**STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03)**

**SUPPLEMENTAL SPECIFICATIONS**

**FOR**

**BIG ELK CREEK CULVERT REPLACEMENT**

**ELK CREEK ROAD**

**Nez Perce Tribe**

**Department of Fisheries Resource Management**

**Idaho County, Idaho**

Prepared by:

**GREAT WEST ENGINEERING**

**2501 Belt View Drive**

**Helena, MT 59604**

**BIG ELK CREEK CULVERT REPLACEMENT**

**FP-03 SUPPLEMENTAL SPECIFICATIONS**

**TABLE OF CONTENTS**

Preface 1

101 – Terms, Format, and Definitions 2

102 – Bid, Award, and Execution of Contract 5

103 – Scope of Work 6

105 – Control of Material 8

106 – Acceptance of Work 9

107 – Legal Relations and Responsibility To the Public 10

108 – Prosecution and Progress 11

109 – Measurement and Payment 12

151 – Mobilization 13

152 – Construction Survey And Staking 14

153 – CONTRACTOR QUALITY CONTROL 15

155 – SCHEDULES FOR CONSTRUCTION CONTRACTS 17

156 – Public Traffic 18

157 – SOIL EROSION CONTROL 20

203 – Removal of Structures and Obstructions 21

204 – Excavation and Embankment 22

208 – Structure Excavation And Backfill For Selected Major Structures 23

251 – Riprap 24

272 – GEOCELL ABUTMENT STABILIZATION 25

308 – MINOR CRUSHED AGGREGATE 27

553A – Precast Concrete Structures 28

603 – STRUCTURAL PLATE STRUCTURES 31

622 – Rental Equipment 32

625 – TURF ESTABLISHMENT 33

626 – PLANTS, TREES, SHRUBS, VINES, AND GROUNDCOVERS 35

648 – STREAM SIMULATION 37

703 – AGGREGATE 39

704 – SOIL 40

705 – ROCK 41

725 – MISCELLANEOUS MATERIAL 42

736 – GEOCELL 45

# Preface

Delete all but the first paragraph and add the following:

The Nez Perce Tribe will use FP-03 specifications and these supplements for construction of this project.

# 101 – Terms, Format, and Definitions

**101.01 Meaning of Terms.**

Add the following:

Delete all references to the TAR (Transportation Acquisition Regulations) in the specifications.

**101.03 Abbreviations.**

Add the following to (a) Acronyms:

|  |  |
| --- | --- |
| AFPAMSHANISTNESCWCLIB | American Forest and Paper AssociationMine Safety and Health Administration[National Institute of Standards and Technology](http://www.nist.gov/)National Electrical Safety CodeWest Coast Lumber Inspection Bureau  |

Add the following to (b) SI Symbols:

|  |  |
| --- | --- |
| mp | Milepost  |
| ppm | Part Per Million |

**101.04 Definitions.**

Delete the following definitions and substitute the following:

**CO**--Nez Perce Tribe representative for contractual matters - (Owner).

**Contractor**--The individual or legal entity contracting with the Tribe for performance of prescribed work.

**Right-of-Way**--A general term denoting (1) the privilege to pass over land in some particular line (including easement, lease, permit, or license to occupy, use, or traverse public or private lands), or (2) Real property necessary for the project, including roadway, buffer areas, access, and drainage areas.

Add the following:

**Change**--“Change” means “change order” as used in the Federal Acquisition Regulations.

**Neat Line**--A line defining the proposed or specified limits of an excavation or structure.

**Protected Streamcourse**--A drainage shown on the plans that requires designated mitigation measures.

**Schedule of Items**--A schedule in the contract that contains a listing and description of construction items, quantities, units of measure, methods of measurement, unit price, and amount.

**Tribe--**Nez Perce Tribe

Add Figure 101-1—Illustration of road structure terms:

Figure 101-1—Illustration of road structure terms.



# 102 – Bid, Award, and Execution of Contract

**102 Bid, Award, and Execution of Contract**

Delete Section 102 in its entirety.

# 103 – Scope of Work

**Deletions**

Delete all but subsection 103.01 Intent of Contract.

The project consists of the removal of two existing culverts and replacement with a new 20’-0” span by 6’-4” rise steel structural plate arch culvert on Elk Creek Road over Big Elk Creek. Improvements consist of but are not limited to: structure excavation and backfill, installing a new culvert, concrete footings, excavation and reshaping of the channel through the new structure, placement of in-stream cross-vane structures and fish rest stop rocks, placement of riprap, embankment and excavation of the roadway approaches, and asphalt road surfacing.

The project is located approximately 1.5 miles north of Elk City in Idaho County, Idaho (Section 14, Township 29 north, Range 8 east). Refer to the location map on the title sheet of the plans.

All in-stream work must take place between July 15th and August 15th unless otherwise approved by the Owner.

**104 – Control of Work**

**104 Control of Work.**

Delete sections 104.01, 104.02, and 104.04.

Add the following subsection:

**104.06 Use of Roads by Contractor**

The Contractor is authorized to use roads under the jurisdiction of Idaho County or as shown on the plans for all activities necessary to complete this contract, when such use will not damage the roads or County resources, and when traffic can be accommodated safely.

# 105 – Control of Material

**105.02 Material Sources.**

Add the following before the first paragraph.

Sources have been designated for this project as follows:

Approved Material Stockpile Site – Space at the project site is limited. The Contractor will be allowed to stockpile material, including riprap, cross-vane rocks, fish rest stop rocks, and culvert components, adjacent to the existing culverts. Materials must be stockpiled in such a manner as to avoid impacts to the roadway and must be placed above the ordinary high water mark of the stream. Provide the Owner 72 hours advance notification prior to stockpiling any materials at the construction sites.

Roadway Embankment Source – Owner Furnished – The Contractor may use suitable onsite material from structure excavation and roadway excavation for embankment construction. All material must be approved by the Owner before placement.

Riprap Source – Commercial Source

Crushed Aggregate Source – Commercial Source

Coarse Granular Backfill – Commercial Source

Streambed Material – Owner Furnished – Contractor shall salvage native streambed material onsite. All material must be approved by the owner before placement.

Cross-Vane Rock Source – Commercial Source

Fish Rest Stop Rock Source – Commercial Source

Add the following to section (b) Contractor-located sources:

Prior to any pit development or use of materials, the Contractor shall provide to the Owner a State certification that the pit site is free of noxious weed as listed on the "All States Noxious Weeds List”.

# 106 – Acceptance of Work

**106.07 Delete**

Delete subsection 106.07.

# 107 – Legal Relations and Responsibility To the Public

**107 Legal Relations and Responsibility to the Public.**

Delete section 107 in its entirety.

##

# 108 – Prosecution and Progress

**108 Delete**

Delete Section 108 in its entirety.

# 109 – Measurement and Payment

**109 Deletions**

Delete the following entire subsections:

**109.06 Pricing of Adjustments.**

**109.07 Eliminated Work.**

**109.08 Progress Payments.**

**109.09 Final Payment.**

**109.02 Measurement Terms and Definitions.**

**(b) Contract quantity**.

Add the following:

Contract quantities will be adjusted only when there are errors in the original design of 15% or more.

Change the following:

“(b) Cubic yard” to “(c) Cubic yard”.

Add the following Subsection:

**109.10 Methods of Measurement**

One of the following methods of measurement for determining final payment is DESIGNATED IN THE BID SCHEDULE for each PAY ITEM:

 **(a) Actual Quantities (AQ).** These quantities are determined from measurements of completed work.

**(b) Contract Quantities (CQ).** As defined in 109.02 (b) and supplemented above.

**(c) Lump Sum Quantities (LSQ).** These quantities denote one complete unit of work as required by or described in the contract, including necessary materials, equipment, and labor to complete the job.

# 151 – Mobilization

**151.01 Description**

Add the following at the end of the last sentence:

A preliminary construction schedule shall be submitted 7 days prior to the preconstruction meeting.

All temporary or portable signs shall be included as a subsidiary item to section 151. Signs and sign placement shall meet the requirements of the “MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES” (MUTCD), published by the U.S. Department of Transportation, Federal Highway Administration. Work on the project shall not be started until all required signs are in place and approved by the Owner.

Work also includes cleaning all construction equipment prior to entry on to the project site. Remove all dirt, plant parts and material that may carry noxious weed seeds into the area. Only construction equipment inspected by the Tribe will be allowed to operate within the project area. Treat subsequent move-ins of equipment the same as the initial move-in. Clean truck beds and dump boxes hauling to the project site prior to entering the work area. The Contractor shall give the Tribe at least 24 hours advance notification when equipment is ready for inspection. The location for inspection shall be as agreed upon in the preconstruction meeting.

# 152 – Construction Survey And Staking

**152.03 Survey and Staking Requirements.**

Add the following:

Conduct all construction staking under the direction of a licensed professional engineer or land surveyor who is closely associated and familiar with construction staking.

# 153 – CONTRACTOR QUALITY CONTROL

**Add the following.**

**153.07. Project Submittals**

At a minimum the contractor shall provide project submittals as shown on the below Submittal Log. Submittal requirements are listed in the Standard Specifications, Supplemental Specifications, and Plans.

| **Submittal Log** |
| --- |
| **Log No.** | **Incidental to** **Pay Item(s)** | **Description of Submittal** | **Type of Submittal** | **Requirement found in Specification No./Drawings** | **Additional Specification References** |
| **1** | 151 | Submittal Schedule | Schedule |  |  |
| **2** | 151 | Hazardous Spill Plan | Plan | SS 107.10 |   |
| **3** | 151 | Contractor Quality Control Plan | Plan | 153.02 | 552.09 |
| **4** | 151 | Weed Free Material Source Certification | Material Certification | SS 105.02(b), SS 155 |   |
| **5** | 152 | Surveyor Credentials | Certification | SS 152 |  |
| **6** | 156 | Traffic Control Plan | Plan | SS 156.03 |   |
| **7** | 157 | Stream Diversion and Dewatering Plan | Plan | DrawingsSS 157.03 | 157.09 |
| **8** | 157 | Soil Erosion & Pollution Control Plan | Plan | 157.03 |   |
| **9** | 208 | Backfill Proctor | Test Results | 208.11 | 208 |
| **10** | 208 | Backfill Density Testing | Test Results | 208.11 | 208 |
| **11** | 208 | Excavation and Backfill Plan | Plan | Drawings |  |
| **12** | 251 | Riprap | Material Certification | 251.07, SS 251.07 | 106, 705, Drawings |
| **13** | 272 | Geocell Abutment Stabilization | Material Certification | 272.06 | 106, SS 736 |
| **14** | 272 | Geocell: Coarse Granular Backfill | Material Certification | 272.06 | 106, SS 703.03, Drawings |
| **15** | 272 | Geocell: Geotextile – Type II | Material Certification | 272.06 | 106, 714, Drawings |
| **16** | 308 | Crushed Aggregate | Material Certification | SS 308.06 | 703.06 |
| **17** | 308 | Backfill Proctor | Test Results | SS 308.05 |  |
| **18** | 308 | Backfill Density Testing | Test Results | SS 308.05 | 301.05 |
| **19** | 403 | Asphalt | Mix Design | 403.03 | 106 |
| **20** | 403 | Asphalt Testing | Test Results | 403.17 | 106 |
| **21** | 553A | Precast Concrete Structures: Footings | Shop Drawing | SS 553A.03 | 104, 552, 553, 554 |
| **22** | 553A | Precast Concrete: PCI/NPCA Certification | Fabrication Certification | SS 553.02 |  |
| **23** | 553A | Precast Concrete Structures: Testing | Test Results | SS 553A.06 | 106, 554, 562 |
| **24** | 553A | Reinforcing Steel  | Order List | 554.03 | 553, 553A, 709, Drawings |
| **25** | 553A | Miscellaneous Material: Grout | Material Certification | SS 725.40 | Drawings |
| **26** | 553A | Miscellaneous Material: Grout | Product Approval | SS 725.40 | Drawings |
| **27** | 603 | Structural Plate Structures | Material Certification | 603.04 | 106, Drawings |
| **28** | 603 | Structural Plate Structures | Shop Drawing | SS 603.03 | Drawings |
| **29** | 622 | Equipment Rental  | Equipment Approval | SS 622.02 |   |
| **30** | 625 | Seed Mix | Material Certification | 625.10 | 106, SS 625, 713 |
| **31** | 633 | Posts and Signs | Material Certification | 718.09, 718.12 | 718.08 |
| **32** | 648 | Cross-Vane and Fish Rest Stop Rock | Material Certification | Drawings | SS 705.08 |
| **33** | 705 | Native Streambed Material  | Gradation | SS 705.07 |  |

# 155 – SCHEDULES FOR CONSTRUCTION CONTRACTS

**155 Delete**

Delete Section 155 in its entirety.

# 156 – Public Traffic

**156.03 Accommodating Traffic During Work.**

Delete the following from the last paragraph:

According to Subsection 106.07(b)

Delete the first paragraph and replace with the following:

Accommodate traffic according to the requirements set forth below, MUTCD, and Section 635. Submit a traffic control plan for acceptance at least 30 days before intended use.

Add the following project specific requirements:

The contractor will be allowed to close Elk Creek Road to through traffic for the duration of the project. The contractor shall give the Owner at least 4 weeks advance written notice prior to closure. It is the responsibility of the Contractor to schedule delivery of materials, equipment and all necessary supplies to the site, to ensure that the culvert can be substantially completed within the specified contract time.

Contractor shall provide and install two road closed ahead signs for the duration of the project. One road closed sign is to be placed on Elk Creek Road at its intersection with Sweeney Hill Road (1.5 miles ahead). The second road closed sign is to be placed along Elk Creek Road at its intersection with Hidden Spring Road (0.5 miles ahead).

**ROAD CLOSED**

**1.5 MILES**

**AHEAD**

**ROAD CLOSED**

**0.5 MILES**

**AHEAD**

In addition to the road closed signs, the contractor shall direct traffic, through detour signage, to the following detour route:

Heading north from Elk City, from the intersection of Sweeney Hill Road and Highway 14 continue east to the intersection of Main Street and American River Road. From the intersection of Main Street and American River Road, turn north and proceed to the intersection of American River Road and Erickson Ridge Road (falls Point). From the intersection of American River Road and Erickson Ridge Road, proceed north to Elk Creek Road. The route signed per MUTCD standards.

**156.08 Traffic and Safety Supervisor.**

Delete this subsection in its entirety.

**156.10 Measurement and payment.**

Delete this subsection in its entirety and replace with the following:

Do not measure Public Traffic for payment. Compensation for this item shall be incidental to Mobilization.

# 157 – SOIL EROSION CONTROL

**157.02 Materials.**

Add the following:

Provide bales, wattles, logs, and rolls from a certified noxious weed free source.

**157.03 General.**

Delete the first two paragraphs and replace with the following:

Submit an Erosion Control Plan detailing permanent and temporary control measures to minimize erosion and sedimentation during and after construction in accordance with the plans and storm water permits. Do not modify the type, size, or location of any control without approval. Submit the erosion control and dewatering plan proposals at least 14 days before operations begin to the Owner for approval.

Reflect in the Erosion Control Plan special concerns and measures necessary to protect resources and owner improvements. Include:

1. The construction activities and sequence of implementation relating to specific erosion control measures.
2. The location and type of permanent controls to be implemented during construction.
3. The location and type of temporary controls to be implemented during construction.
4. For work in stream channels with running water, provide a detailed dewatering plan.
5. For work in stream channels without flowing water describe level of ground and vegetative disturbance and measures to reduce potential sediment delivery.
6. Description of the monitoring plan.

Add the following to the third paragraph:

Upon completion of construction at the site, remove all temporary erosion control devices, dewatering materials and equipment from the owners property and reclaim all disturbed areas.

**157.09 Sedimats.**

Add the following:

Place Sedimats across the streambed as shown on the plans or approved by the Owner. The Sedimat is a proprietary product manufactured by Indian Valley Industries, Inc., phone: (800) 659-5111 and distributed by Columbia Storage Inc., Vancouver Washington, phone: (800) 426-7976. Use Sedimats according to manufacturer’s recommendations.

# 203 – Removal of Structures and Obstructions

**203.01** Delete and replace with the following:

This work consists of disposing of clearing slash, salvaging, removing and disposing of buildings, fences, structures, pavements, culverts, utilities, curbs, sidewalks, and other obstructions.

**203.05 Disposing of Material.**

Modify this subsection as follows:

**(a) Remove from project.** Add the following:

All materials designated for removal become property of the Contractor and are to be disposed of in accordance with all local, state, and federal requirements.

**(b) Burn.** Delete this section.

**(c) Bury.** Delete this section.

# 204 – Excavation and Embankment

**204.11 Compaction.**

Delete and replace with the following:

Layer Placement (Roller Compaction) Method. Place material by end dumping to the minimum depth needed for operation of spreading equipment. Adjust the moisture content of the material to obtain a mass that will not visibly deflect under the load of the hauling and spreading equipment. Operate compaction equipment over the full width of each layer until visible deformation of the layer ceases. Make at least six complete passes.

**204.14 Disposal of Unsuitable or Excess Material.**

Delete the text of the first paragraph and substitute the following:

Dispose of unsuitable or excess material at designated sites or as directed by the Owner.

# 208 – Structure Excavation And Backfill For Selected Major Structures

**208.04 General.**

Add the following:

Submit four sets of the excavation plan to the Owner for approval a minimum of 21 days before the start of construction.

Use all suitable material in the construction of the roadway embankment and for structural backfill. Field drain and dry excessively wet material that is otherwise suitable for embankment before placement.

**208.08 Dewatering.**

Delete the subsection and add the following:

Submit a dewatering plan according to Section 157.03.

Construct diversion prior to performing any excavation and according to Sections 157.08 and 157.09. Construct diversions using water tight, non-eroding methods. Employ settling basins or other methods so that muddy water is not returned to stream. Install, operate, and remove diversions in a manner that minimizes erosion and sedimentation.

**208.10 Backfill.**

Add the following:

Submit four sets of the backfill and compaction plan to the Owner for approval a minimum of 21 days before the start of backfilling operations.

# 251 – Riprap

**251.01 General.**

Delete the first sentence and add the following:

Perform the work under Section 208.

**251.07 Acceptance.**

Delete the fourth sentence and add the following:

Structure excavation and backfill will be evaluated under section 208.

**251.09 Payment.**

Add the following:

The cost of excavation, embankment, and haul required for placement of riprap is incidental to the riprap pay item.

# 272 – GEOCELL ABUTMENT STABILIZATION

**Description**

**272.01** This work consists of constructing geocell abutment stabilization at each abutment using a cellular confinement system such as Presto Geoweb Cellular Confinement System or Webtec TerraCell in accordance with the plans and manufacturers recommendations.

**Materials**

**272.02 Requirements.** Ensure that material conforms to specifications in the following subsections:

 Granular Backfill Type (a) 703.03

 Geotextile, Type II (A, B, C) 714.01

 Geocell 736

**Construction Requirements**

**272.03 General.** Perform the work specified in Section 208 or 209. Use ditches, grading or similar methods to prevent surface runoff that may occur during inclement weather from ponding in the foundation excavation.

**272.04 Storage and Handling of Material.** During shipment and storage, wrap geotextile materials in heavy-duty protective covering. Protect the material from mud, soil, dust, debris and sunlight prior to installation.

**272.05 Geotextile Installation.** Place the geotextile according to Section 207. Have the surface approved by the Owner prior to placing geotextile.

Sew or overlap adjacent strips a minimum of 12” at joints. Insert securing pins through both strips of overlapped geotextile at minimum intervals of 3 feet, but no closer than 2 inches to each edge, to prevent the geotextile from being displaced.

Have the installed geotextile approved by the Owner prior to setting the geocells.

**272.06 Geocell Installation.** Furnish the Owner with product literature and certification as required in Section 106.03 for review and approval 7 days prior to installation. When requested by the Owner, furnish a sample of the geocell from each lot for verification testing.

Place the geocell sections directly on the prepared subgrade. Expand the geocell sections into position at the grades and lines as shown on the plans. Hold the expanded geocell sections with suitable “stretcher frames”, steel stakes driven inside selected outer cell walls, or other similar methods as allowed by the manufacturer prior to filling. Ensure that the individual cells have expanded to the minimum dimensions required by the manufacturer. If necessary field cut sections as per the manufacturer’s recommendations to the lines shown on the plans.

Connect geocell panels in accordance with the manufacturer’s recommendations.

**272.07 Infill Placement.** Furnish the Owner with the manufacturer’s specific recommendations for backfilling 7 days prior to placement of the geocells.

Place coarse granular backfill meeting Subsection 703.03 into the expanded cells with equipment appropriate for the site conditions such as a backhoe or a front-end loader. Do not drop infill material more than 3 feet to avoid damage or displacement of the cell walls.

Overfill the geocell cells and level to a minimum of 2 inches above the top of the cell walls. A front-end loader may be used to place the infill provided that it only traffics above geocell sections that have been filled and covered with the minimum 2 inches of additional material. Compact the infill material with a vibratory plate compacter. Operate compaction equipment over the full width of the geocell. Make at least three complete passes or until visible deformation of the infill ceases. Grade the surface to be ½ inch above the top of the cells. Ensure that the cell walls are not exposed after fine grading is completed.

Use the geocell manufacturer’s specific recommendations for backfilling if they are more stringent than stated above.

**272.08 Acceptance.** Geotextile will be evaluated under Subsections 106.02 and 714.01.

Material for geocell will be evaluated under Subsections 106.2 and 106.03.

Granular backfill material will be evaluated under Section 106.02 and 106.04.

**Measurement**

**272.09 Method.** Measure the items listed in the bid schedule according to Subsection 109.02 and the following.

Measure geocell by the square yard in place, exclusive of wastage.

**Payment**

**272.10 Basis.** The accepted quantities will be paid for at the contract price per unit of measurement for the Section 272 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

The cost for furnishing and placing the granular backfill required in Sections 207, 208, and 209 for geocell infill is incidental to this pay item and no separate payment will be made. The cost for furnishing and placing geotextile for the geocell installation is incidental to this pay item and no separate payment will be made.

# 308 – MINOR CRUSHED AGGREGATE

**308.05 Compacting and Finishing Crushed Aggregate.**

**(a) Roadway aggregate**.

Compact per method 2. **Maximum density of AASHTO T180, Method D.**

# 553A – Precast Concrete Structures

**Description**

**553A.01 Work.** Construct precast concrete members. In addition, manufacture, test materials for, transport, store, and install all precast concrete portions except piling, and perform all necessary grouting, welding, or other connections. Furnish precast concrete members complete and in place, including all concrete reinforcing steel and incidentals connected therewith.

**Materials**

**553A.02 Requirements.** Provide materials that meet the requirements specified in the following subsections:

 High-Strength Nonshrink Grout ……………………………… 725.40

 Mortar ………………………………………………………… 725.40

 Reinforcing Steel ……………………………………………… 709.01

 Sealants, Fillers, Seals, & Sleeves …………………………….. 712.01

 Structural Concrete ……………………………………………. 552

 Structural Steel ………………………………………………… 717.01

Provide precast concrete members of the size, shape, strength, air content, and finish that are SHOWN ON THE DRAWINGS. Precast concrete members must be manufactured by a plant with one of the following certifications:

* Precast / Prestressed Concrete Institute (PCI)
	+ Bridge 1, Precast Bridge Products (no prestressed reinforcing).
	+ Commercial 1, Precast Concrete Products (no prestressed reinforcing).
* National Precast Concrete Association (NPCA)
	+ Precast
* American Concrete Pipe Association (ACPA)
	+ QCast

Submit a copy of the transmittal letter of the latest PCI or NPCA inspection/certification with the shop drawings.

In lieu of PCI or NPCA certification, Contractor shall retain a professional engineer to provide quality assurance for the work by inspecting and certifying in writing the concrete members are constructed in accordance to the specification and shall include but not limited to:

1. Shop drawing review.
2. Concrete member dimensions.
3. Concrete mix design.
4. Aggregate sources and test results.
5. Steel reinforcing placement.
6. Concrete curing and strength test results.
7. Concrete material certifications.
8. Placement mixing, delivery and sampling.

Certification of the above shall be received by the Owner prior to shipment and installation at the job site.

Perform all sampling, testing, and inspection necessary to ensure quality control of the component materials and the concrete. Sample and test for quality control and acceptance testing in accordance with the AASHTO or ASTM test methods prescribed in Section 552.

 Maintain adequate records of all inspections and tests. Keep records that indicate the nature and number of observations made, the number and type of deficiencies found, the quantities approved and rejected, and the nature of any corrective action taken.

**Construction**

**553A.03 Performance.** Construct precast concrete structural members in accordance with the following sections and subsections, as applicable:

 Reinforcing Steel ………………………………………………... 554

 Storing, Transporting, & Erecting ………………………………. 553.08

 Structural Concrete ……………………………………………… 552

Submit four sets of shop drawings to the Owner for approval, including the concrete mix design for each class of concrete proposed for use, a minimum of 21 days before fabrication of the precast member(s).

**553A.05 Handling, Transporting, & Erecting.** Provide additional reinforcement, as needed, to meet the requirements of handling, transporting, and erecting precast members.

**553A.06 Acceptance.** Reinforcing steel, anchor devices, elastomeric bearings, and material for concrete and grout will be evaluated under Subsection 106.03. Furnish production certifications for hydraulic cement and reinforcing steel.

Concrete for precast concrete members will be evaluated under Subsections 106.02, 106.03, and 106.04.

Construction of precast concrete members will be evaluated under Subsections 106.02 and 106.04.

Reinforcing steel will be evaluated under Section 554.

Falsework and forms will be evaluated under Section 562.

Measurement

**553A.07** Measure the Section 553A items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Do not measure reinforcing steel, concrete, anchorages, plates, nuts, and other material contained within or attached to the unit for precast concrete structural members.

Payment

**553A.08** The accepted quantities will be paid at the contract price per unit of measurement for the Section 553A pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

# 603 – STRUCTURAL PLATE STRUCTURES

**603.03 General.**

Delete the first sentence and add the following:

Excavation and backfill will be evaluated under Section 208.

Submit four sets of shop drawings with design calculations to the Owner for approval a minimum of 21 days before fabrication.

**603.05 Acceptance.**

Delete the third sentence and add the following:

Excavation and backfill will be evaluated under Section 208.

# 622 – Rental Equipment

**622.02 Rental Equipment.**

Delete the first two sentences of the first paragraph and add the following:

Hydraulic Excavator. Provide a track mounted hydraulic excavator. Excavator shall be reasonably free of leaks and other mechanical deficiencies. Bucket must be equipped with a hydraulic "thumb". Contractor shall supply an excavator of a size capable of performing the excavation needs for the project, i.e. structure excavation, riprap construction, in-stream structures, etc., or other work that may be directed under this section. Submit the model number of the equipment to the Owner for approval before delivery to the project site. Contractor is required to get approval of the size of the Hydraulic Excavator from the Owner prior to any work taking place.

Large Dump Truck. Provide a large dump truck with a minimum capacity of 12 cubic yards, 1990 model year or newer. Contractor is required to get approval of the size of the Dump Truck from the Owner prior to any work with the dump truck taking place.

# 625 – TURF ESTABLISHMENT

**625.03**

Add the following after the last paragraph of the subsection.

**Conserved Topsoil and Vegetated Soil Mats.** As approved by the Owner; conserve riparian vegetation, vegetated soil mats, and topsoil from excavation and embankment areas. Stockpile conserved riparian vegetation, vegetated soil mats, and topsoil in low windrows immediately beyond the rounding limits of cut and embankment slopes or in other approved locations. Separate from other excavated material. Water soils mats as necessary to ensure transplant success.

**625.04.**

Delete this entire subsection:

**625.05.**

Delete this entire subsection:

**625.06.**

Delete this entire subsection:

**625.07 Seeding.**

Add the following after subsection (b):

**Application Methods for Seed:**

Apply seed by the Dry Method. The kind of seed to be furnished and the amounts to be applied in terms of pure live seed shall be as follows:

 Quantity of Pure Live Seed

 Common Name Scientific Name (Pounds/ Acre)

 Blue Wildrye Elymus glaucus 8

 Annual Rye 6

 Bromar Mountain Brome Bromus Marginatus 10

 Canbar Canby’s Bluegrass Poa Canbyi 2

 Total 26 Pounds/ Acre

Pounds of seed to be furnished per acre shall be obtained by dividing the pounds of pure live seed (PLS) required per acre by the product of the percent purity & percent germination.

 Example: (5 lbs. PLS/acre) = 6.55 lb.

 (0.90 x 0.85) where purity = 90% & germination = 85%

**Seed Certification:**

Certified, blue-tagged seed shall be used where a named variety or cultivar is specified. Blue Tags that are removed to mix or spread the seed will be saved and provided to the Owner. All seed purchased will be certified free of seeds from weeds listed on the current “All States Noxious Weeds List.”

**625.08.**

Delete this section and replace with the following:

No fertilizer will be required.

# 626 – PLANTS, TREES, SHRUBS, VINES, AND GROUNDCOVERS

626Delete entire section and replace with the following:

**Description**

**626.01** This work consists of furnishing or excavating on site, transporting and re-planting trees, shrubs, vines groundcovers, and other native plants with machinery.

**Materials**

**626.02** Existing plant material will be made available within 500 feet of project site for re-planting on newly constructed embankment slopes, riprap, and stream channel banks. Do not excavate plant materials unless the Contractor’s operations will permit re-planting within 1 hour.

**Construction Requirements**

**626.03 General.** Do not plant in frozen ground, when snow covers the ground, or when the soil is over saturated, extremely dry, or is otherwise unsatisfactory for planting.

Plant clumps shall not be excavated from critical locations, riparian areas, along streams, areas that may be prone to future erosion, or as determined by the Owner.

When excavating plants contractor shall leave minimum spacing of 10’ to 20’ between removals. Excavated plant areas shall have holes refilled with good quality native material. Pack soil firmly into hole.

The excavated plant shall have the entire root system, and native dirt clump, including duff layer to establish a healthy growing condition. Plants shall be healthy, and growing vigorously.

Loosen soil at the sidewalls and bottom of plant pit to a sufficient depth before setting the plant. Remove all weeds, roots and other unsuitable material from the planting site. Remove air pockets from around the root mass when planting. Spacing of clump plantings shall be determined by the Owner.

Keep all plant material moist and exercise care to prevent damage to bark, branches, and root systems. Employ all necessary means to preserve the plants in a healthy growing condition during plant establishment period.

**626.06 Acceptance.** Planting of trees, shrubs, and other native plants will be evaluated under Subsection 106.02.

**Measurement**

**626.05** Measure Section 626 items listed in the bid schedule according to Subsection 109.02.

**Payment**

**626.06** The accepted quantities will paid at the contract price per unit of measurement for section 626 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this section. See Subsection 109.05.

# 648 – STREAM SIMULATION

**Description**

**648.01** This work consists of placing rock and fill to simulate a natural streambed, profile, and cross section though road stream crossings.

**Material**

**648.02**

Use onsite native streambed material

 Cross-Vane and Fish Rest Stop Rock 705.07

**Construction Requirements**

**648.03 General.** Place native streambed material on a prepared surface to form a well-graded, low permeability mass, similar in appearance and texture to the natural streambed.

**648.04 Channel Excavation and Embankment.**

Do not disturb material and vegetation outside the construction limits.

Construct the new stream channel as shown on the plans or as directed by the Owner. Do not operate equipment in the live stream unless given approval by the Owner. Only excavators with an operating weight less than 40,000 lbs may be used for channel excavation. Minimize disruption of the existing landscape and impacts to the stream. Provide adequate pumping equipment, piping or other acceptable measures, as approved by the Owner, to dispose of any water encountered during excavation in a manner that will cause minimal sedimentation to the existing stream.

Scarify earth cuts to 6 inches below subgrade within the channel construction limits. Compact the scarified material according to Subsection 648.06.

Native streambed material shall be used to construct the channel section shown on the Drawings. Channel excavation or structure excavation material may be used. Incorporate only suitable material into embankments.

Dispose of unsuitable or excess excavation material.

Compact the material according to Subsection 648.06.

**648.05 Placed Streambed Material and Cross-Vane Fish Rest Stop Rock.**

**(a) Machine Placed.** Place native streambed material in one or more layers with a layer depth less than 1 ½ times the maximum dimension of the material. Place material by methods that do not cause segregation or damage to the prepared surface. Place or rearrange individual rocks by mechanical methods to obtain a compact, low permeability mass matching the natural stream configuration. Fill voids before placing the next lift.

**(b) Placed Cross-Vane and Fish Rest Stop Rock.** Place or rearrange individual rocks by mechanical methods to obtain the configuration shown on the drawings.

**648.06 Compaction.**

Compact the material using mechanical and/or hand labor methods to form a well-graded, low permeability mass, similar in appearance and texture to the natural streambed.

**648.07 Acceptance.** Channel excavation and embankment and cross-vane rock will be evaluated under Subsections 106.02 and 106.04.

**Measurement**

**648.08** Measure the items listed in the bid schedule according to Subsection 109.02.

**Payment**

**648.09** The accepted quantities, measured as provided in Subsection 109.02, will be paid at the contract unit price per unit of measurement for Section 648 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

# 703 – AGGREGATE

**703.03 Granular Backfill.**

Add the following:

(c) **Coarse Granular Backfill.** Furnish backfill material that consists of clean, hard durable particles or fragments of crushed stone, crushed slag or crushed gravel meeting the gradation shown below.

|  |  |
| --- | --- |
| **Sieve Size** | **Percent Passing** |
| 1 inch | 100 |
| ¾ inch | 75 to 100 |
| No. 4 | 0 to 60 |
| No. 40 | 0 to 50 |
| No. 200 | 0 to 5 |

**703.06 Crushed Aggregate.**

Delete this subsection and add the following:

Furnish crushed aggregate meeting the following gradation. Variations may be approved by the Owner.

|  |  |
| --- | --- |
| **Sieve Size** | **Percent Passing** |
| 1 inch | 100 |
| ¾ inch | 70 – 98 |
| No. 4 | 36 – 60 |
| No. 8 | 22 - 43 |
| No. 30 | 12 – 31 |
| No. 200 | 6 - 15 |

# 704 – SOIL

**704.04 Structural Backfill.**

Add the following:

Use all suitable onsite material in the construction of structural backfill. Material must meet the requirements for structural backfill.

(d) Soil Classification, AASHTO M145 A-1 or A-2

# 705 – ROCK

**705.02 Riprap Rock.**

Add the following:

All riprap material to be used shall be approved by the Owner prior to placement.

Delete the following:

Conform to the following:

1. Apparent specific gravity, AASHTO T 85 2.50 min.
2. Absorption, AASHTO T 85 4.2% max.
3. Coarse durability index, AASHTO T 210 50 min.

Add the following:

**705.07 Native Streambed Material.**

(a) General. Sort onsite material to create a mixture of native material that consists soil, gravel, cobble, and boulders to simulate a natural streambed. The cobbles and boulders should be hard, durable rock without open fractures.

Gradation requirements for Streambed Material:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **100% passing** | **84% passing** | **50% passing** | **16% passing** | **10% passing** |
| 15” | 8” | 3 ½” | ¾” | No. 10 |

Add the following:

**705.08 Cross-Vane and Fish Rest Stock Rock.**

(a) General. Furnish from the same source as the riprap rock, hard, durable rock that consists of intact blocks without open fractures, foliation, or other planes of weakness.

(b) Sized and shapes. Furnish rocks that are generally cubical, tabular, or rectangular in shape, with dimensions as designated, or as specified in the plans.

# 725 – MISCELLANEOUS MATERIAL

Add the following section:

**725.40 High-Strength Nonshrink Grout**

Furnish grout that is packaged and ready for use with the addition of water at the construction site. Ensure that each bag is stamped to show the last date on which it may be used. Use grout that consists of a hydraulic cementitious system, graded and processed natural fine aggregate, and additional technical components such that the product meets the following conditions:

1. Free of inorganic accelerators, including chlorides.
2. Free of oxidizing catalysts.
3. Free of gas-producing agents.
4. When mixed to 130 percent flow on flow table (ASTM C 230 at 10 drops), it does not reduce in linear dimension when tested in accordance with ASTM C157. Take measurements at 72 hours and 7 days.
5. Produces no bleeding for the first 2 hours after mixing when mixed to 130 percent flow on flow table (ASTM C 230 at 10 drops), as tested in accordance with ASTM C232.
6. Has a minimum strength as follows when tested in accordance with ASTM C 109:

(1) After 72 hours, 25 MPa (3500 psi).

(2) At 7 days, 40 MPa (6000 psi).

(3) After 28 days, 50 MPa (7200 psi).

Provide performance characteristics at 115 to 120 percent flow on flow table (ASTM C 230 at 10 drops).

1. It must be designed, as stated by the manufacturer, to be mixed, placed, and cured at atmospheric temperatures of 5O C to 30O C (40O F to 85O F). Submit products proposed for use for approval by the Owner and accompany them with manufacturer’s submittals substantiating all requirements in this subsection, including graphs or charts showing the time, temperature, and humidity requirements for curing to achieve the specified grout strengths; and recommendations for storage, mixing, application, and curing procedures.

As specified as grout on the contract plans, the following products meet the above requirements.

1. MASTERFLOW 928 GROUT, manufactured by Chemrex.
2. CRYSTEX GROUT, manufactured by L&M Construction Chemicals, Inc.
3. CEMENT ALL, manufactured by CTS Cement Manufacturing Co.
4. SURE-GRIP HIGH PERFORMANCE GROUT manufactured by Dayton Superior.

**725.41 Mortar**

Furnish mortar that is packaged and ready for use with the addition of water at the construction site. Ensure that each bag is stamped to show the latest date on which it may be used. Use mortar that consists of a cementitious system made up of:

1. Natural aggregate, 3/8” maximum size, that meets the requirements specified in ASTM C 33 except for grading. Accomplish grading by blending sieve sizes to obtain the optimum density.
2. Metallic aggregate free from nonferrous material, soluble alkaline compounds, and visible rust.
3. Water reducers, workability agents, air-entraining agents, and catalysts.

Blend the materials to minimize bleeding, increase workability, resist exposure to freeze-thaw cycles and deicing salts, and prevent shrinkage within and at the perimeter of the patch, keyway, or other area to be filled.

Ensure that the minimum compressive strength of the mortar, as tested by ASTM C 109 for a 3” slump, is:

* 24-hour..........................................................................................35MPa (5000 psi)
* 7-day.............................................................................................60 MPa (8500 psi)
* 28-day........................................................................................70 MPa (10,000 psi)

Ensure that the durability of the products when tested at 300 cycles, ASTM C 666, procedure A is:

|  |
| --- |
| Submerged in: DF (%)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Water 98 5% CaCl2 solution 95 5% NaCL solution 85 |

Ensure that the scaling resistance has a rating of 3, Moderate Scaling, after 50 cycles when tested in accordance with ASTM C 672.

Provide certification from the manufacturer that the product is compatible for work that is 1” or more in depth and more than 1” in width; and where the mixing, placing, and curing temperatures may range from 5O C to 30O C (40O F to 85O F).

Submit products proposed for use to the Owner for approval, and accompany them with the manufacturer’s submittals substantiating all requirements in this section, including (1) graphs or charts showing the time, temperature, humidity, and curing requirements to achieve mortar strengths equal to the adjacent concrete; and (2) complete recommendations for storage, mixing, application, and curing procedures.

As specified as mortar on the contract plans, the following products meet the above requirements.

1. EMACO T425 or T430, manufactured by Chemrex.
2. RAPID SET DOT REPAIR MIX manufactured by CTS Cement Manufacturing Co.
3. SURE-GRIP HIGH PERFORMANCE GROUT (when extended with pea gravel) manufactured by Dayton Superior .

# 736 – GEOCELL

736.01 Geocell**.**

Furnish geocell material consisting of sheet strips fabricated from high-density polyethylene (H.D.P.E.), connected in series at off-set, full-depth ultrasonic seams aligned perpendicular to the longitudinal axis of the strips. When expanded, the interconnected strips form the walls of a flexible, three-dimensional cellular confinement structure into which the specified infill material is placed.

736.02 Requirements. Furnish geocells consisting of polyethylene material treated to resist ultraviolet degradation and conforming to the requirements shown in table 736-1.

|  |
| --- |
| **Table 736-1 – requirements for geocells**. |
| Density | ASTM D 1505 | 0.935 to 0.965 g/cm3 (58.4 to 60.2 pounds per cubic foot). |
| Environmental Stress Crack Resistance | ASTM D 1693 | 3000 hour |
| Strip Sheet Thickness | ASTM D 5199 | 1.27 mm (50 mil), minus 5 percent, plus 10 percent. Determine thickness in the flat before any surface texturing or other surface disruption. |
| Short-term peel strength | U.S. Army Corps of Engineers Technical Report GL-86-19, Appendix A | 2000 N (450 pound) minimum for 203 mm (8.0 inch) depth cell |

|  |  |  |
| --- | --- | --- |
| Seam Hang Strength | 101.6 mm (4”) weld joint supporting load of 72.5 kg (160 pounds) or101.6 mm (4”) weld joint supporting load of 72.5 kg (160 pounds) while undergoing temperature change from 23O C to 54O C (74O F to 130O F) on 1 hour cycles. | 30 days minimum7 days minimum |