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## PART 00200 - TEMPORARY FEATURES AND APPURTENANCES

### Section 00205 - Field Laboratory, Weighhouse, Etc.

#### Description

**00205.00 Scope** - This work consists of providing facilities for Agency use to perform testing, weighing and other necessary functions during the course of the Project.

#### Materials and Equipment

**00205.10 Contractor-Furnished Field Laboratory** - Provide a leveled field laboratory for Agency use in close proximity to the Contractor's plant at least five calendar days before aggregate production, paving, or processing work begins under the Contract, meeting the safety and health requirements of the Oregon Department of Consumer and Business Services, the Oregon Health Division, the State Fire Marshall, and the following minimum requirements:

- Length - 4.9 m (16 feet)
- Width - 2.4 m (8 feet)
- Ceiling Height - 2.1 m (7 feet)
- Floor
- Insulation - Walls and ceiling - R-11
- Doors - At least one, 0.9 m (3 feet) wide, all with locks
- Windows - four
  - Adequate for good lighting
  - Capable of being opened for adequate ventilation
  - One providing a view of the crushing or processing plant
- Interior Walls and Ceiling - White
- Counter - 6 meters (20 feet) long, 750 mm (30 inches) wide, about 900 mm (36 inches) high, with a durable, smooth surface
- Sink - one deep double with adequate supply of cold potable, clear, running water
- Electrical Power System:
  - 120/240 V, single phase, 60 A service
  - Wired according to the National Electrical Code
- Electrical Service
  - Continuous, 24 hours per day during crushing and aggregate mixing operations
  - For 24 hours following termination or interruption of operations
- Electrical Outlets - six duplex
- Electrical Light Fixtures - Enough to provide good overall lighting
- Heating and Air Conditioning - Adequate to provide suitable heating and cooling
- Exhaust Ventilation System - Adequate for all activities performed in the laboratory, including aggregate drying and vacuum extractions of AC
- Toilet - One, portable, for use by Agency employees

The site must be approved by the Engineer before work is to begin.

Remove the field laboratory when the Project is complete.

**00205.11 Agency-Furnished Field Laboratory** - Provide a level site for an Agency-furnished laboratory trailer at least five calendar days before aggregate production, paving, or processing work begins under the Contract, at a location in close proximity to the Contractor's plant. The site must be approved by the Engineer before work is to begin.

00205.11

Employ a commercial hauler to bring the trailer to the Project, relocate at the site if necessary, and to return the trailer to its storage area. Employ a licensed electrician to connect and disconnect the power source. Provide an adequate supply of potable water, electricity, and a portable toilet for use by Agency employees, according to 00205.10.

**00205.12 Weighhouse** - When materials are weighed on platform-type scales or by other means and the Contractor chooses to have the Agency provide a weigher, provide a weatherproof weighhouse or other approved shelter for the weighperson. The weighhouse shall meet the safety and health requirements of the Oregon Department of Consumer and Business Services, the Oregon Health Division, the State Fire Marshall and the following minimum requirements:

- Length - 2.7 m (9 feet)
- Width - 1.8 m (6 feet)
- Ceiling Height - 2.1 m (7 feet)
- Floor
- Protect Scale Recording Device and Agency's weigher from weather
- Provide space to store scale testing equipment
- Provide adequate shelf space
- Provide artificial lighting and good visibility throughout
- Provide adequate heat, as required
- Provide stool and other facilities for keeping records and performing other duties of the weigher
- Doors - at least one, all with locks
- Windows
  - Capable of being opened for adequate ventilation, unless air conditioning is provided
  - One, facing the scale
  - One, at each end
  - Adequate size and position to permit view of loading operations and movements of hauling vehicles
- Toilet - One, portable, for use by Agency employees

Remove the weighhouse when the Project is complete.

### Measurement

**00205.80 Contractor-Furnished Field Laboratory** - Pay quantities for providing field laboratories will be measured on a unit basis per each installed and accepted.

**00205.81 Agency-Furnished Field Laboratory** - Pay quantities for performing the work described in 00205.11 will be measured on a unit basis per each for each Agency-furnished field laboratory required to be located at the Contractor's site of operations.

**00205.82 Weighhouse** - No measurement for providing weighhouses described in 00205.12 will be made.

### Payment

**00205.90 Contractor-Furnished Field Laboratory** - Payment for providing Contractor furnished field laboratories will be made at the Contract unit price per each for the item "Furnishing Field Laboratory". Payment will be payment in full for furnishing the specified laboratory meeting the requirements of 00205.10.

**00205.91 Agency-Furnished Field Laboratory** - Payment for performing the work described in 00205.11 will be made at the Contract price per each for the item "Agency-Furnished Field Laboratory". Payment will be payment in full for all work required by 00205.11.

**00205.92 Weighhouse** - No payment will be made for providing the weighhouse described in 00205.12. This work will be considered Incidental, and payment will be included in one or more of the listed Contract pay items.

## Section 00210 - Mobilization

### Description

**00210.00 Scope** - This work consists of operations and preparatory work necessary to become ready to perform the work or an item of work.

### Construction

**00210.40 Mobilization** - Mobilization includes, but is not limited to, the following:

- Move personnel, equipment, supplies, and incidentals to the Project site
- Establish offices, buildings, and other facilities necessary for work on the Project
- Perform other work and operations or incur costs as necessary before beginning work on the Project

### Measurement

**00210.80 Lump Sum Basis** - There will be no measurement of work performed under this section.

### Payment

**00210.90 Lump Sum Basis** - Payment for the item "Mobilization" will be the Contract lump sum amount.

The amounts paid for mobilization in the Contract progress payment will be based on the percent of the original Contract amount that is earned from other Contract items, not including advances on materials, and as follows:

- When 5% is earned, either 50% of the amount for mobilization or 5% of the original Contract amount, whichever is the least
- When 10% is earned, either 100% of mobilization or 10% of the original Contract amount, whichever is the least
- When all work is completed, amount of mobilization exceeding 10% of the original Contract amount

This schedule of mobilization progress payments will not limit or preclude progress payments otherwise provided by the Contract.

**00210.91 Incidental Basis** - When the Contract Schedule of Items or the Special Provisions do not indicate payment for mobilization, mobilization will be considered incidental to the work and no separate or additional payment will be made.

## Section 00220 - Accommodations for Public Traffic

### Description

**00220.00 Scope** - This work consists of maintaining facilities to accommodate public traffic through and within the Project for the life of the Contract. Public traffic includes motor vehicles, bicycles, and pedestrians.

**00220.01 Beginning of Contractor's Responsibility** - The Contractor's responsibilities for accommodating public traffic begin on the day any on-site work begins within the Project limits.

**00220.02 Public Safety and Convenience** - Provide for the safety and convenience of the public and:

- Be responsible for damages to property, injury to persons, loss, expense, inconvenience, and delay caused by or resulting from any act, omission, or neglect of the Contractor, the Contractor's subcontractors and suppliers, or their employees while performing the work.
- Conduct work at all times so that there is the least possible interference with or hazard to the traveling public and residents affected by the Project.
- Do not perform work which would restrict or interrupt traffic movement on opposite sides of the traveled way at the same time.
- Keep the existing lanes of traffic open and in operation through the Project at all times except:
  - One lane may be closed to traffic in the immediate work area but only during hours work is actually being performed.
  - All lanes may be closed to traffic if allowed by the Special Provisions or if directed.
- Do not stop or hold vehicles more than 20 minutes, block driveways, intersections or connections for more than two hours unless otherwise authorized in writing.
- Submit proposed methods and lane closure times in each instance to the Engineer for approval with ample time to allow the traveling public to be notified through the news media.
- Obtain the Engineer's approval before closing any lanes.
- Do not close any lane until the area is signed according to the plans or the requirements of this Section.
- Park construction equipment and vehicles and stockpile material at least 10 m (30 feet) from the traveled way. If this is not possible, protect the equipment, vehicles, and stockpiled material with barriers or other satisfactory means.
- Provide and maintain in a safe condition temporary access to business and residence driveways, temporary intersections, and temporary connections with roads, streets, bikeways, sidewalks and footpaths.
- Provide protection from work areas.
- Allow emergency vehicles immediate passage at all times.

## Construction

**00220.40 General Requirements** - Provide the following for public traffic in all construction areas:

**(a) Traffic Nuisance Abatement** - If loose rock or dust exists on roadway surfaces and shoulders, the Engineer may direct one or more of the following:

- Use pilot cars and/or flaggers.
- Apply a fine spray of water to the surface. The Engineer will determine the rate of application.
- Broom paved surfaces with power brooms.

**(b) Detours and Stage Construction** - Construct and remove, if required, detours, stage construction roadways, shoulders, and temporary bridges, including accessory features shown on the plans or ordered.

**(c) Driveways** - While working on subgrade and other construction, provide adequate access to businesses, residences, intersections and connections as required by 00220.02, and as follows:

- Replace and maintain temporary aggregate driveways, approaches, crossings and intersections as needed.
- Use reasonably well-graded aggregate material.
- Before placing the permanent base, do one of the following:
  - Uniformly spread the temporary aggregate material over the subgrade.
  - Remove and place the temporary aggregate material in the shoulder slope area if it meets quality requirements.
  - Dispose of the temporary aggregate material in a manner satisfactory to the Engineer.

**(d) Adjacent to Excavations** - Where paved shoulders adjacent to excavations are less than 1.2 m (4 feet) wide, protect the traffic as follows:

- At the end of each working day, backfill pavement edge excavations to the elevation of the existing pavement with permanent base material or with a temporary wedge of aggregate as shown on the plans.
- Do not excavate along both edges of the pavement adjacent to traffic at the same time. Before excavating at the edge of the pavement on the opposite side of the roadway, complete the construction to existing pavement elevation on the side which was excavated first.
- Remove the temporary wedge of aggregate material, if used, before placing permanent base material, and place it in the shoulder slope area or spread it uniformly over the subgrade.

## Maintenance

**00220.60 Surface Maintenance Responsibilities** - Provide adequately maintained accommodations at all times for public traffic through and within the Project according to this Section and Section 00225.

**(a) During Construction** - The responsibility for maintaining surfacings during construction is as follows:

**(1) Contractor Responsibility** - Do the following at Contractor's expense:

- Keep surfaces being used by public traffic, free of dirt, mud and other harmful materials.
- Repair damage to surfaces caused by the Contractor's operations.
- Maintain any detour or stage construction surfacings not constructed as specified or directed.

**(2) Agency Responsibility** - The Agency will be responsible to do the following at Agency expense:

- Maintain surfacings and shoulders in existence at the start of the Project which have not been damaged by Contractor operations.
- Maintain surfaces of detours and intermediate stage construction during the time they are being used by public traffic, but only if constructed according to the plans or as directed.
- Sand icy pavements and remove the sand residue.
- Remove snow from traveled ways as required to accommodate public traffic.

This work may be performed by Agency forces, or, if directed, by the Contractor according to Section 00196.

**(b) During Suspensions** - Maintain surfacings for which the Contractor is responsible according to 00220.60(a-1), the work according to 00170.80, and work zone traffic control according to Section 00225 during suspensions of the work as follows:

**(1) Suspensions Due To Contractor Fault Or Neglect** - If the suspension is due to any cause within the control or responsibility of the Contractor, including failure to:

- Perform any provisions of the Contract,
- Correct conditions unsafe for the general public, workers or Agency employees, or
- Carry out orders given by the Engineer.

Then do the following:

- Assume sole responsibility for making provisions for traffic acceptable to the Engineer, and
- Be solely responsible for the costs of maintaining surfaces under traffic, the work, and work zone traffic control during the suspension.

**(2) Suspensions Due To Other Causes** - If the suspension is due to winter seasonal conditions, or any cause not included in (b-1) above, and if the suspension occurs within the Contract time or adjusted Contract time:

- Place uncompleted traveled ways, shoulders, driveways, approaches, connections, and detours necessary for traffic in a maintainable, acceptable condition.
- Be responsible for the work.
- Be responsible for work zone traffic control.

The Agency will then assume responsibility for maintenance of the roadway surfaces during the suspension.

**(c) Right of Agency To Perform Work At Contractor Expense** - If the Contractor fails to provide adequate accommodations for traffic and to maintain the traveled ways and connections as provided in the Contract, the Engineer may proceed immediately to provide adequate accommodations and maintenance. The cost of this work will be deducted from monies due, or that become due, the Contractor.

**00220.70 Opening Sections To Traffic** - When it is in the public interest the Engineer may order any portion of the work opened to traffic. If the portion opened to traffic has been finished in an acceptable manner, it will be designated as "accepted for traffic", and the Contractor will be relieved of maintaining it for legal, public traffic. If the portion of the work to be opened to traffic has not been finished in an acceptable manner, it shall be maintained under traffic by the Contractor in a condition serviceable and adequate for traffic until it is finished in an acceptable manner, except as provided in 00220.60(b).

Maintain portions of the work designated "accepted for traffic" as Extra Work if so ordered. Maintain portions of the work opened to traffic but not "accepted for traffic" at no additional compensation, except watering ordered to protect the work or to alleviate dust will be paid for as provided in Section 00340.

The "accepted for traffic" portion(s) of the work will:

- Be accepted only to the extent the Contractor is relieved of maintaining these portions for legal, public traffic after acceptance.
- Not entitle the Contractor to reduction of retainage.
- Not relieve the Contractor's responsibility for defective materials or work
- Not relieve the Contractor's responsibility for damages to the work from causes other than legal, public traffic except as provided in 00170.80.
- Not constitute a waiver of any provision of the Contract.

If the Contractor delays the completion of shoulders, drainage structures, or other feature of the work, the Engineer may order all or any portion of the work to be opened to traffic. In this case, the Contractor shall be responsible for maintenance as described in 00220.60(a-1), during the period the work is opened to traffic until final acceptance. Conduct the remaining operations to cause the least obstruction to traffic, and bear all additional costs caused by the presence of traffic.

**Measurement**

**00220.80 Measurement** - There will be no measurement of work performed under this Section.

**Payment**

**00220.90 Payment** - No payment will be made for work performed under this Section, unless otherwise provided or pay items are provided under other Sections.

In addition, no payment will be made for costs incurred by the Contractor because of:

- Inconvenience, additional length of travel to conform to established traffic patterns and planned access features; or
- Compliance with laws governing traffic regulations and load limitations.

Costs anticipated because traffic will be using portions of the work will be included in the Contract prices for the various items of work involved.

## Section 00225 - Work Zone Traffic Control

### Description

**00225.00 Scope** - This work consists of providing temporary traffic control measures (TCM) and furnishing, installing, moving, operating, maintaining, inspecting, and removing traffic control devices (TCD) throughout the Project area according to the standard drawings, the traffic control plan (TCP) for the Project, these Specifications, or as directed.

**00225.01 Abbreviations, Definitions, and Standards:**

**(a) Abbreviations:**

ADT	-	Average Daily Traffic
TCD	-	Traffic Control Devices
TCM	-	Traffic Control Measures
TCP	-	Traffic Control Plan
TCS	-	Traffic Control Supervisor
TSS	-	Temporary Sign Support
PCMS	-	Portable Changeable Message Sign

**(b) Definitions:**

**Traffic Control Devices (TCD)** - Signs, signals, markings, and other devices placed on or adjacent to a road to regulate, warn, or guide traffic.

**Traffic Control Measures (TCM)** - Elements of the TCP including, but not limited to, TCD, personnel, materials and equipment used to control traffic through a work zone.

**Traffic Control Plan (TCP)** - A written and drawn plan for handling traffic on a specific roadway through a work zone.

**Work Zone** - An area within highway construction, maintenance, or utility work activities.

**(c) Standards** - Use and follow the Oregon Department of Transportation's "Sign Policy and Guidelines for the State Highway System", the "Manual on Uniform Traffic Control Devices (MUTCD)", and these Specifications and Special Provisions in designing, applying, installing, maintaining, inspecting and removing traffic control devices.

Do not use the Oregon Department of Transportation's "Short Term Traffic Control Handbook". Do not use the "Traffic Control on State Highways for Short Term Work Zones" guideline except when directed by the Engineer for mobile pavement marking operations.

**00225.02 General Requirements** - Be responsible to provide and maintain all TCM. The Engineer may verbally or in writing require immediate changes to the TCM being used on the Project. Immediately make these changes, as directed. Submit all proposed TCM revisions to the Engineer for approval.

Do not start work on any stage of construction until the TCP has been reviewed and accepted and all TCM are in place and the TCP is operating satisfactorily. During construction, determine if additional TCD are required to those in place and immediately notify the Engineer. Immediately make changes as approved or directed, but do not place or remove devices without prior approval.

Work may be suspended as specified in 00180.70 or the TCM may be performed by the Agency if the Contractor fails to correct an unsafe condition. Costs for work performed by the Agency will be deducted from monies due the Contractor.

**00225.03 Traffic Control Outside Contract Limits** - Provide TCM outside the Contract limits when required.

**00225.04 Regulations and Codes** - All electrical equipment, materials, and work shall conform to NEC requirements and any other laws which apply.

**00225.05 Contractor's Traffic Control Plan** - Submit the following in writing five days before the pre-construction conference for approval:

- Proposed TCP showing all TCM and quantities of all TCD
- Proposed order and duration of the TCM

TCP revisions will be subject to a Contract change order before implementation.

**00225.06 Routing Traffic Over Surfacing** - When allowed by the TCP, control traffic being routed over newly constructed surfacings as follows:

**(a) Aggregates** - When directed, control traffic over aggregate surfacings with flaggers or flaggers and pilot car(s).

**(b) Asphalt Treated Permeable Base (ATPB)** - When directed, control traffic over ATPB with flaggers or flaggers and pilot car(s).

**(c) Asphalt Concrete** - Control traffic over asphalt concrete according to 00745.61(b).

**(d) Oil Mats/Chip Seals** - Control traffic over asphalt oil mats or chip seals with flaggers and pilot car(s), unless otherwise directed, until the entire surface has been broomed or bladed after the aggregate was placed as tabulated below:

ADT	Minimum Pilot Cars
Over 1500	2
1500 and Less	1

**(e) Sand Seals** - Control traffic with flaggers and pilot car(s) during application of asphalt and until it is covered with aggregate, unless otherwise directed.

### Materials

**00225.10 General** - Use new or like-new TCD for all installations unless otherwise specified. Provide test results and quality compliance certificates, equipment lists and drawings when specified. Acceptance will be by the QPL, test results and quality compliance certificates, equipment lists, drawings and testing as necessary to assure compliance with the Specifications. After TCD have been accepted in place on the Project, inspect and maintain the condition of the devices.

Use Category I, Category II, and Category III TCD's conforming to the National Cooperative Highway Research Program (NCHRP) Report 350. Category I devices are low-mass devices including, but not limited to, conical markers, tubular markers, plastic drums, and delineators. Category II devices include, but are not limited to, barricades, and sign supports. Category III devices include, but are not limited to, impact attenuators, end treatments, and concrete barriers.

**00225.11 Temporary Signing** - Use new temporary signs and accessories conforming to the following:

**(a) Signs** - Use materials and fabricate signs conforming to Section 00940 and the following:

**(1) Size and Shape** - Use standard size and shape signs conforming to the current edition of the MUTCD and "Sign Policy and Guidelines for the State Highway System" unless otherwise specified or ordered. Double-face signs will not be allowed except for flagger "STOP/SLOW" sign paddles.

**(2) Type** - Use Type "OO" signs, unless otherwise indicated in this Section or in the TCP. In addition to Section 00940, fabricate these signs on one of the following materials:

- New sheet aluminum sign blanks
- Used sheet aluminum sign blanks that are without bends, tears, holes, or dents and that have been cleaned to bare metal
- 19 mm (3/4 inch) high-density overlay plywood
- 19 mm (3/4 inch) medium-density overlay plywood

**(3) Folding or Turning Signs** - Temporary signs on posts may be the folding or turning type as long as they can be locked when not in use so the sign message is not visible to any traffic.

**(4) Reflective Sheeting** - Use Fluorescent Orange Retroreflective (Wide Angle, Prismatic) sheeting only on post-mounted signs that are specifically indicated as using this sheeting in Section 00225 of the Special Provisions or on the plans. Also, use Fluorescent Orange Retroreflective (Wide Angle, Prismatic) sheeting on the sign flag boards. The sheeting shall meet the photometric properties of Section 02910.

**(5) Roll-up Signs** - Use roll-up signs with reflective roll-up sign sheeting from the QPL.

**(b) Sign Supports:**

**(1) Wood Sign Posts** - Provide wood sign posts in the sizes and quantities determined from Standard Drawing TM100.

**(2) Portable Sign Supports** - Use portable sign supports from the QPL and conforming to the following:

- Free standing
- Capable of supporting signs in vehicle-caused turbulence and in winds common to the area where they are used. If additional ballast is required to maintain the signs in an upright position, use sandbags to anchor the sign support legs. Place a sandbag filled with loose sand (approximately 11 kg (25 pounds)) across the bottom of each leg as needed.

**(3) Concrete Barrier Sign Supports** - Barrier rail sign supports shall:

- Conform to Standard Drawing RD945
- Be attached securely to the top of the concrete barrier
- Not project laterally from the surface of the barrier in such a way to create an unsafe condition

**(4) Temporary Sign Supports** - Fabricate TSS as shown on Standard Drawing RD945.

**(c) Sign Covers:****(1) Temporary Signs** - Sign covers for temporary signs shall be:

- One-piece plywood or other sign cover from the QPL
- Large enough to completely cover the sign
- Easy to attach to and remove from the sign without damaging the sign face
- Black, non-reflective and opaque

**(2) Permanent Signs** - Sign covers for permanent signs shall conform to Section 00941.**(d) Sign Flags** - Sign flags shall be:

- Orange or fluorescent red-orange
- 406 mm (16 inch) square or larger
- Made from an acceptable tightly woven fabric or plastic sheeting

**(e) Amber Flashers** - Amber flashers shall be:

- Industry standard 200 mm (8 inch) traffic signal head with visors
- Visible the full width of the traveled way and shoulders 365 m (1,200 feet) from the flashers
- 110/120 V flashers conforming to the flash rate, illuminated period and temperature requirements of 02920.42 or 12 V, rechargeable, battery-operated flashers that:
  - Provide a constant flash rate of one flash per second plus or minus 10%
  - Provide an illuminated period of each flash of 30% plus or minus 10% of each flash cycle
  - Operate one 50 W, 12 V incandescent lamp

**(f) Sign Flag Boards** - Use sign flag boards conforming to 02910.10 and Standard Drawing TM105.

**00225.12 Temporary Barricades, Guardrail, Barrier, Attenuators, and Pedestrian Fencing** - Temporary barricades, guardrail, barrier, attenuators, pedestrian fencing, and accessories shall conform to the following:

**(a) Barricades** - Use barricades from the QPL and conforming to Standard Drawing RD950.**(b) Guardrail** - Use guardrail conforming to Section 00810 except posts may be untreated. Use guardrail terminals from the QPL and Standard Drawings RD 416 and RD 417.

Used guardrail materials may be reused provided:

- Timber posts are structurally sound 150 mm x 200 mm (6" x 8"), or 200 mm x 200 mm (8" x 8"), at least 1.8 m (6 feet) long, and free from damage which would affect their strength
- Rail members meet the requirements of 00810.15(b)
- Guardrail hardware is in good condition and conforms to the design for new materials

**(c) Concrete Barrier** - Use pin-and-loop concrete barrier that conforms to Standard Drawing RD500 and the applicable requirements of Section 00820.

Provide concrete barrier that is in good condition, without cracks, chips, spalls, or corroded loops. Immediately repair any concrete barrier segment that is damaged by the Contractor during or after placement. Repair it to the Engineer's satisfaction or replace it with an undamaged section at no expense to the Agency.

00225.12(c)

Salvaged pin-and-loop concrete barrier that conforms to this section may be used when acceptable to the Engineer.

Use concrete barrier with the same cross section, height, and loop configuration within individual runs.

The concrete barrier shall have functioning scuppers.

**(d) Impact Attenuators** - Use temporary impact attenuators conforming to Standard Drawing RD955 and RD960 or the QPL.

**(e) Barrier and Guardrail Mounted Reflectors** - Use temporary concrete barrier and temporary guardrail reflectors from the QPL.

**(f) Glare Shields** - Use minimum 610 mm (24 inch) high temporary glare shields from the QPL.

**(g) Temporary Pedestrian Fencing** - Use temporary pedestrian work zone delineation fencing from the QPL.

**00225.13 Temporary Traffic Delineation** - Temporary traffic delineation items and accessories shall conform to the following:

**(a) Tubular Markers** - Use tubular markers from the QPL.

**(b) Conical Markers** - Use conical markers from the QPL.

**(c) Surface Mounted Tubular Markers** - Use surface mounted tubular markers from the QPL.

**(d) Plastic Drums** - Use plastic drums from the QPL.

**(e) Delineators** - Use new delineators from the QPL or salvaged reflectorized delineators (W-1) or (Y-1), as appropriate, and conforming to the requirements of Section 00840.

**(f) Pavement Markers:**

**(1) Reflective Pavement Markers** - Use new reflective pavement markers from the QPL.

**(2) Flexible Oiling Pavement Markers** - Use new flexible oiling pavement markers from the QPL.

**(3) Flexible Overlay Pavement Markers** - Use new flexible overlay pavement markers from the QPL.

**(g) Temporary Tape** - Use temporary removable and temporary non-removable tape from the QPL.

**(h) Striping:**

**(1) Paint** - Use striping paint from the QPL.

**(2) Beads** - Use glass beads from the QPL.

**00225.14 Temporary Illumination** - Materials for temporary illumination shall conform to this subsection of the Special Provisions.

**00225.15 Temporary Traffic Signals** - Materials for temporary traffic signals shall conform to Sections 00960, 00990, 02920 and the following:

**(a) General** - Used materials are permitted except if noted on the plans. Do not use permanent signal equipment as part of the temporary signal installation.

**(b) Cable and Wire** - Use all new cable and wire.

**(c) Wood Poles** - Poles shall be able to support the dead load of the equipment shown and withstand a wind load of 40 m/s (90 mph).

**(d) Traffic Signal Control Devices** - Use new, or like-new, Model 170 controllers and cabinets. Cabinets shall meet the minimum requirements of 02920.40. Repair all damage before delivery to the Project. Maintain a minimum of 600 mm (2 feet) and a maximum of 1800 mm (6 feet) of clearance between the bottom of a pole mounted temporary controller and the ground beneath it, except when work next to the pole is affecting this clearance.

The controller program, PROM and monitor will be furnished by the Agency.

When the temporary signal is removed, return the PROM and monitor to the Agency.

**00225.16 Temporary Electrical Signs** - Provide electrical signs conforming to the following:

**(a) Sequential Arrow Signs** - Use Type "C" sequential arrow signs from the QPL.

**(b) Portable Changeable Message Signs** - Use PCMS's from the QPL.

**00225.17 Temporary Illumination for Nighttime Flaggers** - Use temporary illumination equipment conforming to the following:

- Provide an illuminated area of at least 12 m (40 feet) diameter at ground level
- Provide portable illumination equivalent to a 200 W to 250 W high pressure sodium luminaire
- Provide shielding to prevent the illumination from adversely affecting traffic

### **Equipment**

**00225.20 General** - Use new or like-new equipment for all temporary items under this Section unless otherwise specified. Acceptance will be by testing that the Engineer determines necessary to assure compliance with the Specifications.

**00225.27 Flaggers** - Equip flaggers as follows:

- Clothing to cover the complete body except head, neck, and arms below the point of the shoulders.
- An orange, yellow, strong yellow green or fluorescent versions of these colors, retroreflective vest. The retroreflective material shall be orange, yellow, white, silver, strong yellow green, or a fluorescent version of one of these colors, and shall be visible at a minimum distance of 300 m (1,000 feet). The vest shall be designed to identify the wearer as a person and be visible through the full range of body motions.
- An fluorescent yellow-green, orange, yellow, or bright white hardhat or baseball-style cap. Wear hardhats when there is danger of falling or flying objects or electrical shock or burns.
- Highly visible "STOP/SLOW" sign paddles conforming to the MUTCD and fabricated using encapsulated lens reflective sheeting or brighter.
- For flaggers farthest from the work site, as indicated in 00225.47, a minimum 610 mm (24 inch) square red flag made of tightly woven fabric or plastic attached to a 914 mm (36 inch) long staff or highly visible "STOP/SLOW" sign paddles. The free edge shall be weighted.
- Portable, self-contained two-way radio with a range suitable for the Project.
- Illuminated stand area of high visibility at night.

**00225.28 Traffic Control Supervisor** - Equip TCS as follows:

- Clothing, vest, hard hat or cap equivalent to that of flaggers
- Portable, self-contained two-way radio with a range suitable for the Project
- Cellular telephone active 24 hours a day
- A vehicle that is equipped with a roof or post mounted rotating amber light that is visible for 360°, or other approved non-strobe device

**00225.29 Pilot Cars** - Provide pilot cars with the following features:

- Be no smaller than a compact pickup truck
- Have four wheels
- Be identified with a "PILOT CAR FOLLOW ME" (G20-4-457) sign mounted in a conspicuous location on the rear of the vehicle
- Equipped with a roof or post mounted rotating amber light that is visible for 360°, or other approved non-strobe device
- Equipped with two-way radio with a range suitable for the Project

**Labor**

**00225.30 General** - Observe all laws concerning construction safety and health standards according to 00170.60. Provide flaggers, TCS, signal operators, and pilot car operators, to stop, direct, and maintain traffic control through the work zone.

**00225.31 Qualifications** - Use flaggers, TCS, signal operators, and pilot car operators who have:

- The mental and physical ability to provide timely, clear, and positive guidance
- A sense of responsibility for safety of public and work crew
- A neat appearance
- A courteous but firm manner
- Completed an approved work zone traffic control and flagging course within the past three years and have in their possession a current, valid certificate verifying their training

**00225.32 Traffic Control Supervisor** - When the bid schedule does not include an item for a TCS, appoint a trained person on the jobsite during working hours and on call at all other times who:

- Meets the requirements of 00225.31
- Is responsible to maintain all TCD in proper position and condition
- Is equipped with a two-way radio with a range suitable for the Project
- Has the authority to assign and control flagging operations
- Files his/her name and phone number with the Engineer and local police

When the bid schedule includes an item for a TCS, designate an individual or individuals to perform the TCS duties for the Project. Do not designate the Project superintendent as the TCS. The TCS shall personally perform all of the duties of the TCS.

The TCS shall have completed an approved work zone traffic control supervisor and flagging course within the past three years and have in their possession a current, valid certificate verifying their training as a TCS by one of the following:

- American Traffic Safety Services Association (Requires proof of completion of second day of Oregon State TCS Certification Class.)
- Oregon State TCS Certification Class
- Approved training course

The TCS's duties include:

- Discussing proposed TCM and coordinating implementation of the TCP with the Engineer
- Coordinating all TCM, including those of subcontractors, suppliers, and any adjacent construction or maintenance operation
- Coordinating the Project's activities (such as ramp closures, road closures, and lane closures) with appropriate police, fire control agencies, city or county engineering, medical emergency agencies, school districts, Postmaster and transit companies
- Inspecting TCD for proper location, installation, message, cleanliness, and effect on the traveling public. When the TCS is on duty, inspect TCD during each work shift except check post-mounted signs once a week. Inspect traffic control devices left in place for 24-hours or more at least once during non-working hours. Check for effectiveness in both daylight and darkness.
- Reviewing and inspecting nighttime lighting and its effect on the traveling public
- Preparing and signing a daily traffic control report. Submit to the Engineer no later than the end of the next working day. Include in the report such items as:
  - When signs and TCD are installed and removed
  - Locations of signs and TCD
  - Revisions to the TCP
  - Lighting utilized at night
  - Observations of traffic conditions
  - When TCD are damaged or replaced
  - How TCD were damaged and by whom
  - Accidents or incidents occurring within the work zone
- Ensuring that corrections are made to the TCP when not functioning as required. The TCS may make minor revisions to the TCP to accommodate site conditions as long as the original intent of the TCP is maintained and the revision has been approved by the Engineer
- Overseeing all requirements of the Contract to ensure the convenience, safety and orderly movement of vehicular, bicycle, and pedestrian traffic
- Having the latest adopted editions of the documents listed in 00225.01 and applicable standards and Specifications available on the Project at all times
- Attending all Project meetings where TCM is discussed
- Providing traffic control management on a 24-hour per day basis

Maintain a 24-hour telephone number at which the TCS can be contacted. Make arrangements so that the TCS will be available on every working day, on call at all times, and available upon the Engineer's request at other than normal working hours. During non-work periods, the TCS shall report to the Project site within 45 minutes after notification. The TCS shall have appropriate manpower, equipment, and material available at all times to expeditiously correct any deficiency in the TCM for the Project.

Notify the Engineer of an alternate TCS who can assume the duties of the assigned TCS in the event of that person's inability to perform. Alternate TCS shall be adequately trained and certified to the same degree as the assigned TCS.

The TCS shall not act as a flagger except in an emergency.

**00225.34 Law Enforcement Officer** - In place of a properly equipped flagger, a uniformed law enforcement officer may be used to control traffic. If so, the provisions of 00225.27 will not apply, except the illuminated stand area will be required.

## Construction

**00225.40 General** - Install, inspect, move, operate, maintain, and remove temporary TCD according to the plans, these Specifications, and the following:

- Install, maintain, and move all TCD by working with the direction of traffic
- Provide additional TCM, according to 00225.02, when necessary or directed
- Turn, cover, or remove the existing TCD as directed when they are not necessary or conflict with temporary devices. Remove and obliterate, without damaging the wearing surface, all evidence of all temporary TCD when the Contract is completed
- Remove TCD in a sequence reverse to installation

Temporary TCD are to remain the property of the Contractor.

Existing TCD shall remain in operation throughout the Contract or until replaced by new, permanent TCD as appropriate.

**00225.41 Temporary Signing** - Once temporary signs have been accepted and paid for on the Project, do not remove them from the Project, until directed by the Engineer. When work on the Project requires temporary signing at locations not shown on the plans, provide signing according to the MUTCD and "Sign Policy and Guidelines for the State Highway System".

Provide all temporary signing according to the plans and the following:

**(a) Orange Construction Speed Zone Signing** - In areas where the existing posted speed is basic rule maximum speed (65/55 mph), cover type "W1" speed zone signs with a non-transparent weather and windproof cover if the speed shown is higher than the speed shown on orange construction speed signs. Uncover them when the orange construction speed signs are removed or covered. When there is no work on the Project or when directed, cover or remove the orange construction speed signs and restore the original type "W1" speed zone signs. At the trailing end of the Project, install a type "W1" speed zone sign with the original designated speed. If existing type "W1" speed signs are 150 m (500 feet) or less beyond the Project, additional signs are not required.

In areas where the existing posted speed is less than basic rule maximum, do not cover the existing white speed signs when orange construction speed signs are in use.

**(b) Sign Supports:**

**(1) Wood Sign Posts** - Except as provided in the following (2) through (4), mount all temporary signs on wood sign posts as shown and according to Standard Drawing TM100.

When sign posts are installed in rock, a shorter post may be used provided the post is installed in a buried concrete footing at least 300 mm (12 inches) in diameter and 600 mm (2 feet) deep.

**(2) Portable Sign Supports** - Use portable sign supports as follows:

- Signs are needed at a single location for no more than 48 consecutive hours
- Support is positioned so the lowest point of the sign is at least 305 mm (1 foot) above the roadway surface
- Flags are installed on signs according to 00225.41(c)
- Remove from road at end of each work shift when the condition is no longer in effect
- Use only with roll-up signs

**(3) Concrete Barrier Sign Supports** - Mount signs on concrete barrier so the:

- Lowest point of the sign is at least 2.1 m (7 feet) above the roadway surface
- Sign and post are held securely with a device that prevents blowdown
- Sign can be turned and locked parallel to the flow of traffic when not in use

**(4) Temporary Sign Supports** - Use TSS's as follows:

- When signs are needed at a single location for more than 48 consecutive hours
- When not practical to post mount due to location
- Position the TSS's behind other channelization devices

**(c) Sign Flag Boards and Sign Flags** - Install two sign flag boards, according to TM105, above "ROAD WORK NEXT XX MILES" and "BRIDGE\ROAD WORK AHEAD" post mounted signs. Install at least two sign flags above all signs mounted on portable sign supports. The flags are in addition to specified amber flashers, if any. Mount flags so both the entire sign and amber flashers are visible.

**(d) Amber Flashers** - Use either 110/120 V flashers or 12 V rechargeable flashers.

**(e) Roll-up Signs** - Roll-up signs may be used at a single location for no more than 48 consecutive hours.

**(f) Inappropriate Temporary Signs** - Ensure that all temporary signs are properly used in the work zone by doing the following:

- Remove from the road all temporary signs which are no longer needed
- Fold, turn, cover, or remove the signs so that the message is not visible to any traffic
- Cover or remove sign flag boards
- Remove or roll and completely cover flags with an opaque, black, reflective sheath
- Turn off or remove amber flashers
- Remove portable signs and supports from the road at the end of the shift when the condition is no longer in effect

When it is determined only minor work remains on the Project and the work area does not encroach on the roadway or shoulder, do the following:

- Remove all temporary signs and supports, including the advance construction signs and sign flag boards
- Provide signs for minor work on portable sign supports

**(g) Permanent Signing** - Install the appropriate permanent signing as required before changing traffic control staging.

**00225.42 Temporary Barricades, Guardrail, Barrier, Attenuators, and Pedestrian Fencing** - Install temporary barricades, guardrail, barrier, attenuators, pedestrian fencing, and accessories as follows:

**(a) Barricades** - Use and place barricades as shown or as directed.

**(b) Guardrail** - Construct temporary guardrail as shown and according to Section 00810.

**(c) Concrete Barrier** - When placing barrier adjacent to a road, maintain a minimum of 610 mm (24 inches) from face of barrier to edge of traffic lane. Flare the leading end as shown in the table below and treat ends as shown on the plans.

Speed		Flare Rate
(mph)	(km/h)	
65	110	19:1
55	90	16:1
50	80	14:1
45	70	13:1
40	60	11:1

**(d) Impact Attenuators** - Assemble and install impact attenuators according to the manufacturer's recommendations and as follows:

- May be placed on pallets, which are no more than 100 mm (4 inches) high, as approved
- Place and fill the modules with the mass of dry sand according to the appropriate Standard Drawing RD955 or RD960
- Mix salt with the sand to the proportions recommended by the manufacturer or at least 5% by volume when no manufacturer recommendations are given
- Attach an object marker to the lead module according to the appropriate Standard Drawing RD955 or RD960
- Use attenuators designed for the original pre-construction posted speed
- For narrow site systems, pin the first two barrier sections to AC pavement

**(e) Reflectors** - Install reflectors on temporary concrete barrier and temporary guardrail when shown or specified, as follows:

- Space on 60 m (200 foot) centers on tangents and 8 m (25 foot) centers on curves. Closer spacing may be required as directed.
- Use same type for each run of barrier or guardrail
- Bracket-mount to the top of guardrail posts and concrete barrier
- Use yellow when installed on the left side of traffic
- Use white when installed on the right side of traffic
- Position to face oncoming traffic

**(f) Glare Shields** - Install glare shields as shown or as directed and according to the following:

- Install at spacing recommended by the manufacturer
- Install all glare shield blades vertical and true to line
- Firmly attach the base plate anchor bolts to the concrete barrier to withstand a 4.4 kN (1,000 pound) vertical pull and to prevent horizontal and rotational displacement. Maximum spacing between anchor bolts on modular units shall be 760 mm (30 inches).
- Repair any damage to the concrete barrier caused by the Contractor's operations at no expense to the Agency
- Modular or single element glare shields that are installed in a continuous run shall be of the same manufacture and of like appearance throughout the entire installation

**(g) Temporary Pedestrian Fencing** - Install temporary pedestrian work zone delineation fencing as shown or as directed.

**00225.43 Temporary Traffic Delineation** - Install and remove temporary traffic delineation items and accessories as follows:

**(a) Tubular and Conical Markers** - Install tubular or conical markers as shown or directed.

Place tubular or conical markers no more than 3 m (10 feet) apart along both sides of driveways, streets, and road connections within work areas.

Within individual runs of tubular or conical markers, use one shape for the entire run. Conical markers may substitute for tubular markers.

**(b) Surface Mounted Tubular Markers** - Install surface mounted tubular markers as shown or directed.

**(1) Surface Mounted Tubular Marker Removal** - Remove surface mounted tubular marker bases in a manner that leaves any remaining adhesive material with a textured surface condition similar to the texture of the surrounding top lift wearing course pavement surface. Make the surface dull and non-reflective. Remove adhesive from the pavement surface using a method that will not damage the pavement surface.

**(c) Plastic Drums** - Install plastic drums as shown or as directed.

**(d) Delineators** - Install traffic delineators as shown or as directed.

**(e) Pavement Markers** - Unless shown on the plans, install pavement markers as follows:

- Three single markers spaced 1.5 m (5 feet) apart to simulate a 3 m (10 feet) skip line with a gap of 9.2 m (30 feet) to the next skip line
- Single markers spaced 1.5 m (5 feet) apart for solid, no passing lines
- Double markers spaced 1.5 m (5 feet) apart for double solid, no passing lines

Use yellow markers for highway centerline. Use white markers for lines between adjacent lanes in the same direction of traffic.

Flexible pavement markers shall remain in place until the permanent striping is complete. Replace missing markers at the Contractor's expense. Remove the markers from the top lift of pavement within five days after the Contractor is notified of the placement of permanent striping through the work area. Remove the flexible paving markers without damaging the roadway surface, or cut the markers off within 3 mm (1/8 inch) of the roadway surface.

**(1) Reflective Pavement Markers** - Use reflective pavement markers when shown on the plans according to Section 00860. Establish alignment with control points at 60 m (200 foot) intervals on tangents and at 15 m (50 foot) intervals on curves.

**(2) Flexible Oiling Pavement Markers** - Use flexible oiling pavement markers just before applying asphalt for chip seals, sand seals, and oil mats. Remove marker covers before reopening the roadway to traffic.

If a segment of roadway is not completed when the roadway is reopened to traffic, install another set of markers just before the next application of asphalt.

**(3) Flexible Overlay Pavement Markers** - Use flexible overlay pavement markers as follows:

- On surfaces that do not require chip seals, sand seals, and oil mats
- On underlying surfaces that temporarily carry traffic
- When temporary striping is determined as not practical

Install the markers before reopening the roadway to traffic. Remove the markers on underlying surfaces before placing the next surface layer.

**(4) Existing Pavement Marker Removal** - Remove and dispose of existing raised or recessed pavement markers as needed for Stage Construction or as directed. Remove the markers from permanent wearing course surfaces so the roadway surface is not damaged and a surface texture similar to that of the surrounding area remains. Make the surface dull and non-reflective. Remove adhesive from the pavement surface using a method that will not damage the pavement surface.

**(f) Temporary Removable and Non-removable Tape** - Install removable and non-removable tape as shown or as directed.

**(g) Striping** - Before opening roadways to traffic, unless otherwise permitted, apply temporary painted stripes on pavement base courses and pavement markers on the wearing surface at locations designated. Immediately remove all unacceptable striping and replace with acceptable striping at no additional compensation.

**(1) Base Courses** - On pavement base courses apply bead binder at a thickness of 380  $\mu\text{m}$  (15 mils) wet, equivalent to 40 L/km (17 gallons/mile) for a 100 mm (4 inch) wide solid line. Apply glass beads at a rate of 0.6 kg/L (5 pounds/gallon) of paint. Apply 100 mm (4 inch) wide by 3 m (10 foot) long stripes with 9.2 m (30 foot) gaps for skip striping. Apply 100 mm (4 inch) wide, continuous stripe for edge line striping.

**(2) Wearing Course** - On pavement wearing courses use pavement markers or temporary removable tape to simulate lane lines. When a travel lane is adjacent to temporary concrete barrier, replace the edge line with temporary removable tape, as directed. When striping the edge line, use a continuous strip of temporary removable tape.

**(3) Stripe Removal and Durable Stripe Removal** - Remove striping by sandblasting, hydroblasting, or steel shot blasting so the pavement surface is not damaged. Remove durable striping by steel shot blasting, grinding the pavement surface to a depth no greater than 7 mm (1/4 inch), or other approved method so the pavement surface is not damaged. Do not use paint or asphalt to cover existing stripes. Repair any damaged surfaces to the Engineer's satisfaction at no additional compensation.

Use vacuum shrouded equipment or other equally effective containment procedures.

Contain and collect all removed paint, durable striping, and spent abrasive and dispose of according to all Department of Environmental Quality (DEQ) and Environmental Protection Agency (EPA) regulations outlined in "Environmental Protection and Worker Safety During Hazardous Coating Removal" special provisions available from the Agency. This outline of the Oregon DEQ and Federal EPA regulations is meant only as a guide, not as a substitute, requiring the Contractor to be knowledgeable of all environmental protection and worker safety requirements.

Remove striping on pavement base courses when a change in striping is necessary and when the pavement will not be covered with an additional base course. Remove striping and pavement markers on the wearing course so that the permanent striping can be applied. Remove all remaining striping and pavement markers from the wearing course after the permanent striping has been applied, as directed.

Coordinate all removal work with the construction activity. Remove striping and pavement markers during the same day(s) the traffic shift is accomplished unless otherwise approved.

**(h) Pavement Edge Delineation** - When construction work obscures the painted shoulder stripe (edge line), or when paving creates an abrupt edge or sloped edge drop-off 25 mm (1 inch) or more in height, install pavement edge delineation the same day by placing and maintaining tubular or conical markers along the pavement edge as follows:

- Between existing delineators
- Space markers as shown for traffic delineators on Standard Drawing RD800, except do not exceed 60 m (200 feet)
- Patrol daily and restore them to their proper position at least once in the early morning and once in the late afternoon until the tubular or conical markers are no longer required
- Remove after a new edge stripe has been painted

**00225.44 Temporary Illumination** - Construct and remove temporary illumination according to the plans, Sections 00950, 00960, 00970, 02920, and this subsection of the Special Provisions.

**00225.45 Temporary Traffic Signals** - Construct and remove temporary traffic signals according to the plans, Sections 00950, 00960, 00990 and 02920 and the following:

**(a) Removal** - Remove the temporary traffic signal when directed. Remove all wood poles and guy anchors in their entirety. Abandon vehicle detector loops in place. Contractor furnished equipment remains the property of the Contractor.

**(b) Power Service** - Be responsible for utility coordination, hook-up, and power consumption.

**(c) Wood Poles** - Backguy wood poles so that they are vertical with all dead loads applied.

**(d) Suspension of Heads** - Adapt signal mounting hardware as needed for mounting on wood poles. When tether wires are shown, tether all signals and signs suspended from messenger cables.

**(e) Testing and Turn-on** - Certify that all traffic signal controllers and related control equipment for temporary signals have passed the Oregon Department of Transportation laboratory tests. Successfully tested controllers and related control equipment will be assigned permanent certification tags and will not require further environmental testing. Deliver controllers to the Traffic Signal Services Unit for functional testing.

After successful Turn-on, assume all maintenance of the temporary traffic signal installation until it is removed. After notification by the Agency, if the Contractor is not able to respond to a maintenance request, Agency electricians will make repairs at the Contractor's expense.

**00225.46 Temporary Electrical Items** - Provide and install electrical resources as follows:

**(a) Sequential Arrow Signs** - Use the sequential arrow signs as follows:

- Install where the sign is visible from 0.8 km (1/2 mile) minimum
- Mount at a height of 2.1 m (7 feet) from bottom of sign to ground
- Do not use on 2-Lane, 2-Way roadway
- For shoulder work use caution mode only
- Provide a solar/battery power source

**(b) Portable Changeable Message Signs (PCMS)** - Use PCMS as follows:

- Install beyond the outside shoulder or behind existing barrier or guardrail
- Install where the sign is visible from 0.8 km (1/2 mile) minimum
- Mount at a height of 2.1 m (7 feet) from bottom of sign to ground
- Entire message is displayed within 7.5 seconds
- Use no more than two displays within any message cycle
- Separate two PCMS used in sequence by 300 m (1,000 feet) minimum
- Messages shall not scroll horizontally or vertically across the face of the sign
- When the PCMS is not displaying appropriate messages, as directed, remove the PCMS from the roadway and locate the device outside the clear zone
- Provide a solar/battery power source

**(c) Temporary Power Source** - Arrange for, provide, and pay for all electrical power.

**00225.47 Flaggers** - Locate flaggers far enough in advance of the work area to permit adequate time for the motorist to respond to the flagger's instructions. When two flaggers are used for one direction of traffic in advance of a worksite, the flagger farthest from the site may use either a red flag or "STOP/SLOW" sign paddle. The flagger nearest the worksite shall use only the "STOP/SLOW" sign paddle.

When one flagger is used in advance of a worksite, that flagger shall use only the "STOP/SLOW" sign paddle.

Position flaggers, as directed, at locations where traffic can enter the highway within the limits of the work zone. Direct vehicles entering the highway to follow the pilot car line.

Flagging stations shall be staffed continuously or until the Engineer determines flagging is no longer required.

Provide continuous illumination as required for nighttime flagging or until the Engineer determines the illumination is no longer required.

**00225.48 Traffic Control Supervisor** - Supervise the safe operation of traffic control within the construction work zone.

**00225.49 Pilot Cars** - Operate pilot cars at a safe and prudent speed.

### **Maintenance**

**00225.60 Temporary TCD** - Evaluate the condition of TCD and maintain them using the criteria shown in the current American Traffic Safety Services Association (ATSSA) publication titled "Quality Standards For Work Zone Traffic Control Devices". The ATSSA publication is available for review at the Project Manager's office. Using the above criteria, the Engineer will make regular documented inspections during the Contract and when changing stages or restarting work after extended shutdown periods. Except for electrical devices, replace all TCD that are in "marginal" or "unacceptable" condition with equal devices, in new or like-new condition, within a time period agreed upon by the Engineer.

Electrical devices that are in "marginal" or "unacceptable" condition may be repaired instead of being replaced, as long as the repairs are satisfactorily completed within a time period agreed upon by the Engineer.

The replacement or repair of TCD, found to be in "marginal" or "unacceptable" condition, shall be made at the Contractor's expense except as in 00225.90(a).

The above inspections and subsequent replacement of devices does not relieve the Contractor of the responsibility to evaluate, maintain and repair or replace TCD, or to perform other duties including the following:

- Keep the devices in proper position, clean, and legible at all times
- Keep lights, reflectors, and flashers clean, visible, and operable during both daylight and darkness
- Trim or remove vegetative growth or other materials so the devices can be seen
- Verify the effectiveness of the installations at frequent intervals, both in daylight and darkness, by actual travel and inspection
- Repair, replace, or restore damaged or destroyed devices to maintain continuity and effectiveness

Maintain temporary TCD during suspensions of work the same as if work were in progress.

**00225.61 Existing TCD** - Maintain existing TCD as follows:

**(a) Signs and Other Existing TCD** - Maintain existing guide signs, warning signs, regulatory signs, and other existing TCD, the same as temporary signs and devices are maintained.

**(b) Signals, Illumination, and Sign Illumination** - Maintain existing signals, illumination, and sign illumination after adjusting or working on them until accepted.

Routine maintenance of electrical items will be performed by the Agency at the Agency's expense before the Contractor works on them and after work on them is completed and accepted.

**00225.62 Impact Attenuators and Portable Electrical Signs** - Maintain or replace materials and equipment as follows:

**(a) Impact Attenuators** - Complete repair of damaged temporary impact attenuators, except for narrow site systems, within 24 hours of being notified of the damage. Complete repair of damaged narrow site systems within four hours of discovery of or of being notified of the damage.

When narrow site systems are used, have enough modules, cartridges, components, and replacement parts on-site to replace one complete installation.

Replace damaged modules, cartridges, components, and replacement parts with modules, cartridges, components, and replacement parts of the same manufacturer and type, and with attenuation capabilities equal to the original, installed system.

**(b) Portable Electrical Signs** - Maintain and use the required portable changeable message signs and sequential arrow signs according to the manufacturer's recommendations, traffic control plans, and as required. Do not display or alter any sign message before it is approved.

While portable changeable message signs and sequential arrow signs are in use, have on the Project site repair equipment and parts recommended by the manufacturer.

When directed, repair or replace sequential arrow signs and portable changeable message signs that are damaged or destroyed before continuing work that requires use of the signs.

**00225.67 Temporary Illumination for Nighttime Flaggers** - Maintain and use the required temporary illumination equipment according to the manufacturer's recommendation and as required.

When the temporary illumination equipment is in use, have on the Project site, the following:

- Two extra lamps for the temporary luminaire system
- Repair equipment and parts recommended by the manufacturer or have an acceptable backup temporary luminaire

### Measurement

**00225.80 General** - Work covered under this Section will be measured by one of the following methods:

- **Method "A" - Unit Basis** - Under this method, work zone traffic control measures will be measured according to 00225.80(a) through 00225.89.
- **Method "B" - Lump Sum Basis** - Under this method, no measurement of quantities will be made.
- **Method "C" - Incidental Basis** - Under this method, no measurement of quantities will be made.

**(a) Quantity Limitations** - The quantities for work zone traffic control measures will be limited to the initial installation of the following, plus those damaged by public traffic and replaced by the Contractor, unless otherwise specified:

- Quantities necessary to complete the Project based on the Schedule of Items
- Additional TCD and TCM that the Engineer and Contractor agree are necessary to ensure a safe work zone

**(b) Temporary Protection and Direction of Traffic** - No measurement of quantities will be made for this work.

**00225.81 Temporary Signing** - Quantities for temporary signing and flashers will be determined as follows:

**(a) Signs** - The quantity of temporary signs will be measured upon delivery to the Project. The quantities will be limited to those in the approved TCP. The sign area will be the nominal area determined by multiplying the width times the length. No deductions will be made for corners or irregular shapes.

**(b) Amber Flashers** - Amber flashers will be measured on a unit basis, per each.

**00225.82 Temporary Barricades, Guardrail, Barrier, Attenuators, and Pedestrian Fencing** - Quantities for barricades, attenuators, guardrail, concrete barrier, and pedestrian fencing will be determined as follows:

**(a) Barricades and Attenuators** - Barricades, temporary impact attenuators, and moving temporary impact attenuators will be measured on a unit basis, per each.

**(b) Guardrail and Concrete Barrier:**

**(1) Guardrail** - Quantities of temporary guardrail will be the length in meters (feet) of each type complete and in place as specified, measured by one of the following methods:

- a. Count Method** - The number of standard sections will be counted and multiplied by 3.81 m (12 1/2 feet). For purposes of this subsection, a "standard section" is defined as

3.81 m (12 1/2 feet) of complete guardrail, without regard to the number of posts or rail elements used. Non-standard sections will be measured from center of post to center of post and added to the total calculated length of the standard sections for each run.

**b. Length Method** - Measurement will be from center to center of end posts, along the line and grade of each run of each type.

**(2) Guardrail Terminals, Transitions, and Bridge Connections** - Temporary guardrail terminals, temporary guardrail transitions, and temporary bridge connections will be measured on a unit basis, per each.

**(3) Concrete Barrier** - Quantities of temporary concrete barrier and moving temporary concrete barrier will be the length in meters (feet), measured by one of the following methods:

**a. Count Method** - The laying length of a standard section, as shown on the applicable standard drawing, multiplied by the number of standard sections installed in each separate run. Non-standard sections, terminal sections, and transition sections will be measured and added to the total length of standard sections.

**b. Length Method** - Measurement will be from end to end of the barrier along the line and grade of each run.

**(4) Pedestrian Fencing** - No separate measurement will be made for pedestrian fencing.

**(c) Glare Shields** - Glare shields and moving glare shields will be measured from center to center of the glare shield blades, as installed on concrete barrier for each run.

**00225.83 Temporary Traffic Delineation** - Quantities for temporary traffic delineation will be determined as follows:

**(a) Surface Mounted Tubular Markers, Plastic Drums, Delineators, and Pavement Markers** - Surface mounted tubular markers, replacing surface mounted tubular markers, plastic drums, temporary delineators, reflective pavement markers, and flexible pavement markers will be measured on a unit basis, per each.

Measurement for flexible pavement markers includes flexible oiling markers and flexible overlay markers.

**(b) Temporary Removable and Non-Removable Tape** - Temporary removable and temporary non-removable tape will be determined by measuring the actual length of the 100 mm (4 inch) wide tape in place, as accepted.

**(c) Striping** - Painted temporary striping on pavement base courses will be determined by measuring the actual length of 100 mm (4 inch) wide stripe in place as accepted.

Skip intervals will not be included in the measurement.

The quantity of temporary striping will be the length of lines based on a nominal width of 100 mm (4 inches). If the plans call for, or the Engineer requires, stripes other than nominal 100 mm (4 inch) width, the measurement will be adjusted by converting to equivalent length of nominal 100 mm (4 inch) width.

**(d) Stripe Removal and Durable Stripe Removal** - Stripe removal and durable stripe removal will be determined by measuring the overall length of 100 mm (4 inch) line removed. The quantity of stripe removal and durable stripe removal will be the computed length of lines removed based on a nominal

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width of 100 mm (4 inches). For computations, the width of a line is defined as the normal standard line width applied during original placement of solid no-passing lines, broken (skip) lines, edge lines and any other lines normally 100 mm (4 inches) wide. For purposes of computations, the length of continuous lines will be as measured, while the length of broken (skip) stripes will be defined as the standard length of a skip line normally painted during original placement of the lines (3 m (10 feet) of paint per 12.2 m (40 feet) of roadway length). If the plans call for, or the Engineer requires, removal of standard 200 mm (8 inch) or 300 mm (12 inch) wide stripes, the computed length will be adjusted by converting to equivalent length of 100 mm (4 inch) width line. No conversion or adjustment will be allowed for lines that are wider or longer due to improper placement or retracing deviations.

**(e) Striping and Stripe Removal Mobilization** - Striping and stripe removal mobilization will be measured on the unit basis per each for each time the Contractor mobilizes as required by the Engineer for striping, stripe removal, or durable stripe removal. No separate measurement will be made for mobilization to place or remove temporary flexible pavement markers.

**00225.84 Temporary Illumination** - No measurement of quantities will be made for this work.

**00225.85 Temporary Traffic Signals** - No measurement of quantities will be made for this work.

**00225.86 Temporary Electrical Signs** - Quantities for temporary electrical signs will be determined as follows:

**(a) Sequential Arrow Signs** - Sequential arrow signs will be measured on a unit basis, per each by actual count where the devices are initially installed on the Project.

**(b) Portable Changeable Message Signs** - Portable changeable message signs will be measured on a unit basis, per each by actual count where the devices are initially installed on the Project.

**00225.87 Flaggers** - The quantity for flaggers will be measured by the actual number of hours flagging stations are staffed.

No measurement will be made for the temporary illumination required for nighttime flagger operations.

No measurement will be made for flagging performed by the TCS.

**00225.88 Traffic Control Supervisor (TCS)** - The quantity for the TCS will be measured by the number of authorized 24-hour days regardless of the number of people used. An authorized 24-hour day will be any day or portion of a day authorized by the Engineer when any of the following is required:

- Construction operations require a TCS during normal working hours
- TCS performs routine inspection of TCD during non-work hours
- TCS is called to respond to a traffic related issue during non-work hours

**00225.89 Pilot Cars** - The quantity for pilot cars will be measured by the actual number of hours pilot cars are operated.

## Payment

**00225.90 Method "A" - Unit Basis:**

**(a) Pay Quantities** - The accepted quantities, measured according to 00225.80(a) through 00225.89, will be paid for at the Contract lump sum amount or Contract unit price per unit of measurement for each of the pay quantities listed in the Schedule of Items and in approved change orders. Payment will be payment in full for furnishing, installing, moving, operating, maintaining, inspecting, and removing the

materials and TCD, and for furnishing all equipment, labor, and incidentals necessary to complete the work as specified, except as covered in 00225.90(b).

All TCD damaged by public traffic and replaced by the Contractor will be paid for at the Contract price for the pay items listed in the Schedule of Items or in approved Contract change orders, unless otherwise specified. Replacement temporary impact attenuator component(s) will be paid for according to Section 00196. Payment for replacing damaged TCD will only be made when:

- The Engineer orders it
- The replacement devices are used on the Project
- The damaged devices are disposed of to the Engineer's satisfaction

No separate or additional payment will be made for:

- Moving and reinstalling signs, barricades, attenuators, plastic drums, delineators, sequential arrow signs, and portable changeable message signs required by stage construction
- Providing TCM, including flaggers, used at material sources and disposal sites that are outside the Contract limits unless specifically called for on the plans or in the Special Provisions
- Providing portable signs when only minor work is required as indicated in 00225.41(f)
- TCD damaged or destroyed by Contractor's equipment or operations

**(b) Temporary Protection and Direction of Traffic** - Payment for the item "Temporary Protection and Direction of Traffic" will be made at the Contract lump sum amount and will be for:

- Positioning all traffic control devices in proper locations at all times
- Providing and furnishing electrical power
- Cleaning up and removing devices destroyed or damaged by public traffic
- Furnishing, placing, maintaining and removing temporary sign covers
- Moving temporary concrete barrier to and from Contractor's stockpile areas
- Furnishing, placing, replacing, maintaining, moving and removing tubular and/or conical markers
- Removing existing raised and recessed pavement markers
- Furnishing, placing, replacing, maintaining, moving and removing tubular and/or conical markers used to delineate the pavement edge because of edge line obliteration
- Furnishing, installing, maintaining, moving, and removing pedestrian work zone delineation fencing

**00225.90A Method "B" - Lump Sum Basis** - Payment for the item "Temporary Work Zone Traffic Control, Complete" will be made at the Contract lump sum amount and will be for furnishing, installing, moving, operating, maintaining, inspecting, and removing materials and TCD, and for furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

**00225.90B Method "C" - Incidental Basis** - When the Schedule of Items does not indicate payment for work zone traffic control, all work zone traffic control will be considered Incidental and no separate payment will be made.

**00225.91 Temporary Signing** - The pay items for temporary signing and appurtenances will be as follows:

<b>Pay Item</b>	<b>Unit of Measurement</b>
(a) Temporary Signs.....	m <sup>2</sup> (Square Foot)
(b) Amber Flashers.....	Each

Item (a) will be payment in full for signs, regardless of type. No separate or additional payment will be made for flags, sign flag boards, or posts and other supports.

Item (b) will be payment in full for the flashers.

**00225.92 Temporary Barricades, Guardrail, Barrier, and Attenuators** - The pay items for temporary barricades, guardrail, barrier, and attenuators will be as follows:

<b>Pay Item</b>	<b>Unit of Measurement</b>
(a) Temporary Barricades, Type ____ .....	Each
(b) Temporary Guardrail, Type ____ Reflectorized .....	m (Foot)
(c) Temporary Guardrail Terminals, ____ .....	Each
(d) Temporary Guardrail Transition .....	Each
(e) Temporary Bridge Connections .....	Each
(f) Temporary Concrete Barrier, Reflectorized.....	m (Foot)
(g) Moving Temporary Concrete Barrier.....	m (Foot)
(h) Temporary Impact Attenuator, ____ .....	Each
(i) Moving Temporary Impact Attenuators .....	Each
(j) Temporary Glare Shields .....	m (Foot)
(k) Moving Temporary Glare Shields.....	m (Foot)

In item (a), the type of barricade will be inserted in the blank.

In items (b) and (c), the type of guardrail or terminal will be inserted in the blank.

Items (d) and (e) will be payment in full for each device, regardless of size or type.

Item (f) will be payment in full for the barrier.

Item (g) will be payment in full for moving temporary concrete barriers from one location of actual use to another, including removing and replacing reflectors on the barriers, as necessary.

In item (h), the type of attenuator, if applicable, will be inserted in the blank. No separate payment will be made for temporary impact attenuator replacements, replacement modules, cartridges, components, or replacement parts.

Item (i) will be payment in full for each move of the device, regardless of size or type.

Item (j) will be payment in full for the devices installed on the concrete barrier.

Item (k) will be payment in full for moving the devices from one location on the concrete barrier to another.

**00225.93 Temporary Traffic Delineation** - The pay items for temporary traffic delineation will be as follows:

Pay Item	Unit of Measurement
(a) Surface Mounted Tubular Markers.....	Each
(b) Replace Surface Mounted Tubular Markers.....	Each
(c) Temporary Plastic Drums.....	Each
(d) Temporary Delineators .....	Each
(e) Temporary Reflective Pavement Markers .....	Each
(f) Temporary Flexible Pavement Markers .....	Each
(g) Temporary Non-Removable Tape.....	m (Foot)
(h) Temporary Removable Tape .....	m (Foot)
(i) Temporary Striping .....	m (Foot)
(j) Stripe Removal .....	m (Foot)
(k) Durable Stripe Removal.....	m (Foot)
(l) Striping and Stripe Removal Mobilization .....	Each

Item (a) will be payment in full for furnishing and installing the complete assembly of each device in its initial location and for removing the device from the surface.

Item (b) will be payment in full for furnishing new or refurbished devices to replace damaged or missing devices.

Items (c) and (d) will be payment in full for the devices.

Item (e) will be payment in full for temporary pavement markers having either one or two reflective faces.

Item (f) includes removing flexible pavement marker covers.

Item (l) will be payment in full for each time the Contractor mobilizes as required for striping, stripe removal or durable stripe removal.

Payment for items (g), (i), (j), and (k) performed beyond the quantity shown in the Schedule of Items will be made at the Contract unit price if the Engineer determines that the Contract unit price does not exceed the value of the work as determined on the basis of rates given in Section 00197. If the Engineer determines that the Contract unit price exceeds the value of the work, payment for the additional work will be made according to Section 00196.

**00225.94 Temporary Illumination** - The item "Temporary Illumination", will be made at the Contract lump sum amount, and will be payment in full for all required materials called for by the plans and Specifications and for minor adjustments not requiring disassembly.

**00225.95 Temporary Traffic Signals** - The item "Temporary Traffic Signal Installation", will be made at the Contract lump sum amount and will be payment in full for all required materials called for by the plans and Specifications and for minor adjustments not requiring disassembly.

**00225.96 Temporary Electrical Signs** - The pay items for electrical signs will be as follows:

<b>Pay Item</b>	<b>Unit of Measurement</b>
(a) Sequential Arrow Signs.....	Each
(b) Portable Changeable Message Signs.....	Each

Items (a) and (b) will be payment in full for furnishing, operating, moving, and removing the signs and supports. No payment will be made for removing and replacing damaged signs.

**00225.97 Flaggers** - The item "Flaggers" includes all necessary equipment, special apparel, flagging equipment, two-way radios, and illumination for night use.

Workers performing flagging duties who are not properly equipped or attired will not be considered to be flaggers and will not be eligible for payment under this item.

Flaggers performing work other than flagging will not be considered flaggers and will not be eligible for payment under this item.

Payment for item "Flaggers" performed beyond the quantity shown in the Schedule of Items will be made at the Contract unit price if the Engineer determines that the Contract unit price does not exceed the value of the work as determined on the basis of rates given in Section 00197. If the Engineer determines that the Contract unit price exceeds the value of the work, payment for the additional work will be made according to Section 00196.

**00225.98 Traffic Control Supervisor** - The item "Traffic Control Supervisor" will be paid for at the Contract unit price per day. Payment includes vehicle and equipment.

**00225.99 Pilot Cars** - The item "Pilot Cars", will be payment in full for fully operated pilot cars, two-way radios, the "PILOT CAR FOLLOW ME" sign, and the rotating amber light mounted on the pilot car.

Payment for item "Pilot Cars" performed beyond the quantity shown in the Schedule of Items will be made at the Contract unit price if the Engineer determines that the Contract unit price does not exceed the value of the work as determined on the basis of rates given in Section 00197. If the Engineer determines that the Contract unit price exceeds the value of the work, payment for the additional work will be made according to Section 00196.

**Section 00240 - Temporary Drainage Facilities****Description**

**00240.00 Scope** - This work consists of furnishing, installing, and removing temporary drainage facilities.

**Construction**

**00240.40 General** - Furnish and install temporary drainage facilities of sufficient capacity and strength to carry traffic over the facility, and water flow in or under the facility. Determine the actual size, strength and type of facility needed. The sizes of facilities shown on the plans are minimum only. Submit this determination and its basis to the Engineer for review. Do not install until approved.

Remove temporary drainage facilities when they are no longer needed. The facilities remain the property of the Contractor.

**Measurement**

**00240.80 General** - No measurement of quantities will be made for this work.

**Payment**

**00240.90 Lump Sum Basis** - Payment will be made at the Contract lump sum amount for the item "Temporary Drainage Facilities". Payment will be payment in full for furnishing, placing, maintaining and removing temporary drainage facilities as specified.

## Section 00280 - Erosion and Sediment Control

### Description

**00280.00 Scope** - This work consists of installing, maintaining, and removing temporary erosion and sediment control devices such as berms, dikes, swales, check dams, sediment traps, sediment basins, matting, mulching, slope drains, sediment fences, sediment barriers, construction accesses, and other structural or nonstructural erosion and sediment control devices. Typical work areas include medians, interchanges, cut and fill slopes, areas disturbed by Project construction, material sources, and disposal sites.

The work described in these Specifications and shown on the plans is the Erosion and Sediment Control Plan (ESCP) and is the minimum requirement for wet weather site conditions.

Coordinate all temporary erosion control features with all permanent erosion control features, if applicable, to the extent practicable to assure economical, effective, and continuous erosion control throughout the construction and post-construction period.

**00280.01 National Pollutant Discharge Elimination System** - The Agency's ESCP's are developed to comply with Federal, State, and local laws, rules and regulations, and the National Pollutant Discharge Elimination System (NPDES) General Construction Permit for erosion prevention and sediment control for on-site construction activities. A copy of the Permit is available from the Agency. Erosion and sediment control features, other than those shown on the plans, may be required depending on the Contractor's methods of operation and schedule.

**00280.02 Agency Controlled Lands Erosion and Sediment Control Plan** - For work on all Agency-controlled lands, submit signed copies of the following for review and approval ten days before the preconstruction conference:

- A Contractor developed ESCP that incorporates the Agency's ESCP and all proposed modifications to it
- Implementation schedules for the ESCP

The Contractor may submit the ESCP that is included in the Project plans. To assist in the preparation or modification of the ESCP, refer to the Agency's Erosion and Sediment Control Manual.

For each phase of the scheduled work indicate on the ESCP how the proposed erosion and sediment control devices will divert flows, store flows, limit runoff from exposed areas, stabilize exposed soil, and filter sediment.

Include the following information in the implementation schedules, if applicable:

- A list of emergency on site stockpiled materials
- Clearing and grubbing for perimeter controls
- Installing perimeter controls
- Construction phasing
- Clearing and grubbing, grading, and trenching for activities other than perimeter controls
- Grading related to the Project
- Temporary stabilizing exposed soil surfaces
- Final grading, landscaping, and stabilization
- Work on or at bridges and other watercourse structures
- Isolating work area from surface water during in-water work
- Installing and removing utilities
- Work required in wetlands

- Monitoring rainfall
- Inspecting controls
- Installing, maintaining, monitoring, and removing temporary controls
- Installing and maintaining permanent controls
- Disposing of waste materials
- Haul road and borrow pit controls
- Additional controls for wet season work and temporary work suspensions

The ESCP and the implementation schedules shall be prepared by an individual who is knowledgeable in erosion and sediment control.

Keep a copy of the approved ESCP on site during all construction activities. During inactive periods longer than 7 calendar days, the ESCP may be on-site or retained by the Agency.

Do not begin work until the ESCP and the implementation schedules are approved.

Update the ESCP and schedules as needed for unexpected storm events or for other reasons to ensure that sediment-laden water does not leave the construction site. Add approved changes to the ESCP and schedules as soon as possible after changes have been implemented, but no later than 24 hours after implementation.

**00280.03 Non-Agency Controlled Lands Erosion and Sediment Control Plan** - For work on all non-Agency controlled lands, submit signed copies of the following for review ten days before the preconstruction conference:

- A Contractor developed ESCP
- A description of the methods to be used for the ESCP

Describe the following:

- Clearing and grubbing
- Installing perimeter controls
- Construction phasing
- Grading
- Temporary stabilizing exposed soil surfaces
- Final grading, landscaping, and stabilization
- Inspecting controls
- Installing, maintaining, monitoring, and removing temporary controls
- Installing and maintaining permanent controls
- Disposing of waste materials
- Haul road and borrow pit controls
- Additional control for wet season work and temporary work suspensions
- Methods of diverting flows, storing flows, limiting runoff from exposed areas, stabilizing exposed soil, and filtering sediment

The ESCP and methods of operation shall be prepared by an individual who is knowledgeable in erosion and sediment control.

Also, furnish the following:

- Signed, written letter from the property owner that allows the Contractor access to the property. Include a statement in the letter that holds the Agency harmless for all consequences related to the Contractor's use of the property.

00280.03

- Signed agreement with the property owner detailing the Contractor's operation and use of the property.
- Copies of permits or proof that permits are not required from all pertinent federal, State, county, city, and local agencies.

If the Contractor's operations requires work on non-Agency controlled lands that were not presented at the preconstruction conference, or if changes to the Contractor's submitted ESCP are necessary, submit a new or revised ESCP to the Agency for review.

**00280.04 Erosion and Sediment Control Manager (ESCM)** - Designate and provide a representative, experienced in all disciplines of highway construction, as the Erosion and Sediment Control Manager (ESCM). The ESCM is responsible for assuring the duties described in 00280.61 are done and has the authority to immediately mobilize necessary personnel to correct and modify erosion prevention and sediment control devices as required. Provide the ESCM's name and working phone number ten days before the preconstruction conference. Provide written changes in the appointment of this individual during the term of the Contract.

### **Materials**

**00280.10 General** - Provide materials meeting the following requirements. The Contractor may submit a request for proposed alternate materials by following the requirements of 00140.70.

**(a) Biofilter Bags** - Provide minimum size 460 mm x 150 mm x 760 mm (18" x 6" x 30") plastic mesh bags with 13 mm (1/2 inch) openings filled with approximately 20 kg (45 pounds) of clean, 100% recycled wood-product waste.

**(b) Check Dams** - Provide check dam material meeting the following requirements:

- **Aggregate** - Aggregate with maximum size between 150 mm (6 inches) and 75 mm (3 inches) meeting the requirements of 00330.16.
- **Straw Bales** - Standard rectangular straw bales meeting the requirements of 00280.10(n).
- **Biofilter Bags** - Biofilter bags meeting the requirements of 00280.10(a).
- **Sand Bags** - Sand bags meeting the requirements of 00280.10(l).
- **Stakes** - Stakes meeting the requirements of 00280.10(n).
- **Prefabricated** - Prefabricated check dam system meeting the manufacturers recommendations.

**(c) Construction Entrances** - Provide construction entrance material meeting the following requirements:

- **Aggregate** - Aggregate with a maximum size between 150 mm (6 inches) and 75 mm (3 inches) meeting the requirements of 00330.16.
- **Geotextile** - Subgrade geotextile meeting the requirements of Section 02320. Provide "Level B" documentation according to 02320.10(c).

**(d) Diversion Dike/Swale** - Provide diversion dike/swale material meeting the following requirements:

- **Aggregate** - Aggregate with maximum size between 100 mm (4 inches) and 25 mm (1 inch) meeting the requirements of 00330.16.

- **Seeding** - Temporary seeding meeting the requirements of 01030.13.

(e) **Temporary Drainage Curbs** - Provide temporary drainage curb material as follows:

- **Type 1** - Concrete drainage curb meeting the requirements of 00480.11.
- **Type 2** - Asphalt concrete drainage curb meeting the requirements of 00480.12.
- **Type 3** - Sand bags meeting the requirements of 00280.10(l).

(f) **Dust Control** - For dust control, use water at an application rate determined by the Engineer or use liquid stabilizer emulsion or dry powder tackifier according to the following:

- **Liquid Stabilizer Emulsion** - Provide a tackifier base material of liquid and polyvinyl acetate polymers with emulsion resins containing not less than 55 % total solids by mass (weight). Do not use tackifiers that contain polyacrylates or polyvinyl acrylics.
- **Dry Powder Tackifier** - Provide a tackifier base consisting of one or more active hydrocolloids from natural plant sources which hydrates in water and blends with other slurry materials, and upon application and drying tacks the slurry particles to the soil surface, and exhibits no growth or germination inhibiting factors. Provide stabilizing emulsion in a dry powder form that may be remulsifiable and consists of a processed organic adhesive derivative of one of the following:
  - Gumbinder derived from guar (*Cyamopsis tetragonoloba*)
  - Gumbinder derived from plantain (*Plantago insularis*)

Use nontoxic dust control materials that do not have an adverse effect on soil structure or establishment and growth of vegetation.

(g) **Flow Spreader** - Provide aggregate for flow spreaders with a maximum size between 150 mm (6 inches) and 75 mm (3 inches) meeting the requirements of 00330.16.

(h) **Inlet Protection** - Provide inlet protection materials meeting the following requirements:

- **Wire Mesh** - Provide wire mesh materials as follows:
  - **Type 1 Inlet Protection** - Wire mesh meeting the requirements of 00280.10(o).
  - **Type 2 Inlet Protection** - 1 mm diameter (19 gage) steel-wire mesh with 10 mm x 10 mm (3/8" x 3/8") openings.
- **Geotextile** - Type 1 sediment fence geotextile meeting the requirements of Section 02320. Provide "Level B" documentation according to 02320.10(c).
- **Aggregate** - Aggregate with maximum size between 100 mm (4 inches) and 25 mm (1 inch) meeting the requirements of 00330.16.
- **Stakes** - Stakes meeting the following requirements:
  - **Type 1 Inlet Protection** - Use commercial grade metal posts with a mass (weight) of at least 2 kg/m (1.35 pounds/foot).
  - **Type 4 Inlet Protection** - Use minimum 25 mm x 50 mm x 450 mm (1" x 2" x 18") wooden posts.

- **Biofilter Bags** - Biofilter bags meeting the requirements of 00280.10(a).
- **Prefabricated Filter Inserts** - Provide prefabricated filter inserts manufactured specifically for collecting sediment in drainage inlets and listed on the QPL. Include handles and/or fasteners sufficient to keep the insert from falling into the inlet during maintenance and removal of the insert from the inlet.
- **Concrete Masonry Units** - Provide nominal 200 mm x 200 mm x 400 mm (8" x 8" x 16"), 13 kg (29 pound) concrete building blocks with two 140 mm x 140 mm (5 1/2" x 5 1/2") openings and 25 mm (1 inch) minimum outer wall thickness.
- **Sod** - Provide grass sod grown on agricultural land that is cultivated specifically for turf sod meeting the following requirements:
  - Free of weeds, diseases, nematodes, and insects
  - Mature and not less than 10 months old
  - Machine cut to a uniform thickness of 16 mm (5/8 inch) or more, excluding top growth and thatch
  - Broken pieces and torn or uneven ends will not be accepted
- **Reinforcing Steel** - Provide commercial grade reinforcing steel.

(i) **Matting** - Provide matting material that conforms to the Texas DOT/TTI Hydraulics and Erosion Control Laboratory requirements and meets the following performance criteria categories:

- **Type A** - Slope protection mat for clay soil slopes 1V:3H or flatter.
- **Type B** - Slope protection mat for sandy soil slopes 1V:3H or flatter.
- **Type C** - Slope protection mat for clay soil slopes steeper than 1V:3H.
- **Type D** - Slope protection mat for sandy soil slopes steeper than 1V:3H.
- **Type E** - Flexible channel liner for shear stress from 0 to 96 Pa (0 to 2 pounds/square foot).
- **Type F** - Flexible channel liner for shear stress from 0 to 192 Pa (0 to 4 pounds/square foot).
- **Type G** - Flexible channel liner for shear stress from 0 to 287 Pa (0 to 6 pounds/square foot).
- **Type H** - Flexible channel liner for shear stress from 0 to 383 Pa (0 to 8 pounds/square foot).

Provide check slot material and fasteners as follows:

- **Check Slot:**
  - **Channel Application** - Compacted class 25 (50) riprap meeting the requirements of Section 00390.
  - **Slope Application** - Compacted native material.

- **Fasteners** - Use U-shaped wire staples or heavy duty pins as follows:
  - **Staples** - 2 mm diameter (14 gage) steel wire staples. 25 mm (1 inch) "U" width with a length of 150 mm (6 inches) minimum for cohesive soils and 200 mm (8 inches) minimum for non-cohesive soils.
  - **Pins** - 4.75 mm (3/16 inch) diameter steel pin with a 50 mm (2 inch) diameter steel washer secured at the head of the pin with a length of 450 mm (18 inches) minimum for cohesive soils and 600 mm (24 inches) minimum for non-cohesive soils.

Provide the manufacturer's material and installation specifications to the Agency prior to installation.

**(j) Temporary Mulch** - Provide mulch material conforming to 01030.15(b) and tackifier material conforming to 001030.16.

**(k) Plastic Sheeting** - Provide plastic sheeting slope protection, anchoring system, and toe protection according to the following:

- **Plastic Sheeting** - Minimum 0.15 mm (6 mil) thick polyethylene plastic sheeting.
- **Anchoring System** - Anchor system consisting of minimum 30 kg (65 pounds), non-puncture type anchor weights with cords or ropes of adequate strength to support the weights on the slope or new or used chain link fence conforming to 03010.30.
- **Stakes** - Commercial grade metal posts with a mass of at least 2 kg/m (1.35 pounds/foot).
- **Rock** - Class 25 (50) riprap conforming to Section 00390.

**(l) Sand Bags** - Provide 610 mm x 300 mm x 150 mm (24" x 12" x 6") durable, weather-resistant, tightly woven bags sufficient to prevent leakage of filler material. Fill bags with at least 34 kg (75 pounds) of firmly packed fine pcc aggregate 9.75 mm - 0 (3/8" - 0) or round 9.5 mm - 4.75 mm (3/8" - 3/16") pea gravel.

**(m) Temporary Scour Holes** - Provide class 50 (100) riprap for temporary scour holes conforming to Section 00390.

**(n) Sediment Barriers** - Provide sediment barriers and sediment barrier materials meeting the following requirements:

- **Straw Bales** - Provide standard 20 - 30 kg (45 - 65 pound) rectangular straw bales that are wire-bound or string-tied. Straw material shall meet the requirements of 01030.15(b).
- **Biofilter Bags** - Biofilter bags meeting the requirements of 00280.10(a).
- **Wattles** - Provide wattles made of straw meeting the requirements of 01030.15(b) except use only rice or coconut straw material. Wrap the straw, to a minimum density of 44 kg/m<sup>3</sup> (2.75 pounds/cubic foot), in tubular plastic netting meeting the following requirements:
  - 200 mm (8 inch) to 260 mm (10 inch) diameter size
  - Minimum strand thickness of 0.08 mm (0.003 inch)
  - Knot thickness of 1.4 mm (1/16 inch)
  - Mass of 33 g/m (Weight of 0.35 ounces/foot) (plus or minus 10%)
  - Made from 85% high density polyethylene, 14% ethyl vinyl acetate, and 1% color for UV inhibition

- **Sand Bags** - Sand bags meeting the requirements of 00280.10(l).
- **Brush Barrier** - Provide maximum 150 mm (6 inch) diameter woody debris brush or topsoil strippings for brush barriers. Provide type 1 sediment fence geotextile meeting the requirements of Section 02320. Provide "Level B" documentation according to 02320.10(c).
- **Filter Berm and Rock Filter** - Provide aggregate with maximum size between 100 mm (4 inches) and 25 mm (1 inch) meeting the requirements of 00330.16. Provide subgrade geotextile meeting the requirements of Section 02320. Provide "Level B" documentation according to 02320.10(c).
- **Prefabricated Barrier System** - Provide prefabricated barriers manufactured specifically for temporarily obstructing the flow of sediment-laden water and listed on the QPL.
- **Stakes** - Provide the following size stakes:
  - Biofilter Bags - Use minimum 25 mm x 50 mm x 450 mm (1" x 2" x 18") wood posts
  - Brush Barrier - Use minimum 25 mm x 50 mm x 450 mm (1" x 2" x 18") wood posts
  - Straw Bales - Use minimum 38 mm x 38 mm x 900 mm (1 1/2" x 1 1/2" x 36") wood posts
  - Wattle - Use minimum 25 mm x 25 mm x 600 mm (1" x 1" x 24") wood posts

**(o) Sediment Fence** - Provide the following materials for sediment fences:

- **Geotextile** - Sediment fence geotextile meeting the requirements of Section 02320. Provide "Level B" documentation according to 02320.10(c).
- **Posts** - Posts meeting the following requirements:
  - **Supported Sediment Fence** - Commercial grade metal posts with a mass of at least 2 kg/m (1.35 pounds/foot).
  - **Unsupported Sediment Fence** - 38 mm x 38 mm x 1200 mm (1 1/2" x 1 1/2" x 48") minimum wooden posts.
- **Wire Mesh** - Galvanized wire mesh with 50x50 - MW3.2xMW3.2 (2x2 - W0.5xW0.5) or 102x50 - MW3.2xMW3.2 (4x2 - W0.5xW0.5) openings or horizontal and vertical self supporting, prior to fastening to posts, mesh with a minimum tensile strength of 485 MPa (70 ksi) meeting the requirements of ASTM A 82.

**(p) Sediment Mat** - Provide sediment mats from the QPL.

**(q) Temporary Sediment Trap** - Provide the following materials for sediment traps:

- **Geotextile** - Type 2 drainage geotextile meeting the requirements of Section 02320. Provide "Level B" documentation according to 02320.10(c).
- **Aggregate Base** - 37.5 mm - 0 (1 1/2" - 0), 25 mm - 0 (1" - 0), or 19 mm - 0 (3/4" - 0) aggregate for aggregate base meeting the requirements of Section 00641.
- **Aggregate** - Aggregate with maximum size between 150 mm (6 inches) and 75 mm (3 inches) meeting the requirements of 00330.16.

**(r) Temporary Slope Drains** - Provide either plastic pipe meeting the requirements of Section 02410 or metal pipe meeting the requirements of Section 02420. If the contributing area is not established, use 300 mm (12 inch) diameter.

**(s) Slope Berms** - Provide earthwork materials for slope berms according to 00330.41 or stone embankment material with the maximum size between 100 mm (4 inches) and 25 mm (1 inch) meeting the requirements of 00330.16.

**(t) Tire Wash Facility** - Provide the following materials for tire wash facilities:

- **Aggregate** - 37.5 mm - 0 (1 1/2" - 0), 25.0 mm - 0 (1" - 0), or 19.0 mm - 0 (3/4" - 0) aggregate base material meeting the requirements of Section 00641.
- **Reinforcing Steel** - Reinforcing steel meeting the requirements of 02510.10.
- **Geotextile** - Subgrade geotextile meeting the requirements of Section 02320. Provide "Level B" documentation according to 02320.10(c).
- **Concrete** - Commercial grade concrete meeting the requirements of Section 00440.

**(u) Chemical Soil Stabilization** - Provide a liquid stabilizing emulsion meeting the requirements of 00280.10(f).

### **Construction**

**00280.40 Installation** - Install erosion and sediment control devices as shown and according to the Agency's Erosion and Sediment Control Manual. Install erosion and sediment control devices before performing clearing, grading, or other land alteration activities. Ensure that sediment laden water does not leave the Project boundaries, enter drainage systems or waterways, or violate applicable water standards.

**00280.41 Work Restrictions** - The following work restrictions apply:

**(a) Disturbance Limits** - Flag all construction site-clearing limits. Do not disturb areas outside the flagging limits. Maintain the flagging during Project construction.

**(b) Perimeter Controls** - Perimeter controls include interceptor ditches, berms in fill areas, and sediment fences or straw bales along the banks of existing streams and toes of slopes. Install all appropriate perimeter controls before beginning major site grubbing operation.

Install all erosion and sediment control features for soil disturbing activities that are within 90 meters (300 feet) horizontal distance of the two-year flood elevation before beginning work.

**(c) Wet Season Work and Temporary Work Suspension** - Wet season work is defined as work between October 1 and May 30. Before working during the wet season and before temporary work suspension for winter, meet with the Agency to review and update the ESCP and to develop a schedule to ensure that appropriate controls are implemented and maintained during the wet season work and work suspension periods.

During wet season work, stabilize soil stockpiles at the end of each workday by diverting flows, placing covers, or installing sediment barriers at the stockpiles. Also, limit excavation and bare ground activities to only that which is required for immediate operations.

**(d) Disturbance Restrictions** - If soil erosion and sediment resulting from construction activities is not effectively controlled, the Agency will limit the amount of disturbed areas to that which can be effectively

controlled. Incorporate erosion and sediment control measures into the Project at the earliest practicable time. Install all erosion and sediment control devices according to the approved implementation schedule and these Specifications. If the Contractor fails to control erosion, the Agency will stop all construction work according to 00180.70.

**00280.42 Stabilization** - Stabilize soil areas as follows:

**(a) Soil Exposure Limitations** - Stabilize all soils which are exposed and disturbed during construction related activities according to the following:

- **Statewide (Entire Year)** - Stabilize within seven days of exposure, all areas within 30 meters (100 feet) of waterways, wetlands, or other sensitive areas using methods that do not rely solely upon germination to control erosion.
- **West of the Cascades (Entire Year)** - Stabilize all other areas within 14 days of exposure.
- **East of the Cascades (October 1 through April 30)** - Stabilize all other areas within 14 days of exposure.
- **East of the Cascades (May 1 through September 30)** - Stabilize slope and embankment construction in stages based on site conditions, weather, and as determined by the Agency.

**(b) Temporary Stabilization** - Protect from erosion the surface area of exposed soils caused by construction activities. Temporary stabilize exposed soil surfaces not at finish grade at all times and soil surfaces at finish grade when working outside the permanent seeding dates. Provide the following until permanent stabilization measures are implemented:

- Schedule temporary stabilization on an 14 day basis, or more frequent, if needed or directed
- Implement at a minimum, appropriate temporary stabilization measures according to the schedule. Temporary stabilization includes, chemical soil tackifiers, temporary seeding, temporary mulching, erosion control matting, plastic sheeting, preparing seed bed, fertilizing, watering, and adding soil amendments.
- Document implemented measures on the ESCP

Active work areas scheduled for re-disturbance before the next scheduled temporary stabilization period may be left unstabilized if approved by the Agency.

**(c) Permanent Stabilization** - Permanently stabilize exposed soil surfaces at finished grade. Permanent stabilization methods include, but are not limited to, seeding, mulching, riprap protection, and bio-engineered slope stabilization. Permanent stabilization includes stabilization of temporary structures such as detours, stockpiles, and staged earthwork. Immediately perform permanent stabilization at each completed excavation and embankment area except for areas that are scheduled to be redisturbed.

If areas that have been seeded and are not sufficiently stabilized by an established stand of vegetation according to 01030.60, or the soil surface is not protected with sufficient temporary stabilization measures by November 1 of each year, do the following:

- Take measures necessary to redirect the flows away from the disturbed areas
- Re-grade disturbed areas to finished grade
- Apply permanent seeding at the original specified rate
- Apply temporary mulching or matting

If areas to be stabilized, prior to re-grading, are too steep or lack access for effective straw mulch application, apply, upon approval, other effective measures such as chemical soil stabilizers.

Incorporate permanent erosion control features into the Project at the earliest practicable time. Use temporary erosion control features for the following situations:

- To correct conditions that occur during construction activities that were not foreseen during the design stage of the Project
- That are needed prior to installing permanent erosion control features
- To temporarily control erosion that develops during normal construction activities

Where erosion will be a problem and if construction permits, construct permanent erosion control features immediately after clearing and grubbing and grading operations are complete. If permanent erosion control features cannot be constructed furnish and install temporary erosion control features.

**00280.43 Area Preparation** - Prepare areas according to 01040.48(d).

Track all fill slopes at finished grades steeper than 1V:3H and flatter than 1V:1.5H so that track impressions run parallel to slope contours. Maintain at least 35 mm (1 3/8 inch) tall track grousers.

**00280.46 Application** - Install erosion and sediment control devices as shown and according to the following:

**(a) Biofilter Bags** - Place and arrange biofilter bags as shown or directed.

**(b) Check Dams** - Construct check dams as shown or as directed.

**Type 1: Aggregate** - Place aggregate in the ditch section with the center low point below the outside edge.

**Type 2: Straw Bales** - Place aggregate in ditch section and extend check dam with straw bales sufficient to direct flow over aggregate weir.

**Type 3: Biofilter Bags** - Place aggregate in ditch section and extend check dam with biofilter bags sufficient to direct flow over aggregate weir. Aggregate weir may be replaced with additional biofilter bags if approved.

**Type 4: Sand Bags** - Place aggregate in ditch section and extend check dam with sand bags sufficient to direct flow over aggregate weir. Aggregate weir may be replaced with additional sand bags if approved.

**Type 5: Pre-fabricated Check Dam System** - Install pre-fabricated check dam systems according to the plans, Special Provisions, and the manufacturer's recommendations. Field fabricated systems are not allowed.

**(c) Construction Entrances** - Construct construction entrances at each access point between the construction site and all public or private roads or other paved surfaces.

When construction entrances are in use and mud and dirt tracking is evident, take additional steps to eliminate tracking by hosing off tires before vehicles leave the site, or by modifying construction techniques or work operation. Perform tire washing on gravel pads. Use silt-trapping structures to collect and drain wash water before it leaves the construction site.

**(d) Diversion Dike/Swale** - Construct diversion dikes and swales above the cut slope to divert runoff from undisturbed areas away from disturbed slope areas. Convey runoff to an undisturbed area and discharge in a nonerosive manner.

Construct diversion dikes and swales at the toe of fill slopes to divert and convey sediment-laden water to a sediment control facility. Compact dike material according to the MFTP.

Immediately after completing constructing diversion dikes and swales place temporary seed and mulch according to Section 01030, or place erosion matting and seed as directed.

**(e) Temporary Drainage Curbs** - Construct temporary drainage curbs as shown or directed.

**(f) Dust Control** - Apply appropriate dust (wind erosion) control according to the following:

- **Water** - Apply water according to Section 00340.
- **Liquid Stabilizer Emulsions** - Dilute liquid stabilizer with water at a ratio of 30:1 then apply at a rate of 270 L/ha (29 gallons/acre) unless the manufacturer recommends a greater rate of application.
- **Dry Powder Tackifier** - Apply at a rate of 157 kg/ha (140 pounds/acre) unless the manufacturer recommends a greater rate of application.

**(g) Flow Spreader** - A flow spreader is a 300 mm (12 inch) to 450 mm (18 inch) high berm of aggregate that is at a uniform grade throughout its length. Place the flow spreader to receive channeled runoff so that the water is uniformly dispersed along the length of the spreader. Discharge water into a stabilized area at nonerosive velocities.

**(h) Inlet Protection** - Construct inlet protection that directs flows through the control and into the inlet. Select materials from alternatives shown on the plans or Special Provisions.

**Type 1** - Install supported sediment fence around the perimeter of the inlet according to 00280.46(n).

**Type 2** - Place wire mesh over the inlet grate. Place sediment fence geotextile over the wire mesh and perimeter area near the inlet. Install aggregate over the geotextile fabric.

**Type 3** - Install pre-fabricated inserts according to the plans, Special Provisions, and manufacturer's recommendations. Field fabricated inserts are not allowed.

**Type 4** - Install biofilter bags according to the plans.

**Type 5** - Install concrete masonry units around the perimeter of the inlet. Place sediment fence geotextile around the outside perimeter, up the outside face, and on the top of masonry units. Place aggregate over the geotextile fabric and flush with the top of masonry units.

**Type 6** - Within 36 hours of harvest, install sod around the perimeter of the inlet.

**(i) Matting** - Insure that the matting is installed according to the plans, these Specifications, or the manufacturer's recommendations, whichever is more stringent.

**(1) Area Preparation** - Remove all materials (vegetation, rocks, wood, etc.) larger than 50 mm (2 inches) in size. Smooth the surface and remove undulations sufficient to allow the matting to be placed in complete contact with the soil.

**(2) Seeding** - Apply seeding over the same area where matting is required according to one of the following:

- a. Seeding Prior to Mat Installation** - Apply according to Section 01030. This method is preferred.
- b. Seeding After Mat Installation** - This method is allowed only if specified in the Special Provisions or approved. Apply according to Section 01030 at double the application rate for seed.
- c. Single Application - Mat and Seed:**
  - **Hydraulically Applied Mat** - Apply seed at double the rate specified in Section 01030. Thoroughly mix seed, fertilizer, and mat material.
  - **Manually Applied (Pre-seeded) Mat** - Pre-seed the mat at double the rate specified with the seed mix specified in Section 01030.

**(3) Mat Placement** - Apply matting loosely so it is in complete contact with the soil to prevent erosion occurring beneath it. Apply mat and fasteners as shown. Construct check slots on all channel applications and on slope applications when shown or specified.

**(j) Temporary Mulch** - Evenly apply dry mulch and tackifier material according to these Specifications. In areas not accessible to heavy equipment, mulch by hand or by other approved methods. Areas not prepared according to 01040.48(d) will require greater rates of application at the Contractor's expense. Tack mulch material in place mechanically or with hydraulically applied tackifier to form a cohesive surface cover that is resistant to displacement by wind and water.

**(1) Dry Mulch** - Apply straw mulch on slopes 1V:1.5H or flatter. Spread straw mulch by hand or blower. Place approximately 50 mm (2 inch) deep, in loose condition, at a rate between 4.5 to 6.7 Mg/ha (2 to 3 tons/acre) of dry mulch. Place straw mulch so that it is loose enough for sunlight to penetrate and air to circulate, but dense enough to shade the ground, reduce water evaporation, and materially reduce soil erosion. Anchor using hydraulically applied tackifier, crimping disc, or sheep's-foot roller approved by the Agency or methods specified in the Special Provisions.

Provide blower equipment that uses air pressure with an adjustable spout that uniformly applies dry mulch at constantly measured rates. Apply the materials using a sweeping, horizontal motion of the nozzle.

**(2) Tacking** - Straw mulch may be tackified using hydraulically applied tacking agents or mechanical methods at the following rates of application:

- a. Hydraulically Applied Tacking Agents:**
  - **Liquid Stabilizer Emulsions** - Dilute liquid stabilizer with water at a ratio of 30:1 then apply at a rate of 270 L/ha (29 gallons/acre) unless the manufacture recommends a greater rate of application.
  - **Dry Powder Tackifier** - Apply at 90 kg/ha (80 pounds/acre) with 880 kg (1,940 pounds) of hydromulch fiber unless the manufacturer recommends a greater rate of application.

**b. Mechanical Methods** - Straw mulch may be mechanically tackified using a crimping disk or sheep's-foot roller.

- **Crimping disc** - A heavy disk with flat, scalloped discs approximately 6 mm (1/4 inch) thick, having dull edges and spaced no more than 230 mm (9 inches) apart.
- **Sheep's-Foot Roller** - Modified sheep's-foot roller equipped with straight studs, made of approximately 20 mm (3/4 inch) steel plate, placed approximately 200 mm (8 inches) apart and staggered. Ensure that the studs are not less than 150 mm (6 inches) long nor more than 150 mm (6 inches) wide, and rounded to prevent withdrawing the straw from the soil. Use a roller with enough mass to incorporate the straw sufficiently into the soil providing a uniform surface cover.

**(k) Plastic Sheeting** - Place plastic sheeting on disturbed, temporary slopes where immediate protection is required and mulching or other methods of soil stabilization are not feasible. Temporary slopes include vertical excavations for retaining walls and other temporary soil excavations and embankments related to structural work.

Cover exposed soils with plastic sheeting and secure it tightly in place using an anchoring system of sand bags, chain link fence, or other approved methods. Do not allow the anchoring system to puncture the plastic sheeting. Trench plastic sheeting at the top of slope and secure adequately to maintain cover during reasonably expected conditions in the area. Direct water away from areas above the plastic sheeting to prevent erosion from undermining the plastic sheeting.

Control drainage from areas covered by the plastic sheeting so that the discharge occurs onto the toe protection.

**(l) Temporary Scour Holes** - Construct temporary scour holes at the outfall ends of temporary slope drains or as shown.

**(m) Sediment Barriers:**

**Type 1: Straw Bales** - Place and arrange straw bales as shown or directed.

**Type 2: Biofilter Bags** - Place and arrange biofilter bags as shown or directed.

**Type 3: Wattles** - Place and arrange wattles as shown or directed.

**Type 4: Sand Bags** - Place and arrange sand bags as shown or directed.

**Type 5: Brush Barrier** - Place and arrange brush barriers as shown or directed. Place woody debris or topsoil strippings in a linear pile.

**Type 6: Filter Berm** - Place and arrange filter berms as shown or directed. Place rock in an evenly spread, trapezoidal berm.

**Type 7: Pre-fabricated Barrier System** - Install pre-fabricated barrier systems according to the plans, Special Provisions, and manufacturer's recommendations. Field fabricated systems are not allowed.

**(n) Sediment Fence** - Construct supported (mesh and metal posts) and unsupported (no mesh) as follows:

- When installing geotextile and mesh, or geotextile alone, use a continuous roll of geotextile cut to the length of the barrier to avoid joints
- Manufacturer's factory seams are acceptable. Field sewn seams are not acceptable.
- Drive posts into undisturbed soil as shown.
- Securely fasten the geotextile (and mesh) to the upslope side of the posts. Securely fasten each end of the geotextile (and mesh) to the end posts.
- Use stitched loops over posts for unsupported silt fence
- Excavate a trench on the upslope side of the fence and place geotextile to the bottom of the trench. Backfill the trench with native material and compact.
- Attach the supported sediment geotextile to the wire mesh
- Install the manufactured silt fence system according to the plans, Special Provisions, and manufacturer's recommendations. Connect end of rolls as shown.

**(o) Sediment Mat** - Place sediment mats a minimum of 6 m (20 feet) downstream of work areas. Install mats individually or in groups on the stream bottom. Remove the mats not later than 48 hours after stream activities are complete. Remove them from the Project site, or if approved, place them on the stream bank and cover with permanent seeding.

**(p) Temporary Sediment Trap** - The trap may be formed by constructing a berm or by partial or complete excavation. Direct the discharge flow to a stabilized conveyance outlet or level spreader.

**(q) Temporary Slope Drains** - Construct watertight slope drains and extend as the embankment height increases. Construct temporary slope berms at the top of embankment slopes to direct water into the drains until permanent drainage structures are completed.

**(r) Temporary Stabilization** - Surfaces which require temporary stabilization include, but are not limited to:

- Exposed soil surfaces not at finished grade
- Exposed soil surfaces at finished grade when outside permanent seeding dates
- Stockpiles of exposed soils

Temporary stabilization methods include chemical soil stabilization, permanent seeding with temporary mulching, temporary mulching, matting, bark mulch and other temporary cover and stabilization measures. Prepare soil surfaces as specified for the appropriate method used.

If seed of any kind is applied and has not achieved 70% density of the surrounding existing grass areas prior to the end of the permanent seeding dates, then apply additional temporary stabilization measures, other than seeding.

**(s) Slope Berm** - Construct a 0.5 m (18 inch) minimum high berm of compacted material at the top of embankments during construction to direct water away from exposed slopes.

**(t) Tire Wash Facility** - Excavate the area for installation of the tire wash facility. Install subgrade geotextile, aggregate base coarse, reinforced concrete, and water as shown.

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**(u) Chemical Soil Stabilization** - Hydraulically apply a liquid stabilization emulsion chemical soil stabilizer at the following rates unless the manufacturer recommends a greater rate of application:

- **Long Term Control of Exposed Soil Surfaces** - 325 L/ha (35 gallons/acre). Dilute the emulsion with water at the rate of one part emulsion to 20 parts water.
- **Steep Slopes with Raveling Small Rock** - 435 L/ha (45 gallons/acre). Dilute the emulsion with water at the rate of one part emulsion to 10 parts water.

**00280.47 Work Quality** - Protect areas according to 01030.49.

**00280.48 Emergency Materials** - Provide, stockpile, and protect emergency materials on-site for unknown weather or erosion conditions. A list of emergency materials will be listed in the Special Provisions. Replenish emergency materials as they are used.

The emergency materials are in addition to the other erosion control materials required to implement and maintain the ESCP.

Remove all unused emergency materials from the Project site at the completion of the Project.

### **Maintenance**

**00280.60 General** - Maintain installed erosion and sediment control devices in good working order at all times. Keep the devices in place until the Agency issues notification of acceptance of stabilization. All maintenance and repairs are at the Contractor's expense.

**00280.61 Erosion and Sediment Control Manager** - The ESCM's duties include:

- Manage and insure proper implementation of the ESCP
- Accompany the Agency's representative to the field to review the ESCP before beginning construction activities
- Monitor rainfall on and in the vicinity of the Project site
- Monitor receiving streams in the vicinity of the Project site
- Weekly inspect erosion and sediment control features on active construction sites
- Every two weeks inspect erosion and sediment control features on inactive sites
- Inspect erosion and sediment control features on all inactive and active sites at least daily during rainy periods when 15 mm (5/8 inch) or more of rain has fallen within a 24 hour period
- Mobilize crews to make immediate repairs to the control devices or to install additional control devices during working and non-working hours
- Record actions taken to clean up significant amounts of sediment
- Complete the Erosion Control Monitoring form
- Update the ESCP monthly and within 24 hours after changes are implemented
- Prepare a contingency plan in preparation for emergencies and the rainy season
- Accompany the Agency's representative on inspections and, if requested, on inspections made by the regulating agency representatives

**00280.62 Ineffective Controls** - If a control feature does not function effectively, immediately repair, replace, or provide additional devices. Devices repaired, replaced, or added due to improper installation, insufficient maintenance, or damage from Contractor operations will be at the Contractor expense.

**00280.63 Monitoring** - Monitoring consists of the following:

(a) **Rainfall** - Furnish and install a rain gauge at the Project site. Notify the Agency if 15 mm (5/8 inch) or more of rainfall occurs within a 24 hour period. As soon as practicable, but not later than 24 hours, after 15 mm (5/8 inch) or more of rainfall occurs, including weekends and holidays, inspect the entire Project to determine the condition of all erosion and pollution control devices.

(b) **Receiving Stream** - Observe and record color and turbidity or clarity within 10 m (30 feet) upstream and downstream of locations where surface waters from the construction site enter the receiving stream. Note whether sheen and floating matter are present or absent. Describe any apparent color and the clarity of the discharge, and any observable difference in comparison with the receiving stream.

(c) **Monitoring Form** - Complete the Erosion Control Monitoring form after each inspection, observation of the receiving stream erosion control facility modification, or maintenance action. Submit the forms to the Agency weekly for active sites and every two weeks for inactive sites.

**00280.64 Sediment Removal** - Remove sediment and upgrade or repair the devices as needed as soon as practicable, but not later than two days after the surrounding exposed ground has dried sufficiently to prevent further damage from equipment needed for repair operations. If rainfall continues over a 24 hour period, or other circumstances that preclude equipment operation in the area, hand carry and install additional sediment control devices with best management practices and approved by the Agency.

(a) **Catch Basins** - Maintain catch basin inserts and other forms of inlet protection by removing trapped sediment when storage capacity has been reduced by 50%.

(b) **Sediment Controls** - Remove sediment from sediment fences, sediment barriers, check dams, and sediment traps once it has reached one third of the exposed height of the device or storage depth. Replace aggregate and rock filter material with new aggregate material when the sediment reduces the filtering capacity of the device by one half. Replace biofilter bags with clean, washed bags when removing sediment from them. Wash bags in an approved sediment control area.

(c) **Paved Areas** - Keep all paved areas clean for the duration of the Project. Use cleaning methods that do not transport sediment-laden water to receiving streams.

(d) **Construction Entrances** - Add and remove aggregate or other specified material as needed to maintain the proper function of the construction entrances.

(e) **Permanent Stabilization** - Restabilize within two calendar days of disturbance all areas disturbed by the Contractor's operations or other causes including wind, water, and vandalism.

(f) **Straw Bales** - Replace straw bales when they become non-functional or, at a minimum, on an annual basis or at the beginning of each construction season as appropriate.

### Finishing and Clean Up

**00280.70 Removal** - Within 30 days of the notification of acceptance of permanent stabilization, remove temporary erosion and sediment control devices and materials from the area. Remove accumulated sediment before removing the devices and materials. Immediately shape and permanently stabilize areas affected by the removal process. All temporary erosion and sediment control features that are not incorporated into the permanent work remain the property of the Contractor. Do not remove temporary erosion and sediment control devices before permanent stabilization is accepted.

**00280.71 Sediment Disposal** - Re-grade removed sediment into slopes or remove and dispose of off-site according to all federal, state, and local laws and ordinances. Do not flush sediment-laden water into drainage systems.

**Measurement**

**00280.80 Lump Sum Basis** - No separate measurement will be made for lump sum items.

**00280.81 Unit Basis** - Unit basis items will be measured on a unit basis, per each, by actual count of each device or location where the device is constructed or placed and accepted.

**00280.82 Length Basis** - Length basis items will be measured by the meter (foot) along the line and grade of the item or device constructed or placed and accepted.

- Flow spreaders and diversion dike/swale will be measured along the long axis
- Sediment barrier, when measured on the length basis, will be measured along the long axis of the barrier regardless of type
- Temporary slope drains will be measured from the beginning of the metal end pieces to the end of the drain. Measurement will be made when each installation is at its maximum length.

**00280.83 Area Basis** - Area basis items will be measured on the ground surface by the meter (foot), and computed to the m<sup>2</sup> (square foot) or ha (acre) unit as applicable.

**00280.85 Limitations** - The quantities of emergency materials listed in 00280.48 of the Special Provisions are included in the pay item quantities listed in bid schedule.

**Payment**

**00280.90 General** - The accepted quantities of erosion and sediment control devices will be paid for at the Contract unit price per unit of measure for the following items:

<b>Pay Item</b>	<b>Unit of Measurement</b>
Erosion Control .....	Lump Sum
Check Dams .....	Each
Construction Entrances.....	Each
Inlet Protection .....	Each
Temporary Scour Holes .....	Each
Temporary Sediment Traps .....	Each
Tire Wash Facility .....	Each
Biofilter Bags.....	Each or m (Foot)
Sand Bags .....	Each or m (Foot)
Sediment Barrier .....	Each or m (Foot)
Diversion Dike/Swale .....	m (Foot)
Temporary Drainage Curbs.....	m (Foot)
Flow Spreader.....	m (Foot)
Sediment Fence, Supported .....	m (Foot)
Sediment Fence, Unsupported .....	m (Foot)
Temporary Slope Drains .....	m (Foot)
Plastic Sheeting .....	m <sup>2</sup> (Square Foot)
Sediment Mat.....	m <sup>2</sup> (Square Foot)
Chemical Soil Stabilization.....	m <sup>2</sup> or ha (Square Foot or Acre)
Matting .....	m <sup>2</sup> or ha (Square Foot or Acre)
Temporary Mulching .....	m <sup>2</sup> or ha (Square Foot or Acre)

"Erosion Control" includes the following:

- Developing, revising, and documenting the ESCP
- Mobilization
- Monitoring activities
- Furnishing, stockpiling, protecting, restocking, and removing emergency materials
- Preparing Project for winter shut-down
- Inspecting, maintaining, and removing erosion control devices
- Restoring all disturbed ground and work areas

If "Erosion Control" is not listed as a pay item, it is Incidental work for which no separate payment will be made.

Emergency materials that are incorporated into the Project will be paid for under the appropriate pay item.

"Plastic Sheetting" includes the costs for protecting exposed slopes with plastic sheets, anchoring devices, and toe protection maintenance.

"Matting" includes the costs for preparing the slope surface and stabilizing exposed soil with erosion mat material.

Biofilter bags and sand bags used in constructing check dams or sediment barriers will not be separately paid for. Biofilter bags and sediment fence used in constructing inlet protection will not be separately paid for. Payment for these items will be included in payment made for the items "Check Dams", "Sediment Barriers", and "Inlet Protection" as applicable.

No separate or additional payment will be made for the following:

- Removing and disposing of sediment build up behind sediment fences and sediment barriers
- Removing and reinstalling required appurtenances to modify temporary slope drains as the embankment slopes are changed
- Constructing and removing temporary slope berms
- Applying dust control
- Erosion control for work outside the construction limits including but not limited to borrow pits, haul roads, disposal sites, and equipment storage sites

Payment will be payment in full for furnishing and placing all materials, performing all work, and furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

**00280.91 Lump Sum Progress Payments** - The amount paid for lump sum items in the Contract progress payment will be based on the percent of the original Contract amount that is earned from other Contract items, not including advances on materials, and as follows:

- 50% upon initial installation of erosion items
- An additional 25% when 50% of the original Contract amount is earned
- The remaining 25% when the Project is complete and all temporary erosion control devices are removed from the Project site

## Section 00290 - Environmental Protection

### Description

**00290.00 Scope** - This Section describes the Contractor's duties and obligations with respect to protection of the waters, air, wildlife and other environmental resources of the State.

Comply with all applicable federal, State and local environmental, health, safety and other laws, acts, statutes, regulations, administrative rules, ordinances, orders and permits, as they may be amended from time to time (referred to in this Section as "Laws"). Comply with all applicable Laws, whether or not specifically referenced in this Section or elsewhere in the Contract.

The following federal, State and local agencies are known to have enacted ordinances and regulations relating to environmental pollution and the preservation of natural resources that may affect the performance of the Contract:

#### Federal Agencies:

Agriculture, Department of  
Forest Service  
Soil Conservation Service

Army, Department of the  
Corps of Engineers

Commerce, Department of  
National Marine Fisheries Service

Defense, Department of

Energy, Department of

Environmental Protection Agency

Federal Energy Regulatory Commission

Health and Human Services, Department of

Housing and Urban Development, Department of

Interior, Department of  
Heritage, Conservation, and Recreation Service  
Bureau of Indian Affairs  
Bureau of Land Management  
Bureau of Mines  
Bureau of Reclamation,  
Geological Survey  
Minerals Management Service  
Office of Surface Mining, Reclamation, and Enforcement  
U.S. Fish and Wildlife Service

Labor, Department of  
Mine Safety and Health Administration  
Occupational Safety and Health Administration

Transportation, Department of  
Coast Guard  
Federal Highway Administration

Water Resources Council

**State of Oregon Agencies:**

Administrative Services, Department of

Agriculture, Department of  
Natural Resources Division  
Soil and Water Conservation District

Columbia River Gorge Commission

Consumer and Business Services, Department of  
Insurance Division  
Oregon Occupational Safety and Health Division

Energy, Office of

Environmental Quality, Department of

Fish and Wildlife, Department of

Forestry, Department of

Geology and Mineral Industries, Department of

Human Resources, Department of

Labor and Industries, Bureau of

Land Conservation and Development Department

Parks and Recreation, Department of

State Lands, Division of

Water Resources Department

**Local Agencies:**

City Councils

County Courts

County Commissioners, Boards of

Design Commissions

Historical Preservation Commissions

Planning Commissions

Port Districts

Special Districts

### **Oregon Tribal Governments**

If any provision of these Specifications appears to conflict with one or more Laws, the more stringent requirement shall apply, unless the Engineer directs otherwise in situations where these Specifications are more stringent.

Comply with any additional requirements or Laws imposed by any agency or governmental unit having authority to enforce the Endangered Species Act (ESA) and other Laws.

No condition of the Contract releases the Contractor from any responsibility or requirement under any environmental or other Law.

**00290.20 Hazardous Waste and Hazardous Substances** - Comply with all applicable federal, State and local laws and regulations as they pertain to the storage, handling, management, transportation, disposal and documentation of:

- Hazardous substances (as defined in ORS 465.200)
- Oil and hazardous materials (as defined in OAR 340-108-0002)
- Hazardous waste (as defined in 40 CFR 261 and OAR 340-101-0033)
- Solid waste (as defined in 40 CFR 258, ORS 459 and OAR 340)

For the purposes of this Section, the term "hazardous substances" includes oil and hazardous materials. Additional requirements, if any, concerning hazardous materials on the Project will be included in the Special Provisions.

**(a) Hazardous Substance Registration** - Register all hazardous substance storage with the Oregon State Fire Marshal, as required by OAR 837-085 to -090, and provide copies of that registration to the Engineer within 14 days of registration.

**(b) Worker Right-to-Know Documentation** - Have on the Project Site Material Safety Data Sheets (MSDS) for all hazardous substances stored or used on-site, readily available to employees and inspectors at all times. Comply with all federal and State Laws for employee right-to-know in association with the use and storage of hazardous substances on-site.

**(c) Fuel Storage** - Any fuel to be stored on-site shall be stored in compliance the Uniform Fire Code, NFPA standards, and all other applicable Laws.

**(d) Solid Waste Disposal:**

**(1) General** - Prepare a hazardous waste determination for all waste generated at the Project Site, in accordance with 40 CFR 262.11 and OAR 340-102-0011. Determine whether the waste is classified as hazardous waste, as defined in 40 CFR 261 and OAR 340-101-0033, as follows:

- Determine whether the waste is excluded from regulation under 40 CFR 261.4
- Determine whether the waste is listed in Subpart D of 40 CFR 261.4
- Determine whether the waste meets the characteristics set forth in Subpart C of 40 CFR 261.4
- Determine whether the waste is otherwise excluded as a hazardous waste in 40 CFR 261, 264, 265, 266, 268, or 273.

- Determine whether the waste is an "Additional" hazardous waste pursuant to OAR 340-101-0033

For waste classified as hazardous, follow the procedures set forth in 00290.20(e).

Except as provided in (b) below, dispose of non-hazardous solid waste generated at the Project Site at a permitted landfill, in accordance with 40 CFR 258, ORS 459.205 through 459.350, OAR 340-093, and all other applicable Laws. Exceptions to this requirement are noted below:

**(2) Inert Material** - Handle inert material, as defined in OAR 340-093-0030, according to 00330.41. Inert materials include weathered, consolidated asphalt paving, concrete (including embedded re-bar), clean soil, rock and brick.

**(e) Hazardous Waste Management** - For all waste streams classified as hazardous waste under 00290.20(d), use an EPA ID number obtained by the Agency for waste characterization and disposal. Conduct all additional testing necessary to characterize the waste for disposal purposes.

**(f) Hazardous Substance Transportation** - All employees involved in the transportation or preparation for transportation of hazardous substances and hazardous wastes must have received training under the provisions of 49 CFR 100 through 185, in addition to having all necessary permits and licenses for hazardous substance/waste transportation. All hazardous waste must be shipped under a hazardous waste manifest. All hazardous substance and hazardous waste shipments shall be appropriately packaged and labeled, and the vehicles placarded in accordance with 49 CFR 100 through 185. Submit copies of the completed manifests and documentation to the Engineer within 14 days of the hazardous substance/waste leaving the site.

**(g) Used Oil** - Store used oil in compliance with 00290.20(c), 00290.30 and all other applicable Laws. Used oil may be transported off-site for recycling or for use as fuel as set forth in 40 CFR 261 and 279, and OAR 340-111. The used oil transporter must be registered with the DEQ for this activity unless the Contractor self-transportes less than 208 L (55 gallons) at any time to a used oil collection center within the State.

**(h) Unexpected Contamination** - If, during construction, unanticipated hazardous substances are discovered that threaten the health and safety of workers, the public, or the environment, do the following:

- Immediately remove all affected employees and secure the area to prevent access.
- Notify the Engineer immediately and provide written notification within 24 hours, setting forth a description of the incident.

The Engineer will attempt to resolve the unanticipated situation expeditiously according to 00140.40. Delays to work due to the discovery of unexpected contamination will be considered for exclusion from Contract time according to 00180.50(e).

**(i) Spills and Releases** - In the event of a spill or release of hazardous substance or hazardous waste, do the following:

- Immediately commence response actions as set forth in the PCP, SPCC and/or Contingency Plan, as appropriate. If any of the provisions set forth in these plans conflict, the actions providing the greatest protection of public health and safety and the environment shall be implemented.
- Immediately notify the Engineer and provide written notification within 24 hours, setting forth a description of the incident.

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- If the quantity released exceeds the minimum for a reportable quantity pursuant to 40 CFR 302.4 or OAR 340-108-0010, immediately notify DEQ via the Oregon Emergency Response System (OERS). OERS can be reached at 1-800-452-0311 or (503) 378-4124.
- If the release impacts or threatens to impact any surface water body, or exceeds the quantity listed in 40 CFR 302.4 and OAR 340-108-0010(1)(d), immediately notify the EPA and the USCG through the National Response Center. The National Response Center can be reached at 1-800-424-8802.
- Conduct cleanup of the released material in compliance with OAR 340-108 and all other applicable Laws.
- Provide a written spill report to the Engineer within 48 hours of completing initial cleanup activities. If spill cleanup is not completed within seven days, provide an interim spill report to the Engineer within seven days of the incident. Include, at a minimum, the type of material and quantity released, a description of how the release occurred, containment and cleanup methods employed, disposal location for cleanup materials (include disposal receipts), any EPA, DEQ, OERS and/or Oregon State Fire Marshal incident identification numbers issued, and a description of how similar incidents will be prevented in the future.

**00290.29 Health and Safety** - Comply with all applicable health and safety Laws as they pertain to the hazardous substances and wastes used, stored and/or generated on the Project Site including, but not limited to, 29 CFR 1910, ORS 654, and OAR 437. If any of these requirements are in conflict, the more stringent requirements shall apply.

**00290.30 Pollution Control** - Prevent, control and abate pollution of the environment as required by the Contract and all applicable Laws. Perform changes or alterations of work required by new or amended environmental pollution Laws, not contemplated at the time of bid preparation, according to 00140.50 and ORS 279.318.

**(a) Water Pollution Control Measures** - Prevent, control and abate pollution of state waters as required by the Contract and local, state and federal regulations and requirements. Be fully informed of the NPDES Storm Water General Conditions, and conduct construction operations accordingly. Meet or exceed the DEQ requirements for the NPDES General Permit 1200-CA. A copy of the permit is available from the Engineer. Maintain a copy of the General Conditions at the Project Site. The criminal penalty for the conviction of a violation of this permit is a fine of not more than \$25,000 and each calendar day of violation constitutes a separate offense. DEQ may also impose civil penalties up to \$10,000 per calendar day for violation of the terms or conditions of the General Conditions.

**(1) Minimum Required Measures** - As a minimum, take the following measures:

- Allow no pollutant of any kind (e.g., petroleum products or fresh concrete) to come in contact with an active flowing stream.
- Promptly correct or repair operational procedures, leaks, or equipment problems that may cause pollution at the Project Site. If soils or other media become contaminated as a result of operational procedures or equipment problems, remove and dispose of them according to applicable Laws and Subsection 00290.20(i).
- Dispose of material waste according to 00290.20(d) and (e). Do not bury, dump or discharge material wastes or unused materials at the Project Site, except as provided in 00310.43.
- Limit water leakage from trucks carrying saturated soils to less than 4 L/hr (1 gallon per hour) before allowing them to leave the Project Site.

- Comply with the erosion and sediment control requirements of Section 00280.

Additional measures applicable to the Project will be included in the Special Provisions.

Any penalties assessed against the Agency because of the Contractor's willful or negligent violation of the terms of the General Conditions will be withheld from the progress or final payments according to 00195.50(e).

**(2) Permitted Work Areas** - Work within permitted work areas shall be performed only within the permitted in-water work period(s), unless otherwise approved. Equipment shall not enter the permitted work area except as allowed in permits issued for the Project.

**(b) Pollution Control Plan (PCP)** - Develop and submit a PCP to prevent point-source pollution related to Contractor operations for approval 10 days before the pre-construction conference. Maintain a copy of the PCP on the Project Site at all times during construction activities, readily available to employees and inspectors. Ensure that all employees comply with the provisions of the PCP. The PCP shall satisfy all pertinent requirements of all applicable Laws including, but not limited to, the requirements of the Uniform Fire Code and National Fire Protection Association (NFPA) Standards, and shall include the following:

- Methods for confining, removing, and disposing of excess concrete, cement and other mortars.
- Measures for containing fluids and debris from washout facilities.
- Identify hazardous products or materials to be used. Include how they will be handled, monitored, inventoried, and stored as well as spill prevention practices to be followed.
- A spill containment and control plan that includes: notification procedures; specific clean up and disposal instructions for different products; quick response containment and clean up measures which will be available on site; proposed methods for disposal of spilled materials; and employee training for spill containment.
- Measures to be used to reduce and recycle hazardous and non-hazardous waste generated from the Project, including types of materials, estimated quantity, storage methods, and disposal methods.
- Vehicle and equipment maintenance procedures and associated pollution prevention practices.
- Off-site vehicle tracking and dust prevention measures.
- A map showing the locations of proposed hazardous substance storage, spill response equipment, communications equipment, fire suppression equipment and the on-site copy of the PCP.

A "Pollution Control Plan Contractor Packet" is available from the Project Manager.

**(c) Air Pollution Control Measures** - Control or abate air pollution to safeguard the State's air resources in compliance with ORS 468 and 468A, OAR 340-014 and 340-200 through -268, and all other applicable Laws.

**(d) Noise Control** - Comply with ORS 467, OAR 340-035, all other applicable Laws and the following construction noise abatement measures:

- Perform no construction within 300 m (1,000 feet) of an occupied dwelling unit on Sundays, legal holidays, or between the hours of 10:00 p.m. and 6:00 a.m. on other days, without the approval of the Engineer.
- Use equipment with sound control devices no less effective than those provided on the original equipment. Equipment with unmuffled exhausts is prohibited.
- Use equipment complying with pertinent equipment noise standards of the EPA.
- Perform no pile driving or blasting operations within 900 m (3,000 feet) of an occupied dwelling unit on Sundays, legal holidays, or between the hours of 8:00 p.m. and 8:00 a.m. on other days, without the approval of the Engineer.
- Mitigate the noise from rock crushing or screening operations performed within 900 m (3,000 feet) of any occupied dwelling by placing material stockpiles between the operation and the affected dwelling, or by other means approved by the Engineer.

Should a specific noise impact complaint occur during the construction of the Project, one or more of the following noise mitigation measures may be required at the Contractor's expense, as directed by the Engineer:

- Locate stationary construction equipment as far from nearby noise sensitive properties as feasible.
- Shut off idling equipment.
- Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
- Notify nearby residents whenever extremely noisy work will be occurring.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- Operate electric-powered equipment using line voltage power or solar power.

**00290.31 Protection of Fish, Wildlife, and Plants:**

**(a) General** - Comply with the Laws of the Oregon Department of Fish and Wildlife, National Marine Fisheries Service and U.S. Fish and Wildlife Service, and the rules and practices developed through the Oregon Plan for Salmon and Watersheds. Conduct operations to avoid any hazard to the safety and propagation of fish and shellfish in waters of the state.

**(b) Prohibited Operations** - Except where authorized by the Contract and by permit, do not:

- Blast underwater
- Use water jetting
- Release petroleum products or chemicals in the water
- Disturb spawning beds
- Obstruct stream channels
- Cause silting or sedimentation of water

- Use treated timbers within the permitted work area
- Impede adult and juvenile fish passage, including intermittent streams

The permitted work area, if any, will be defined by Special Provision for the Project.

**00290.40 Protection of Forests** - Obtain necessary permits according to ORS 477.625 and ORS 527.670, and comply with the Laws of any authority having jurisdiction for protection of forests.

**00290.41 Protection of Wetlands:**

**(a) General** - Comply with, and require that all the Contractor's employees, agents, and subcontractors comply with the Clean Water Act Section 404 (33 U.S.C. 1344); Federal Rivers and Harbors Act of 1899, Section 10 (33 U.S.C. 403 et seq.); Oregon Removal-Fill law (ORS 196.800 -.990); Oregon Removal and Filling in Scenic Waterways law (ORS 390.805 -.925), and other applicable Laws governing preservation of wetland resources. For the purposes of this Section, "wetland" or "wetlands" will be understood to include wetlands as defined in 00110.20, as well as other jurisdictional waters of the U.S. and/or the State.

**(b) Identification of Wetlands** - Wetlands known to be on the Project Site will be shown on the Plans. Wetlands to be permanently filled or excavated, or that will be temporarily impacted, will be identified. Wetlands to be protected will be shown as "no work zones". Further information may be provided in the Special Provisions.

Comply with Clean Water Act Section 404 permits issued by the U.S. Army Corps of Engineers, and Fill/Removal permits issued by DSL, which allow specified quantities of fill and excavation only within specifically identified areas of wetlands.

**00290.50 Protection of Cultural Resources** - Comply with all Laws governing preservation of cultural resources. Cultural resources may include, but are not limited to, dwellings, bridges, trails, fossils, and artifacts.

If cultural resources are encountered on the Project area or in material sources, and their disposition is not addressed in the Special Provisions:

- Immediately discontinue operations or move to another area of the Project Site or material source
- Protect the cultural resource from disturbance or damage
- Notify the Engineer

The Engineer will:

- Arrange for immediate investigation
- Arrange for disposition of the cultural resources. The Engineer may direct the Contractor to perform salvage operations as Extra Work
- Notify the Contractor when to begin or resume construction operations in the affected area

**00290.51 Protection of Sensitive Cultural Sites** - Act in compliance with, and require that all the Contractor's employees, agents, and subcontractors on the Project Site for any purpose comply with, all Laws applicable to the preservation and protection of sensitive cultural sites. The existence of any sensitive cultural sites affecting the Project, and the mandatory preservation and protection measures applicable to such sites, are determined in accordance with the Laws including, but not limited to, the National Historic Preservation Act (NHPA) of 1966, Section 106, codified in 36 CFR Part 800 (Protection of Historic Properties), ORS 97.740 to 97.760 and 97.990(5) and (6) (Indian Graves and

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Protected Objects), ORS 358.905 to 358.955 (Archaeological Objects and Sites) and ORS 390.235 to 390.240 (Archaeological Sites and Historical Material). If sensitive cultural sites are known to be on the Project, further information will be provided in the Special Provisions.

### **Measurement**

**00290.80 General** - There will be no separate measurement of work performed under this Section.

### **Payment**

**00290.90 Lump Sum Basis** - The Contractor's Pollution Control Plan, submitted according to 00290.30(b), will be paid for at the Contract lump sum amount for the pay item "Pollution Control Plan". Payment also includes all work, materials, equipment, labor and incidentals required to comply with the Pollution Control Plan and these Specifications, if not covered by other Pay Items in the Schedule of Items.

**00290.91 Contractor Responsible for Fines Resulting from Violations** - If the Agency incurs any fine as a result of the Contractor's violation of any permit condition or requirement, the cost of such fine will be withheld from amounts due the Contractor.