the slurry (if used) shall conform to the excavation and slurry requirements specified elsewhere in this Special Provision. Concrete placement shall be continuous until the Work is complete.

During concrete placement, the Contractor shall monitor, and minimize, the difference in the level of concrete inside and outside of the steel reinforcing bar cage. The Contractor shall conduct concrete placement operations to maintain the differential concrete head as 1'-0" maximum.

When placing concrete in the dry, only the top five feet of concrete shall be vibrated. The amount and extent of vibration shall be sufficient to assure concrete flow to the outside of the shaft with full consolidation without causing segregation to occur. Temporary casing shall be removed before vibration. This requirement may be waived if the temporary casing is removed with a vibratory hammer during the concrete placement operation. Vibration of the top five feet of concrete does not affect the maximum slump allowed for the concrete class specified.

If water is not present, the concrete shall be deposited through the center of the reinforcement cage by a method which prevents segregation of aggregates and splashing of concrete on the reinforcement cage. The concrete shall be placed such that the free-fall is vertical down the center of the shaft without hitting the sides, the steel reinforcing bars, or the steel reinforcing bar cage bracing. The Section 6-02.3(6) restriction for 5’-0” maximum free-fall shall not apply to placement of Class 4000P concrete into a shaft.

When placing concrete underwater, including when water in a shaft excavation exceeds three inches in depth, the Contractor shall place the concrete by pressure feed using a concrete pump with a watertight tube having a minimum diameter of four inches. The discharge end of the tube on the concrete pump shall include a device to seal out water while the tube is first filled with concrete. Alternatively, the Contractor may use a plug that is inserted in the hopper of the concrete pump and travels through the tremie to keep the concrete separated from the water and slurry. Concrete placement by gravity feed is not allowed.

Throughout the underwater concrete placement operation, the discharge end of the tube shall remain submerged in the concrete at least five feet and the tube shall always contain enough concrete to prevent water from entering.

Before placing any fresh concrete against concrete deposited in water or slurry, the Contractor shall remove all scum, laitance, loose gravel and sediment on the upper surface of the concrete deposited in water or slurry and chip off any high spots on the upper surface of the existing concrete that would prevent the steel reinforcing bar cage from being placed in the position required by the Plans.

The Contractor's construction operation in the vicinity of a drilled shaft excavation with freshly placed concrete and curing concrete shall conform to Section 6-02.3(6)D.

Except for shafts where the shaft concrete is placed in the dry, the Contractor shall complete a uniform yield form, consistent with the sample form submitted to the Engineer as part of the shaft installation plan, for each shaft and shall submit the completed form to the Engineer within 24 hours of completing the concrete placement in the shaft.

Casing Removal

As the temporary casing is withdrawn, the Contractor shall maintain the concrete and slurry inside the casing at a level sufficient to balance the hydrostatic pressure outside the casing. The Contractor shall completely remove all temporary casings.

8-21.4.GR8
Measurement

8-21.4.INST1.GR8

Section 8-21.4 is supplemented with the following:

8-21.4.OPT1.FB8

(April 6, 2015)

*** $$1$$ *** contain(s) the following approximate quantities of material and work:

*** $$2$$ ***

The quantities are listed only for the convenience of the Contractor in determining the volume of work involved and are not guaranteed to be accurate. The prospective bidders shall verify these quantities before submitting a bid. No adjustments other than for approved changes will be made in the applicable sign structure lump sum contract price even though the actual quantities required may deviate from those listed.

8-21.5.GR8
Payment

8-21.5.INST1.GR8

Section 8-21.5 is supplemented with the following:

8-21.5.OPT1.GB8

(April 6, 2015)

“Removing Sign Structure Shaft Obstructions”, estimated.

Payment for removing obstructions, as defined in Section 8-21.3(9)F as supplemented in these Special Provisions, will be made for the changes in shaft construction methods necessary to remove the obstruction. The Contractor and the Engineer shall evaluate the effort made and reach agreement on the equipment and employees utilized, and the number of hours involved for each. Once these cost items and their duration have been agreed upon, the payment amount will be determined using the rate and markup methods specified in Section 1-09.6. For the purpose of providing a common proposal for all bidders, the Contracting Agency has entered an amount for the item "Removing Sign Structure Shaft Obstructions" in the bid proposal to become a part of the total bid by the Contractor.

If the shaft construction equipment is idled as a result of the obstruction removal work and cannot be reasonably reassigned within the project, then standby payment for the idled equipment will be added to the payment calculations. If labor is idled as a result of the obstruction removal work and cannot be reasonably reassigned within the project, then all labor costs resulting from Contractor labor agreements and established Contractor policies will be added to the payment calculations.

The Contractor shall perform the amount of obstruction work estimated by the Contracting Agency within the original time of the contract. The Engineer will consider a time adjustment and additional compensation for costs related to the extended duration of the shaft construction operations, provided:

1. the dollar amount estimated by the Contracting Agency has been exceeded, and

2. the Contractor shows that the obstruction removal work represents a delay to the completion of the project based on the current progress schedule provided in accordance with Section 1-08.3.

DIVISION9.GR9 **Materials**

APPENDIX1.FR9 **Appendices**

(January 2, 2012)

Use when only one appendix is included in the Contract.

If 1-02.4.OPT1.FR1 is used, then the *Summary of Geotechnical Conditions Report* must be an appendix as required in Section 1-02.4(2) of the Standard Specifications.

(1 fill-in)

APPENDIX2.FR9 **Appendices**

(January 2, 2012)

Must be used when multiple appendices are included in the Contract.

If 1-02.4.OPT1.FR1 is used, then the *Summary of Geotechnical Conditions Report* is an appendix as required in Section 1-02.4(2) and must be included as an appendix and is part of the fill-in.

(1 fill-in)

STDPLANS.GR9 **Standard Plans**

(~~January 5~~April 6, 2015)

Use in all projects.

STDPLANS.GR9

(~~January 5~~April 6, 2015)
Standard Plans

The State of Washington Standard Plans for Road, Bridge and Municipal Construction M21-01 transmitted under Publications Transmittal No. PT 14-046, effective August 4, 2014 is made a part of this contract.

The Standard Plans are revised as follows:

A-40.20
Plan Title, Bridge Transverse Joint Seals is revised to read: Bridge Paving Joint Seals
Note 3, replace the phrase “sawing out” with “saw cutting”
Add Note 4. For Details 1, 2, 3, and 4 the item “HMA Sawcut and Seal” shall be used for payment. For Details 5 and 6, the item “Paved Panel Joint Seal” shall be used for payment. For Detail 7, the item “Sealing Existing Longitudinal and Transverse Joint” shall be used for payment.
Details 5 and 6, callout “Waterproofing Membrane (Deck Seal)” delete “(Deck Seal)”

A-50.10
Sheet 2 of 2, Plan, with Single Slope Barrier, reference C-14a is revised to C-70.10

A-50.20
Sheet 2 of 2, Plan, with Anchored Barrier, reference C-14a is revised to C-70.10

A-50.30
Sheet 2 of 2, Plan (top), reference C-14a is revised to C-70.10

A-60.10
Sheet 2, Section B, callout, WAS-“New Tie Bar ~ #5 x 30” (IN) Epoxy Coated Reinforcing Bar” is revised to read: “New Tie Bar ~ #5 x 30” (IN)”

B-10.20 and B-10.40
Substitute “step” in lieu of “handhold” on plan

B-15.60
Table, Maximum Knockout Size column, 120” Diam., 42” is revised to read; 96”

B-25.20
Add Note 7. See Standard Specification Section 8-04 for Curb and Gutter requirements

B-55.20
Metal Pipe elevation, title is revised to read; “Metal Pipe and Steel Rib Reinforced Polyethylene Pipe”

B-90.40
Offset & Bend details, add the subtitle, “Plan View” above titles

C-1
Assembly Detail, Steel Post, (post) callout – was - ”W6 x 9 or W6 x 15” is revised to read; “W6 x 8.5 or W6 x 9 or W6 x 15”

C-1a

General Note 1, first sentence, was – “Type 10 post shall be 6x8 timber or W6x9.” Is revised to read; “Type 10 post shall be 6 x 8 timber, or W6 x 9 or W6 x 8.5 steel.”

C-1b

General Note 3, first sentence, was – “W6x9 steel posts and timber blocks are alternates for 6 x 8 timber posts and blocks.” Is revised to read; “W6 x 8.5 or W6 x 9 steel posts and timber blocks are alternates for 6 x 8 timber posts and blocks.”
Sheet 2, steel post detail, dimension, was – “1 1/8” for W6x9” is revised to read;”1 1/8” for W6 x 9 or W6 x 8.5”

C-10

General Note 1, first sentence, was – “Length of W8 x 35 and W6 x 9 shall be determined by measurement from top of ground to top of grout pad.” Is revised to read; “Length of W8 x 35 and W6 x 8.5 or W6 x 9 shall be determined by measurement from top of ground to top of grout pad.”
Sheet 1, Post Base Plate Detail, callout, was – “W6 x 9” is revised to read; “W6 x 8.5 or W6 x 9”
Sheet 1, Box Culvert Guardrail Steel Post Type 2 detail, callout, was – “W6 x 9 Steel Post” is revised to read;” “W6 x 8.5 or W6 x 9 Steel Post”
Sheet 1, Post Anchor Attachment Detail, callout, was – “W6 x 9 ~ See Note 1” is revised to read; “W6 x 8.5 or W6 x 9 ~ See Note 1”
Sheet 1, Detail A, callout, was – “W6 x 9 Steel Post ~ See Note 1” is revised to read; “W6 x 8.5 or W6 x 9 Steel Post ~ See Note 1”
Sheet 2, Box Culvert Guardrail Steel Post Type 1, callout, was – “W6 x 9 x 27.5” Steel Post” is revised to read; “W6 x 8.5 x 27.5” (IN) or W6 x 9 x 27.5” (IN) Steel Post”
Sheet 2, Detail B, callout, was – “W6 x 9 x 27.5” Steel Post” is revised to read; “W6 x 8.5 x 27.5” (IN) or W6 x 9 x 27.5” (IN) Steel Post”

C-16a

Note 1, reference C-28.40 is revised to C-20.10

C-16b

Note 3, reference C-28.40 is revised to C-20.10

C-20.10

Typical Section ~ without Curb & Typical Section ~ with Curb, callout, was – “6 x 8 Timber Post or W6 x 9 Steel Post (See Notes 1 & 5)” is revised to read; “6 x 8 Timber Post, or W6 x 8.5, or W6 x 9 Steel Post (See Notes 1 & 5)”
Wood Block, Plan View, callout, was – “6 x 8 Timber Post or W6 x 9 Steel Post (See Notes 1 & 5)” is revised to read; “6 x 8 Timber Post, or W6 x 8.5 or W6 x 9 Steel Post (See Notes 1 & 5)”
Isometric View, callout, was – “6 x 8 Timber Post or W6 x 9 Steel Post (Typ.)” is revised to read; “6 x 8 Timber Post, or W6 x 8.5 or W6 x 9 Steel Post (Typ)”
Isometric View, callout, was – “W6 x 9 x 6’ Long Steel Post (See Notes 1 & 5)” is revised to read; “W6 x 8.5 x 6’ (FT) or W6 x 9 x 6’ (FT) Long Steel Post (See Notes 1 & 5)”

C-20.40

Plan View, Elevation View and Span with Headwall Detail, callout, was – “6 x 8 Timber Post or W6x9 Steel Post (Typ.) (See Note 3)” is revised to read; “6 x 8 Timber Post, or W6 x 8.5 or W6 x 9 Steel Post (Typ.) (See Note 3)”

<u>C-20.41</u>

Plan View, Box Culvert Post detail and Section A, callout, was – “W6 x 9 Steel Post” is revised to read; “W6 x 8.5 or W6 x 9 Steel Post”

<u>C-20.42</u>

Case 22A-31 (Plan View), callout, was – “6 x 8 Timber Post or W6 x 9 Steel Post (Typ.)” is revised to read; “6 x 8 Timber Post, or W6 x 8.5 or W6 x 9 Steel Post (Typ.)”

<u>C-22.14</u>

Plan, callout, was – “Location of Post (Without Block) ~ W6 x 9 Steel Post Only” is revised to read; “Location of Post (Without Block) ~ W6 x 8.5 or W6 x 9 Steel Post Only”
Elevation, callout, was – “Location of Post (Without Block) ~ W6 x 9 Steel Post Only” is revised to read; “Location of Post (Without Block) ~ W6 x 8.5 or W6 x 9 Steel Post Only”

<u>C-22.16</u>

Plan, 2x callout, was – “W6 x 9 Steel Post Only (without Block)” are revised to read; “W6 x 8.5 or W6 x 9 Steel Post Only (without Block)”
Elevation, callout, was – “Location of Posts without Blocks ~ W6 x 9 Steel Posts Only” is revised to read; “Location of Posts without Blocks ~ W6 x 8.5 or W6 x 9 Steel Posts Only”

<u>C-22.41</u>

Note 4, Third sentence, Was – “A maximum flare rate of 25 : 1 or flatter over the length of the terminal is allowed for the SKT-MGS (TL-3).” Is revised to read; “A maximum flare rate of 25 : 1 or flatter over the length of the terminal is allowed for the SKT-MGS (TL-3), with a maximum offset of 7.4” (in) over 50’ (ft).”

Plan View, dimension callout, was – “(SEE NOTE 5)” is revised to read; “(SEE NOTE 4)”

<u>C-25.18</u>

General Note 6, was – “Posts 1 and 2 are 10 x 10 timber posts or W6 x 15 steel posts: 7’ – 6” long. Posts 3 through 9 are 6 x 8 timber posts or W6 x 9 steel posts: 6’ – 0” long.” Is revised to read; “Posts 1 and 2 are 10 x 10 timber posts or W6 x 15 steel posts: 7’ – 6” long. Posts 3 through 9 are 6 x 8 timber posts, or W6 x 8.5 or W6 x 9 steel posts: 6’ – 0” long.”

<u>C-25.20</u>

elevation view, dimension, was – “”W6 x 9 ~ 6’ – 0” Long Steel Post with 6 x 12 Block” is revised to read;”W6 x 8.5 or W6 x 9 ~ 6’ – 0” Long Steel Post with 6 x 12 Block”

<u>C-25.22</u>

elevation view, dimension, was – “”W6 x 9 ~ 6’ – 0” Long Steel Post with 6 x 12 Block” is revised to read;”W6 x 8.5 or W6 x 9 ~ 6’ – 0” Long Steel Post with 6 x 12 Block”

<u>C-25.26</u>

elevation view, dimension, was – “”W6 x 9 ~ 6’ – 0” Long Steel Post with 6 x 12 Block” is revised to read;”W6 x 8.5 or W6 x 9 ~ 6’ – 0” Long Steel Post with 6 x 12 Block”

F-10.12

Section Title, was – "Depressed Curb Section" is revised to read: "Depressed Curb and Gutter Section"

G-20.10

Multiple Sign Post Installation in Ditch Section, dimension "7' MIN." is revised to read; "3' MIN.", add dimension at third post on the right, add dimension from post and backslope junction vertically to under side of the sign, callout = "7' MIN."

G-50.10

Delete – Plan View (bottom center of sheet)

Delete – Mounting Bracket and Steel Strap Detail

Add Note 5, "5. For signs installed back to back on a single post no bracing is required."

G-60.10

Sheet 4, Screen Detail, callout – "drill and Tap for ¼" diameter Cap Screw – Spacing approx. 9" o.c. ASTM F593, w/S.S. washer Liberally coat the threads with Anti-seize compound (TYP.)" is revised to read: "*Drill and Tap ¼" (IN) Diam. x 1" (IN) Cap Screw with washer ~ space approx.. 9" o.c. ~ Liberally coat threads with Anti-seize compound (TYP.)"

Add Boxed note: * Bolts, Nuts, and washers ~ ASTM F593 or A193 Type 304 or Type 316 Stainless Steel (S.S.)

G-60.20

Side View, callout, "Anchor Rod ~ 1-3/4" Diam. x 4'-4" Threaded 8" Min. Each End; W/ 2 Washers & 4 Heavy Hex Nuts ~ Galvanize Exposed Anchor Rod End for 1'-0" Min." is revised to read; "Anchor Rod ~ 1-3/4" Diam. x 4'-4" Threaded 8" Min. Each End; W/ 2 Washers & 6 Heavy Hex Nuts ~ Galvanize Exposed Anchor Rod End for 1'-0" Min."

G-60.30

End View, callout, "Anchor Rod ~ 1-3/4" Diam. x 4'-4" Threaded 8" Min. Each End; W/ 2 Washers & 4 Heavy Hex Nuts ~ Galvanize Exposed Anchor Rod End for 1'-0" Min." is revised to read; "Anchor Rod ~ 1-3/4" Diam. x 4'-4" Threaded 8" Min. Each End; W/ 2 Washers & 6 Heavy Hex Nuts ~ Galvanize Exposed Anchor Rod End for 1'-0" Min."

G-70.10

Sheet 4, Screen Detail, callout – "drill and Tap for ¼" diameter Cap Screw – Spacing approx. 9" o.c. ASTM F593, w/S.S. washer Liberally coat the threads with Anti-seize compound (TYP.)" is revised to read: "*Drill and Tap ¼" (IN) Diam. x 1" (IN) Cap Screw with washer ~ space approx.. 9" o.c. ~ Liberally coat threads with Anti-seize compound (TYP.)"

Add Boxed note: * Bolts, Nuts, and washers ~ ASTM F593 or A193 Type 304 or Type 316 Stainless Steel (S.S.)

H-70.20

Sheet 2, Spacing Detail, Mailbox Support Type 1, reference to Standard Plan I-70.10 is revised to H-70.10

J-3b

Sheet 2 of 2, Plan View of Service Cabinet, Boxed Note, “SEE STANDARD PLAN J-6C…” is revised to read: “SEE STANDARD PLAN J-10.10…”
Sheet 2 of 2, Plan View of Service Cabinet Notes, references to Std. Plan J-9a are revised to J-60.05 (3 instances).

Sheet 2 of 2, “Right Side of Service Cabinet” detail, callout, “1 5/8” x 2 7/16” 12 GA. SLOTTED STEEL CHANNEL BRACKETS (3 REQ’D), EMBED 12”MIN. IN FOUNDATION.”
Is revised to read: “1-5/8” x 3-1/4”, 12 GA. BACK TO BACK SLOTTED STEEL CHANNEL BRACKETS (3 REQ’D), EMBED 12” MIN. IN FOUNDATION”

<u>J-10.22</u>
Key Note 4, “Test with (SPDT Snap Action, Positive close 15 Amp – 120/277 volt “T” rated). Is revised to read: “Test Switch (SPDT snap action, positive close 15 amp – 120/277 volt “T” rated).”

<u>J-20.11</u>
Sheet 2, Foundation Detail, Elevation, callout – “Type 1 Signal Pole” is revised to read: “Type PS or Type 1 Signal Pole”
Sheet 2, Foundation Detail, Elevation, add note below Title, “(Type 1 Signal Pole Shown)”

<u>J-22.15</u>
Ramp Meter Signal Standard, elevation, dimension 4’ - 6” is revised to read; 6’-0”

<u>J-28.50</u>
Section D, callout, was – Backup Strip (ref. to key note 3) is revised to read; “Continuous Backup Strip (ref. to key note 3)”
Key Note 3, was – ¼” Thick, or No thinner than pole wall thickness. Tack weld or seal weld to Base plate. Is revised to read; “1/4” Thick, or No thinner than Pole wall thickness. Tack weld in root or continuous seal weld to Base plate or Pole wall.”

<u>J-28.70</u>
Detail C, dimension, 2” MAX. is revised to read: 1” MAX.
Detail D, dimension, 2” MAX. is revised to read: 1” MAX.

<u>J-29.10</u>
Galvanized Welded Wire Mesh detail, callout – “Drill and Tap for ¼” Diam. Cap Screw, 3 Places, @ 9” center, all 4 edges S.S. Screw, ASTM F593 and washer”
Is revised to read;
“*Drill and Tap ¼” (IN) Diam. x 1” (IN) Cap Screw with washer ~ space approx.. 9” o.c. ~ Liberally coat threads with Anti-seize compound (TYP.)”

Add Boxed note: * Bolts, Nuts, and washers ~ ASTM F593 or A193 Type 304 or Type 316 Stainless Steel (S.S.)

<u>J-29.15</u>
Title, “Camera Pole Standard” is revised to read; “Camera Pole Standard Details”

<u>J-29-16</u>
Title, “Camera Pole Standard Details” is revised to read; “Camera Pole Details”

J-60.14

All references to J-16b (6x) are revised to read; J-60.11

J-90.10

Section B, callout, “Hardware Mounting Rack ~ S. S. 1-5/8” Slotted Channel” is revised to read: “Hardware Mounting Rack (Typ.) ~ Type 304 S. S. 1-5/8” Slotted Channel”

J-90.20

Section B, callout, “Hardware Mounting Rack (Typ.) ~ S. S. 1-5/8” Slotted Channel” is revised to read: “Hardware Mounting Rack (Typ.) ~ Type 304 S. S. 1-5/8” Slotted Channel”

K-80.10

Sign Installation (Fill Section), dimension, 6’ TO 12’ MIN. is revised to read: 12’ MIN.
Sign Installation (Sidewalk and Curb Section), dimension, 6’ TO 12’ MIN. is revised to read: 12’ MIN.
Sign Installation (Behind Traffic Barrier Section), Delete dimensions - 6’ TO 12’ MIN. and 6’ MIN.
Sign with Supplemental Plaque Installation (Fill Section), dimension, 6’ TO 12’ MIN. is revised to read: 12’ MIN.
Sign Installation (Ditch Section), dimension, 6’ TO 12’ MIN. is revised to read: 12’ MIN. Delete dimension – 6’ MIN.

K-80.30

In the NARROW BASE, END view, the reference to Std. Plan C-8e is revised to Std. Plan K-80.35

L-20.10

Sheet 1, Type 3 elevation view, callout, was “Knuckled Selvage (Typ.)” located at the top of the fence elevation, is revised to read; “Twisted and Braided (Typ.)”
Sheet 2, Type 3, elevation view, callout, was “End or Corner (Brace) Post” is revised to read; “End or Corner Post”
Sheet 2, Type 4, elevation view, callout, was “End or Corner (Brace) Post” is revised to read; “End or Corner Post”

The following are the Standard Plan numbers applicable at the time this project was advertised. The date shown with each plan number is the publication approval date shown in the lower right-hand corner of that plan. Standard Plans showing different dates shall not be used in this contract.

A-10.10-00........8/7/07	A-30.35-00.......10/12/07	A-50.20-01……...9/22/09
A-10.20-00......10/5/07	A-40.00-00.........8/11/09	A-50.30-00…....11/17/08
A-10.30-00......10/5/07	A-40.10-02...........6/2/11	A-50.40-00…....11/17/08
A-20.10-00......8/31/07	A-40.15-00.........8/11/09	A-60.10-02........6/17/14
A-30.10-00......11/8/07	A-40.20-02...........5/29/13	A-60.20-02............6/2/11
A-30.15-00......11/8/07	A-40.50-01............6/2/11	A-60.30-00..........11/8/07
A-30.30-01......6/16/11	A-50.10-00…....11/17/08	A-60.40-00..........8/31/07

B-5.20-01........6/16/11	B-30.50-01.........4/26/12	B-75.20-01..........6/10/08
B-5.40-01.........6/16/11	B-30.70-03.........4/26/12	B-75.50-01..........6/10/08
B-5.60-01.........6/16/11	B-30.80-00...........6/8/06	B-75.60-00............6/8/06
B-10.20-01........2/7/12	B-30.90-01........9/20/07	B-80.20-00.........6/8/06

B-10.40-00........6/1/06	B-35.20-00..........6/8/06	B-80.40-00.........6/1/06
B-10.60-00........6/8/06	B-35.40-00..........6/8/06	B-82.20-00.........6/1/06
B-15.20-01........2/7/12	B-40.20-00..........6/1/06	B-85.10-01.........6/10/08
B-15.40-01........2/7/12	B-40.40-01........6/16/10	B-85.20-00..........6/1/06
B-15.60-01........2/7/12	B-45.20-00..........6/1/06	B-85.30-00..........6/1/06
B-20.20-02.......3/16/12	B-45.40-00..........6/1/06	B-85.40-00..........6/8/06
B-20.40-03.......3/16/12	B-50.20-00..........6/1/06	B-85.50-01.........6/10/08
B-20.60-03.......3/15/12	B-55.20-00..........6/1/06	B-90.10-00..........6/8/06
B-25.20-01........3/15/12	B-60.20-00..........6/8/06	B-90.20-00..........6/8/06
B-25.60-00.........6/1/06	B-60.40-00..........6/1/06	B-90.30-00..........6/8/06
B-30.10-01.........4/26/12	B-65.20-01..........4/26/12	B-90.40-00..........6/8/06
B-30.20-02.........4/26/12	B-65.40-00..........6/1/06	B-90.50-00..........6/8/06
B-30.30-01.........4/26/12	B-70.20-00..........6/1/06	B-95.20-01..........2/3/09
B-30.40-01..........4/26/12	B-70.60-00..........6/1/06	B-95.40-00..........6/8/06

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C-1b...................6/16/11	C-6c....................1/6/00	C-25.18-04........6/11/14
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C-1d...............10/31/03	C-6f...................7/25/97	C-25.22-04........7/2/12
C-2....................1/6/00	C-7.....................6/16/11	C-25.26-02........7/2/12
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C-2b.................6/21/06	C-8.....................2/10/09	C-40.14-02........7/2/12
C-2c.................6/21/06	C-8a...................7/25/97	C-40.16-02........7/2/12
C-2d.................6/21/06	C-8b....................6/27/11	C-40.18-02........7/2/12
C-2e.................6/21/06	C-8e....................2/21/07	C-70.10-01........6/17/14
C-2f..................3/14/97	C-8f.....................6/30/04	C-75.10-01........6/11/14
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C-3c................6/27/11	C-22.14-03........6/11/14	C-85.16-01........6/17/14
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D-2.18-00........11/10/05	D-2.82-00........11/10/05	D-10.20-00.........7/8/08
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I-30.15-02.........3/22/13	I-30.40-01.......6/10/13	I-60.10-01..........6/10/13
I-30.16-00.........3/22/13	I-30.60-00.........5/29/13	I-60.20-01..........6/10/13
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J-10.15-01........6/11/14	J-28.24-00.......8/07/07	J-50.16-01…….3/22/13
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