

PART 00200 - TEMPORARY FEATURES AND APPURTENANCES

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
- Do not stop or hold vehicles more than 20 minutes, or block driveways, intersections or connections for more than 2 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 or streets
- Do not close any traffic or bike lane, or street 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 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, business and residence entrances during business operating hours, basement vaults as needed, temporary intersections, and temporary connections with roads, streets, bikeways, sidewalks and footpaths
- Provide protection from work areas

- Allow emergency vehicles, incident response units and transit vehicles immediate passage at all times
- Notify the Engineer a minimum of 7 days in advance for any adjustments to existing traffic signals, signs or other traffic control devices
- When it is necessary to limit on-street parking, notify Parking Control at 503-823-PARK, at least 7 days in advance of the parking limitation. Provide 48-hour public notification prior to limiting on-street parking. In metered area, obtain permit(s) to restrict parking in areas where parked vehicles conflict with the execution of the Work
- Notify Tri-Met at least 48 hours in advance of any bus stop closures
- When construction requires the closure of a sidewalk, notify the Engineer in writing, at least 7 days in advance of the closure. Do not close the sidewalk without written approval. Provide 48 hour public notification prior to closing the sidewalk
- Notify the Engineer in writing of all affected emergency services, school districts, and US Postal Service at least 7 days prior to street closure

00220.03 Abbreviations:

ABA - Architectural Barriers Act

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 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.

(e) Sidewalk Closure - When construction requires the closure of a sidewalk or sidewalk ramp:

- Place Type "W1" "SIDEWALK CLOSED" signs (MUTCD R9-9, 10, 11, 11a) as needed to direct pedestrian traffic. Mount each sign above the striped panel of a Type II barricade placed across the sidewalk, facing pedestrians approaching the work area. To the maximum extent feasible, the alternate circulation path shall be provided on the same side of the street as the disrupted route.
- Alternate routes shall comply with the Accessible Routes guidelines found in "ADA and ABA Accessibility Guidelines for Buildings and Facilities". This document prescribes all ADA related design criteria, including the qualities of an acceptable surface.
- Barricades and channelizing devices are to remain in place, except as required for actual work, until the sidewalk is reopened to pedestrian traffic.

- Reopen the sidewalk during non-work hours or continue to provide an alternate route for pedestrians. Reopen the sidewalk when no work is being performed or if no work is scheduled for two weeks or more, and if required, place ramps, barrels, and other protective measures to delineate the route.
- Provide additional traffic control measures to meet the accessibility requirements in Part 6 of the 2003 MUTCD to match the existing facility as a minimum.

(f) Doorways - All open doorways in and around the work site shall be clearly marked using cones and caution tape, construction fencing or other measures approved by the engineer. Accessible 48-inch wide walkways of wood or other hard, non-skid surface shall be provided through, over or around work areas to doorways adjacent to construction activities.

(g) Business/Residential Access and Delineation - When construction requires the closure of a driveway, contact the property's point of contact 14 days in advance of construction. Contractor shall coordinate all driveway closures with the property representative to minimize disruption and inconvenience during construction. Parking and delivery access shall be accommodated during construction either on site or on an adjacent street block.

(h) Trenches - At the end of each working day, backfill trenches to the elevation of the existing pavement, cover trenches with temporary steel plates, or surround trenches with temporary fencing.

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, **pedestrians and bicycles** free of dirt, mud, **gravel** and other harmful materials. **The surface includes sidewalks, bike paths, bike lanes, roadway shoulders or the outside 6 feet of the roadway.**
- Repair damage to surfaces caused by the Contractor's operations
- Maintain any detour or stage construction surfacings not constructed as specified or directed

(2) City Responsibility - The City will be responsible to do the following at City 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 City 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 City 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 City will then assume responsibility for maintenance of the roadway surfaces during the suspension.

(c) Right of City 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.

00220.65 Existing Traffic Control Device Maintenance Responsibility:

(a) General - Maintain existing traffic control signs, such as STOP, YIELD, KEEP RIGHT, and ONE-WAY signs, for the duration of the construction in accordance with (b) and (c) below, unless otherwise directed. If the Contractor fails to comply with the provisions below, the City may perform the work at the Contractor's expense.

(b) Sign Relocation - If a permanent sign must be temporarily relocated, the sign shall be adequately mounted, placed as near as possible to the original locations, and remain clearly visible to approaching traffic without creating a traffic hazard as approved by the Engineer.

(c) Damage/Missing Signs - Damaged, missing or improperly located STOP, YIELD, or ONE-WAY signs shall be replaced or relocated immediately. Provide manual traffic control from the time at which the problem is noted until the time at which it is corrected.

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 and furnishing, installing, moving, operating, maintaining, inspecting, and removing traffic control devices throughout the Project Area according to the standard drawings, the traffic control plan for the Project, these Specifications, or as directed.

00225.01 Abbreviations, Definitions, and Standards:

(a) Abbreviations:

ADT	-	Average Daily Traffic
NCHRP	-	National Cooperative Highway Research Program
NHS	-	National Highway System
TCD	-	Traffic Control Devices
TCM	-	Traffic Control Measures
TCP	-	Traffic Control Plan
TCS	-	Traffic Control Supervisor
TSS	-	Temporary Sign Support
TOD	-	Tourist-Oriented Directional
PCMS	-	Portable Changeable Message Sign
PROM	-	Programmable Read Only Module

(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 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'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:

(a) General - 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 City if the Contractor fails to correct an unsafe condition. Costs for work performed by the City will be deducted from monies due the Contractor.

(b) Horizontal Clearance - When the horizontal clearance for the roadway is less than 19 feet, install "ROAD NARROWS" signs (MUTCD W5-2) signs, identifying the narrowest width of the roadway. Locate these horizontal clearance signs as shown or as directed.

(c) Vertical Clearance - When the vertical clearance is less than 15 feet 3 inches, install low clearance (MUTCD W12-2) signs. The clearance shown on the signs shall be 3 inches less than the shortest height of the opening. Locate these low clearance signs as shown or as directed.

(d) Extended Traffic Queues - When extended traffic queues develop during flagging operations, protect traffic by providing advance flagger(s) and signing according to the "Extended Traffic Queues Detail" shown on ODOT Standard Drawing TM710. The advance flagger is required when the sight distance for oncoming traffic to the end of the queue is less than 675 feet or when traffic queues extend beyond the initial work area warning signs.

Monitor the length of traffic queues and install an additional set of advance flagger signs if traffic queues extend beyond the first set of advance flagger signs. Advance flagger signs include the "BE PREPARED TO STOP" (MUTCD W20-7b) and the Flagger Symbol (MUTCD W20-7a) signs.

Relocate the initial advance warning sign so it is the first sign visible to incoming traffic.

00225.03 Traffic Control Outside Project Site - Provide TCM outside the Project Site 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
- Two copies of a sketch map of the Project showing all existing TOD and business logo signs and a written narrative describing how these signs will be kept in service and protected throughout all the construction stages
- | • A detailed temporary striping plan, [if required](#)
- | • [A designated haul route, if required](#)

| TCP revisions [may](#) be subject to a Contract change order.

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 00747.61(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:

	Minimum
ADT	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.

| **(f) Steel Plates** - When steel plates are installed in travel and bike lanes, appropriate warning signs shall be placed in advance of the plates as shown on the approved TCP.

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 CPL, 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 NCHRP Report 350. Category I devices are low-weight 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.

All work zone TCD on the NHS, except for Category IV trailer mounted devices, are required to comply with the NCHRP 350 report and be crashworthy. Category IV trailer mounted devices are currently exempt from the NCHRP 350 guidelines and do not require crash testing.

00225.11 Temporary Signage - Use temporary signs meeting the requirements of the "Acceptable" category shown in the American Traffic Safety Services Association (ATSSA) "Quality Standards For Work Zone Traffic Control Devices" handbook and 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 "O4" 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
- Use sheet aluminum sign blanks that are without bends, tears, holes, or dents and that have been cleaned to bare metal
- 3/4 inch high-density overlay plywood
- 3/4 inch medium-density overlay plywood
- Extruded aluminum panels

(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) Retroreflective Sheeting (Prismatic Lens) - Use Type "B" sheeting that is Fluorescent Orange (Wide Angle, Prismatic) only on signs that are specifically indicated as using this sheeting in 00225.02 or as shown. The sheeting shall meet the photometric properties of 02910.31.

(5) Roll-up Signs - Use roll-up signs with fluorescent orange roll-up sheeting from the CPL.

(6) Light-Weight Sign Substrate - Use light-weight sign substrates from the CPL.

(b) Sign Supports:

(1) Wood Sign Posts - Provide wood sign posts in the sizes and quantities determined from ODOT Standard Drawing TM670 and according to 02110.40 except preservative treatment is not required.

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

- Conform to ODOT Standard Drawing TM775
- 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

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

- Conform to ODOT Standard Drawing TM775
- 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 according to ODOT Standard Drawing TM775 and according to 02110.40 except preservative treatment is not required.

(5) Square Tube Sign Supports - Provide and use square tube sign supports from the CPL and ODOT Standard Drawing TM681. To determine proper steel post size, gauge, and number of posts for a given sign size, refer to manufacturer specifications.

(c) Sign Covers:

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

- One-piece plywood or other sign cover from the CPL
- 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
- 16 inch square or larger
- Made from an acceptable tightly woven fabric or plastic sheeting

(e) Amber Flashers - Amber flashers shall be:

- Industry standard 8 inch traffic signal head with visors
- Visible the full width of the traveled way and shoulders 1,200 feet from the flashers
- 110/120 V flashers conforming to the flash rate, illuminated period and temperature requirements of [the current edition of ODOT's Standard Specifications for Microcomputer Signal Controller](#) 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 50W, 12 V incandescent lamp

(f) Sign Flag Boards - Use sign flag boards conforming to 02910.10 and [ODOT](#) Standard Drawing TM204.

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 [CPL](#) and conforming to [ODOT](#) Standard Drawing TM750.

(b) Guardrail - Use guardrail conforming to Section 00810 except posts may be untreated. Use guardrail terminals from the [CPL](#) and [ODOT](#) Standard Drawings RD420 and RD425.

Use guardrail materials may be reused provided:

- Timber posts are structurally sound 6" x 8", or 8" x 8", at least 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 conforming to [ODOT](#) Standard Drawing RD500, dated 2002 (three ASTM A 36 M loops, 32 inch height) and the applicable requirements of Section 00820 or use tall concrete barrier conforming to [ODOT](#) Standard Drawing RD545, (two ASTM A 36 M perforated C-shapes, 42 1/2 inch height) and the applicable requirements of Section 00820.

Provide concrete barrier that is in "Acceptable" condition, without cracks, chips, spalls, corroded loops of C-shape connectors. 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 [City](#).

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 from the [CPL](#) and conforming to [ODOT](#) Standard Drawing TM755 or TM760.

(e) Barrier and Guardrail Mounted Reflectors - Use temporary concrete barrier and temporary guardrail reflectors from the [CPL](#).

(f) Glare Shields - Use minimum 24 inch high temporary glare shields from the [CPL](#).

(g) Temporary Pedestrian Fencing - Use temporary pedestrian work zone delineation fencing from the [CPL](#).

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

(a) Tubular Markers - Use tubular markers from the [CPL](#).

(b) Conical Markers - Use conical markers from the [CPL](#).

(c) Surface Mounted Tubular Markers - Use surface mounted tubular markers from the [CPL](#)

(d) Plastic Drums - Use plastic drums from the [CPL](#). Provide drums with Type "OO" encapsulated lens reflective sheeting.

(e) Delineators - Use new delineators from the [CPL](#) 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 Type 1 reflective pavement markers from the CPL.

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

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

| **(g) Temporary Tape** - Use temporary non-removable, temporary removable and temporary non-reflective tape from the CPL.

(h) Striping:

| **(1) Paint** - Use striping paint from the CPL

| **(2) Beads** - Use glass beads from the CPL

00225.14 Temporary Illumination - Materials for temporary illumination shall conform to Sections 00960, 00970, and 02920.

| **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 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 2 feet and a maximum of 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 City.

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

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

| **(a) Sequential Arrow Signs** - Use trailer mounted Type "C" sequential arrow signs from the CPL.

| **(b) Portable Changeable Message Signs** - Use trailer mounted PCMS's from the CPL.

00225.17 Temporary illumination for Nighttime Flaggers - Use temporary illumination equipment conforming to the following.

- Provide an illuminated area of at least 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.

00225.18 Temporary Pedestrian Walkways - Materials for temporary walks shall be constructed using Douglas Fir-Larch No. 2 without knots or better. The walk shall be a minimum of 7 feet wide with 42 inch high hand railing on both sides of the walk. The lumber used shall be a minimum of 2" x 8" except for the hand railing which shall be a minimum of 2" x 4" with 4" x 4" posts. Apply a non-skid material, with a minimum friction coefficient of 0.6, to the walking surfaces.

Submit a design for the proposed walks for review before construction begins.

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 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 object or electrical shock or burns.
- High visible "STOP/SLOW" sign paddles conforming to the MUTCD and fabricated using encapsulated lens reflective sheeting or brighter, or flashing "STOP/SLOW" sign paddles from the CPL.
- Use a "STOP/SLOW" paddle for advance flagging. Cover the "STOP" face of the "STOP/SLOW" paddle during flagging operations.
- Portable, self contained two-way radio and repeaters, as required, with a range suitable for communications throughout the Project limits.

- Illuminated stand area of high visibility at night.

00225.28 Traffic Control Supervisor (TCS) - 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" ([MUTCD G20-4](#)) 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 that meet the following requirements:

- Have a valid drivers license
- Are at least 18 years old
- Have the mental and physical ability to provide timely, clear, and positive guidance to the traveling public
- Have a sense of responsibility for public and work crew safety
- Have a professional appearance
- Have a courteous but firm manner

- Have completed an approved work zone traffic control flagging course within the past three years and have in their possession a current, official state Flagger Certification card from either Oregon, Washington, Idaho or Montana

00225.32 Traffic Control Supervisor (TCS) - 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 [conforming to 00225.28](#)
- 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 possess a current official Oregon Department of Transportation (ODOT) TCS card. A TCS with a current card from another State Department of Transportation or from the American Traffic Safety Services Association may obtain an ODOT TCS card upon completion of ODOT's one-day Recertification Class.

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 sign 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 supervision over all TCM 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. Notify the Engineer within 24 hours of designating the TCS for the following 24-hour period. Make succeeding notifications within 24 hours every time a subsequent TCS is appointed to the Project.

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 complete.
- Remove TCD in [the reverse sequence of the](#) 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."

Install temporary signs according to 00940.47.

Provide all temporary signing according to the plan 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 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 [ODOT](#) Standard Drawing TM676.

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 12 inches in diameter and 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 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 from CPL

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

- Lowest point of the sign is at least 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 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 or when utility conflict exists
- Position the TSS behind other channelization devices
- When TSS, as shown on ODOT Standard Drawing TM775, are not in use, move the sign support outside the clear zone or cover and delineate them with Type III barricades.

(5) Square Tube Sign Supports - Square tube sign supports may be used as a substitute for wood sign posts. Install square tube sign supports according to ODOT Standard Drawing TM670 and TM681.

(c) Sign Flag Boards and Sign Flags - Install two sign flag boards, according to TM204, 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 Flasher - 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 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 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 (mph)	Flare Rate
65	19:1
55	16:1
50	14:1
45	13:1
40	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 4 inches high, as approved
- Place and fill the modules with the weight of dry sand according to the appropriate [ODOT](#) Standard Drawing TM755 or TM760
- 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 [ODOT](#) Standard Drawing TM755 or TM760
- Use attenuators designed for the original pre-construction posted speed
- For narrow site systems, pin the first two barrier sections to the asphalt concrete pavement or attach the first two barrier sections to the concrete pavement as shown

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

- Space [no further apart than 50](#) foot centers on tangents and 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 1,000 pound vertical pull and to prevent horizontal and rotational displacement. Maximum spacing between anchor bolts or modular units shall be 30 inches
- Repair any damage to the concrete barrier caused by the Contractor's operations at no expense to the [City](#)

- 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 according to Section 00270.

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 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 Marker - 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 makers spaced 4.5 feet apart to simulate a 9 foot skip line with a gap of 15 feet to the next skip line.
- Single markers spaced 5 feet apart for solid, no passing lines.
- Double markers spaced 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 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 no further apart than 50 feet on tangent and 25 feet 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 re-opening the roadway to traffic.

If a segment of roadway is not completed when the roadway is re-opened 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 temporary carry traffic
- When temporary striping is determined as not practical

(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.

For temporary striping on new bridge deck surfaces, use temporary removable tape.

(1) Base Courses - On pavement base courses apply bead binder at a thickness of 15 mils wet, equivalent to 17 gallons/mile for a 4 inch wide solid line. Apply glass beads at a rate of 5 pounds/gallon of paint. Apply 4 inch wide by 9 foot long stripes with 15 foot gaps for skip striping. Apply 4 inch wide, continuous strip 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, as directed.

(3) Layout - Provide TCM, personnel, equipment and material to layout the temporary striping as shown or directed.

(h) 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 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.

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.

(i) Pavement Edge Delineation - Place tubular or conical markers to delineate the edge of pavement when construction work obscures the painted shoulder stripe (fog line) or when paving creates an abrupt or sloped edge drop-off 1 inch or more in height along the shoulder. Locate and maintain the markers as follows:

- Between existing delineators
- Space markers as shown for traffic delineators on [ODOT Standard Drawing TM570](#), except do not exceed [50 feet on tangent or 25 feet on curves](#).
- Patrol daily and restore them to their 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 strip has been painted and new delineators are in place
- Between traffic and the abrupt edge
- Place delineation immediately

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.

Install temporary illumination in a manner that does not shine the light directly into approaching traffic.

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 City, if the Contractor is not able to respond to a maintenance request, City 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:

- Mount at a height of 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:

- Mount at a height of 7 feet from bottom of sign to ground
- Entire message is displayed within 75 seconds
- Use no more than two displays within any message cycle
- Separate two PCMS used in sequence by 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
- Use clear, concise messages, approved by the Engineer, that convey applicable work zone information to the motorist.

(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. All flaggers, including advance flaggers, shall use 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.

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

00225.48 Traffic Control Supervisor (TCS) - 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.

00225.50 Temporary Pedestrian Walkways - Construct temporary pedestrian access shown on the traffic control plans where the crosswalks have been excavated in the Project. Transitions from the temporary walk to the sidewalks shall comply with the Americans with Disabilities (ADA) regulations.

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 City at the City'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 temporary impact attenuator, truck mounted attenuator, or narrow site attenuator systems are used, have enough modules, cartridges, components, and replacement parts on-site to replace one complete installation. Re-stock replacement parts within 24 hours of use. All modules, cartridges, components, and replacement parts not used, remain the property of the Contractor.

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

00225.68 Temporary Pedestrian Walkways - Keep walking surfaces clean of debris at all times. Inspect non-skid surfaces weekly for signs of wear and correct as needed. Check slope of transition from walkway to sidewalk for compliance with ADA regulations each time walkway is adjusted or relocated.

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 measures will be limited to the following, 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
- The replacement of TCD and TCM damaged by public traffic and replaced by the Contractor
- The quantities approved in contract change orders

(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.

Route markers and other signs fastened to the face of larger signs will be measured as separate signs.

(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 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 12 1/2 feet. For purposes of this subsection, a "standard section" is defined as 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 of 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 connection 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 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 - When pedestrian fencing is shown, the work will be measured according to Section 00270.

(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 tape will be measured as follows:

- **Removable and Non-Removable Tape** - Temporary removable and temporary non-removable tape will be determined by measuring the actual length of the 4 inch wide tape in place, as accepted.
- **Non Reflective Tape** - Temporary non-reflective tape will be determined by measuring the actual length of the 6 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 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 4 inches. If the plans call for, or the Engineer requires, stripes other than nominal 4 inch width, the measurement will be adjusted by converting to equivalent length of nominal 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 4 inch line removed. The quantity of stripe removal and durable strip removal will be the computed length of lines removed based on a nominal width of 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 4 inches wide. If the plans call for, or the Engineer requires, removal of standard 8 inch or 12 inch wide stripes, the computed length will be adjusted by converting to equivalent length of 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 - No separate measurement will be made for mobilization to perform striping, stripe removal, or durable stripe removal or 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 and Temporary Walkways – Quantities for pilot cars and temporary pedestrian walkways will be determined as follows:

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

(b) Temporary Pedestrian Walkways - Quantities of temporary pedestrian walkways will be measured from end to end of the walkway along the line and grade of each run including the wooden transitions on each end of the walkway.

Payment

00225.90 **General** – Work covered under this Section will be paid by one of the following methods:

(a) Method "A" - Unit Basis:

(1) 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, except temporary signing and temporary electrical signs 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, 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

(2) 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
- Moving temporary impact attenuators of any type to and from Contractor's stockpile areas
- Providing, surfacing, maintaining, removing, and restoring the alternate pedestrian route

(b) 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.

(c) 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:

Pay Item	Unit of Measurement
(a) Temporary Signs.....	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 follows:

Pay Item	Unit of Measurement
(a) Temporary Barricades, Type_____	Each
(b) Temporary Guardrail, Type__ Reflectorized	Foot
(c) Temporary Guardrail Terminals, _____	Each
(d) Temporary Guardrail Transition	Each
(e) Temporary Bridge Connections	Each
(f) Temporary Concrete Barrier, Reflectorized	Foot
(g) Moving Temporary Concrete Barrier	Foot
(h) Temporary Impact Attenuator, _____	Each
(i) Moving Temporary Impact Attenuators	Each
(j) Temporary Glare Shields	Foot
(k) Moving Temporary Glare Shields	Foot
(l) Temporary Concrete Barrier, Tall, Reflectorized	Foot
(m) Temporary Pedestrian Walkways	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. No separate or additional payment will be made for providing temporary pedestrian ramps or ramping materials.

Item (f) will payment in full for the barrier. Item (f) includes tall concrete barrier.

Item (g) will 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 from one location of actual use to another, 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.

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

Item (m) will be payment in full for the walkway, railings, non-skid surface, and wooden transitions. No separate payment will be made for adjusting walkways as needed during construction.

| When pedestrian fencing is installed, the work will be paid for according to Section 00270.

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.....	Foot
(h)	Temporary Striping.....	Foot
(i)	Stripe Removal.....	Foot
(j)	Durable Stripe Removal	Foot
(k)	Striping and Stripe Removal	Each
(l)	Temporary Non-Reflective Tape	Foot

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 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), (h), (i), (j), (k), and (l) 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:

	Pay Item	Unit of Measurement
(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 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 00270 - Temporary Fences

Description

00270.00 Scope - This work consists of constructing, maintaining, and removing temporary fences, gates, and gateways as shown or directed.

00270.01 Definitions:

Agency - A city, county, state organization, special district or political subdivision, as applicable, which is impacted by the Contract with the Contractor.

Exclusion Zone - An area established by the City, an outside agency, or a private party having jurisdiction or ownership rights to prohibit work related activities from occurring in the specified area. An exclusion zone may include private property, an environmental conservation or protection zone, a waterway, a drainage reserve or a mitigation site.

Materials

00270.10 Material - Provide materials meeting the following requirements:

Barbed Wire	03010.10
Chain Link Fabric	03010.30
Commercial Grade Concrete	00440
Concrete Barrier.....	00225.12(c)
Fence Gates	03010.60
Fence Posts, Braces, and Appurtenances.....	02110.30, 03010.50
Gabion Wire Mesh Fabric	03010.70(i)
Pickets	03010.31
Wood Fence Posts and Braces	02110.30
Woven Wire Fabric	03010.20

00270.11 Plastic Mesh – Use high-visibility orange colored extruded plastic mesh manufactured from polypropylene with a minimum weight of 4 ounces per square yard.

Construction

00270.40 General - Construct temporary fences, gates, and gateways according to the applicable parts of Section 01050.

00270.41 Rock Protection Fence - Construct concrete barrier according to Section 00820. Attach fence to barrier as shown.

00270.42 Restrictions for Exclusion Zones - If the plans depict an exclusion zone adjacent to the project work limits, work is prohibited within this area.

00270.43 Exclusion Zone - Construct the temporary fencing to establish a visible barrier between the exclusion zone and the work limits. Extend the fencing beyond the limits of the exclusion zone where encroachment could occur as shown on the plans.

Maintenance

00270.60 General - Maintain temporary fences and appurtenances in good condition. Keep the fences in place until they are no longer needed.

00270.61 Exclusion Zones - Inspect the condition of the exclusion zone fence daily. Maintain the fence for the project duration or until all work activity in the area closest to the encroachment zone is complete.

Finishing and Cleaning Up

00270.70 General - When temporary fences and appurtenances are no longer needed remove and dispose of them according to the applicable parts of Section 00310 except fence fabric, fence wire, posts, and braces may be used in permanent fence installations if the following conditions are met:

- The material was new when installed for temporary purposes
- The material has not been used on previous projects
- The material meets the requirements of 01050.10
- The material is undamaged
- The material is acceptable to the Engineer

Measurement

00270.80 Fence and Gateways - The quantities of temporary fence will be measured on the length basis of each type of temporary fence. Gateways will be considered as fence of the type which adjoins them and will be measured as a continuing part of that type of fence. Measurement will be from center to center of posts, measured along the line and grade of each separate continuous run of fence as constructed exclusive of gates.

00270.81 Gates - The quantities of temporary gates will be measured on a unit basis per each by actual count regardless of size or type.

00270.82 Rock Protection Fence - The quantities of barrier mounted rock protection fence will be measured on the length basis. Measurement will be from center to center of posts, measured along the line and grade of each separate continuous run.

Payment

00270.90 General - The accepted quantities of temporary fences and temporary gates will be paid for at the Contract price per unit of measurement for the following items:

	Pay Item	Unit of Measurement
(a)	Temporary Type ____ Fence	Foot
(b)	Temporary ____ Chain Link Fence	Foot
(c)	Temporary Type Orange Plastic Mesh Fence	Foot
(d)	Temporary Gates	Each
(e)	Temporary Rock Protection Fence, Barrier Mounted.....	Foot

In items (a) and (b) the type of fence will be inserted in the blank.

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

Section 00275 - Temporary Plating

Description

00275.00 Scope - This work consists of furnishing, installing, maintaining, and removing temporary plating as shown or directed.

Materials

00275.10 Material - Provide material meeting the requirements of 02530.10 in grade A-36 or better.

00275.11 Plating Coating - Coating shall be an Acrylic Modified Alkyd Aggregate Coating. The plate coating shall be suitable for steel traffic plates and applied in accordance with the manufacturer's instructions. Use Number 222 series FLOOR-GRIP Alkyd Deck Coating, manufactured by Farwest Paint Manufacturing or approved equal. Paint shall be lead free Orange #229 or similar color.

Construction

00275.40 General - Backfill, place temporary fencing around, or place plating over all trenches when not performing work or as directed.

Install temporary plating such that the roadway or sidewalk is available for access during non-working hours.

Do not use temporary plates if the forecast temperature is to be less than 35° F and on grades greater than 8% slope unless otherwise directed.

00275.41 Signage - Provide advance warning signage for all motorists, cyclists, and pedestrians warning them that a temporary plate is in use.

00275.42 Plate Thickness and Span - The following table list the minimum plate thickness and maximum trench span for an HS-21-44 load configuration.

Plate Thickness Minimum	Trench Span Maximum
3/4 inch	2 ft - 6 in
7/8 inch	3 ft - 4 in
1 inch	4 ft - 5 in
1-1/4 inch	7 ft - 0 in
1-1/2 inch	10 ft - 0 in

If the span is greater than 10 feet, submit a stamped, engineered temporary plating plan for review. Multiple stacked plates are not allowed.

00275.43 Plate Placement - Install plates in the following manner:

- Pin temporary plates to prevent movement under traffic
- Ramp edges of temporary plates with asphalt concrete pavement to provide a smooth transition
- On uneven or crowned streets, shim the temporary plate
- Plates shall be in full contact with undisturbed ground/surface for a minimum of 2 feet on either side of the trench

00275.44 Anti-skid Coating Application - Apply a coating to temporary plates as an anti-skid surface treatment to help prevent slipping by cyclists and pedestrians when required.

Maintenance

00275.60 General - Maintain temporary plating in good condition. Re-align any plates that have been moved by traffic. Re-apply any missing anti-skid coating.

Measurement

00275.80 Measurement - There will be no separate measurement of temporary plating.

Advance warning signs will be measured according to Section 00225.

Temporary fencing will be measured according to Section 00270.

Payment

00275.90 Payment - There will be no separate payment for temporary plating, as the cost will be included in the payment for the particular items of work using temporary plating.

Payment for advance warning signs will be according to Section 00225.

Payment for temporary fencing will be according to Section 00270.

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 City'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 City. 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 City Controlled Lands Erosion and Sediment Control Plan - For work on all City-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 City'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 City's Erosion and Sediment Control Manual revised as of March 1, 2000 along with Title 10 of the City Code.

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 [City](#).

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-[City](#) Controlled Lands Erosion and Sediment Control Plan - For work on all non-[City](#) 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 City harmless for all consequences related to the Contractor's use of the property.
- 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 require work on non-City 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 City for review.

00280.04 Erosion and Sediment Control Manager (ESCM) - Designate and provide a representative, experienced in all disciplines of 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.

00280.05 Project Signing - Install number of erosion signs indicated, along with project information and contact number as shown in the Special Provisions. Place and mount the signs according to ODOT Standard Drawing TM670. Orientate the signs so they are visible to traffic, bicyclists, and pedestrians. Install these signs before performing clearing, grading, or other land alteration activities.

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 18" x 6" x 30" plastic mesh bags with 1/2 inch openings filled with approximately 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 4 inches and 2 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 manufacturer's recommendations.

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

- **Aggregate** - Aggregate with a maximum size between 4 inches and 2 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 4 inches and 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 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 6 inches and 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** - 19 gage steel-wire mesh with 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 4 inches and 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 weight of at least 1.35 pounds/foot.
 - **Type 4 Inlet Protection** - Use minimum 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 CPL. 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 8" x 8" x 16", 29 pound concrete building blocks with two 5 1/2" x 5 1/2" openings and 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 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 2 pounds/square foot.
- **Type F** - Flexible channel liner for shear stress from 0 to 4 pounds/square foot.
- **Type G** - Flexible channel liner for shear stress from 0 to 6 pounds/square foot.
- **Type H** - Flexible channel liner for shear stress from 0 to 8 pounds/square foot.

Provide check slot material and fasteners as follows:

- **Check Slot:**
 - **Channel Application** - Compacted class 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** - 14 gage steel wire staples. 1 inch "U" width with a length of 6 inches minimum for cohesive soils and 8 inches minimum for non-cohesive soils.
 - **Pins** - 3/16 inch diameter steel pin with a 2 inch diameter steel washer secured at the head of the pin with a length of 18 inches minimum for cohesive soils and 24 inches minimum for non-cohesive soils.

Provide the manufacturer's material and installation specifications to the [City](#) 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 6 mil thick polyethylene plastic sheeting.
- **Anchoring System** - Anchor system consisting of minimum 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 weight of at least 1.35 pounds/foot.
- **Rock** - Class 50 riprap conforming to Section 00390.

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

(m) Temporary Scour Holes - Provide class 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 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 2.75 pounds/cubic foot, in tubular plastic netting meeting the following requirements:
 - 8 inch to 10 inch diameter size
 - Minimum strand thickness of 0.003 inch
 - Knot thickness of 1/16 inch
 - 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 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 4 inches and 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 CPL.
- **Stakes** - Provide the following size stakes:
 - Biofilter Bags - Use minimum 1" x 2" x 18" wood posts
 - Brush Barrier - Use minimum 1" x 2" x 18" wood posts
 - Straw Bales - Use minimum 1 1/2" x 1 1/2" x 36" wood posts

- **Wattle** - Use minimum 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 weight of at least 1.35 pounds/foot.
 - **Unsupported Sediment Fence** - 1 1/2" x 1 1/2" x 48" minimum wooden posts.
- **Wire Mesh** - Galvanized wire mesh with 2x2 - W0.5xW0.5 or 4x2 - W0.5xW0.5 openings or horizontal and vertical self supporting, prior to fastening to posts, mesh with a minimum tensile strength of 70 ksi meeting the requirements of ASTM A 82.

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

(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** - 1 1/2" - 0, 1" - 0, or 3/4" - 0 aggregate for aggregate base meeting the requirements of Section 00641.
- **Aggregate** - Aggregate with maximum size between 6 inches and 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 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 4 inches and 1 inch meeting the requirements of 00330.16.

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

- **Aggregate** - 1 1/2" - 0, 1" - 0, or 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).

(v) Coir Filter Fabric - Made of rope fashioned from coconut husk fibers that is either woven or unwoven.

(w) Temporary Signing - Use temporary signing conforming to 00225.11 for Erosion Concerns? signs.

Construction

00280.40 Installation - Install erosion and sediment control devices as shown and according to the City's Erosion and Sediment Control Manual. Install erosion and sediment control devices before performing clearing, grading, or other land alteration activities. Ensure no visible and measurable sediment or pollutants leave the Project boundaries, enter drainage systems or waterways, or violate applicable water standards.

For purposes of this requirement, "visible and measurable" is defined as:

- Deposits or tracking of mud, dirt, sediment or similar material exceeding 1/2 cubic foot in volume on any private or public street or adjacent property, or into any storm or surface water drainage system, either by direct deposit, dropping or discharge, or as a result of erosion; or
- Evidence of concentrated flows of water over bare soils; turbid or sediment-laden flows; or evidence of on-site erosion, such as rivulets on bare slopes where the flow of water is not filtered or captured on the site; or
- Earth slides, mudflows, earth sloughing, or other earth movement off the Project site.

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 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 City 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 City 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 City 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:

- **October 1 through April 30** - Stabilize all areas immediately, but no later than within 24 hours of exposure.
- **May 1 through September 30** - Stabilize all areas as soon as practical, but no later than within seven days of exposure.

(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 un-stabilized if approved by the City.

(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 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 non-erosive 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 the liquid stabilizer emulsion with water at a rate of one part emulsion to 30 parts water. Apply the diluted mixture at a rate of 865 gallons/acre unless the manufacturer recommends a greater rate of application.
- **Dry Powder Tackifier** - Apply at a rate of 140 pounds/acre unless the manufacturer recommends a greater rate of application.

(g) Flow Spreader - A flow spreader is a 12 inch to 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 non-erosive 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 - Ensure 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 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 2 inch deep, in loose condition, at a rate between 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 [City](#) 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 29 gallons/acre unless the manufacture recommends a greater rate of application.
- **Dry Powder Tackifier** - Apply at 80 pounds/acre with 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 1/4 inch thick, having dull edges and spaced no more than 9 inches apart.
- **Sheep's-Foot Roller** - Modified sheep's-foot roller equipped with straight studs, made of approximately 3/4 inch steel plate, placed approximately 8 inches apart and staggered. Ensure that the studs are not less than 6 inches long nor more than 6 inches wide, and rounded to prevent withdrawing the straw from the soil. Use a roller with enough weight to incorporate the straw sufficiently into the soil providing a uniform surface cover.

(k) Plastic Sheetting - 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 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 an 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.

(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** - 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** - 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 City 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 ensure proper implementation of the ESCP
- Accompany the City'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 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 [City'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 [City](#) if 5/8 inch or more of rainfall occurs within a 24 hour period. As soon as practicable, but not later than 24 hours, after 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 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 [City](#) 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 [City](#).

(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%. [Do not flush sediment into the inserts or other forms of inlet protection for the drainage system unless directed.](#)

(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 [and storm or sanitary facilities.](#)

(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 - Re-stabilize 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.

00280.65 Sweeping - Sweeping shall be done using a regenerative air or vacuum pickup sweeper together with proper dust control methods to assure sediments and pollutants do not leave the Project. Mechanical sweepers may be used only for debris pickup after cold plane pavement removal. Clean and sweep the Project to remove sediment, particulate matter and erosion accumulation. Adjust the frequency of sweeping to ensure compliance with the ESCP.

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, materials, and erosion control signing 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 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 foot, and computed to the square foot or 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:

Pay Item	Unit of Measurement
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 Foot
Sand Bags	Each or Foot
Sediment Barrier.....	Each or Foot
Diversion Dike/Swale.....	Foot
Temporary Drainage Curbs	Foot
Flow Spreader	Foot
Sediment Fence, Supported	Foot
Sediment Fence, Unsupported	Foot
Temporary Slope Drains.....	Foot
Plastic Sheetting	Square Foot
Sediment Mat.....	Square Foot
Chemical Soil Stabilization	Square Foot or Acre
Matting	Square Foot or Acre
Temporary Mulching	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

- Erosion control signs

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 earned
- The remaining 25% when the Project is completed 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

[Natural Resources Conservation Services](#)

Army, Department of
National Marine Fisheries Service

Defense, Department of

Energy, Department of

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 Services
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 Transportation

Environmental Quality, Department of

Fish and Wildlife, 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, Board 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.

If above-ground fuel storage will exceed 660 gallons per container or 1,320 gallons aggregate, develop and submit for approval 10 days before the pre-construction conference, a spill prevention control and countermeasures (SPCC) plan, signed and stamped by a professional engineer, in accordance with 40 CFR 112. The SPCC plan requirement is in addition to the PCP requirement described in 00290.30(b). Employees shall be trained as specified in 40 CFR 112 and the SPCC plan. Maintain a copy of the SPCC plan on-site at all times during construction activities, readily available to employees and inspectors.

(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 (d)(2) 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 Owner 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 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 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 00180.60(d)(1).

(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.
- 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 [submittal](#), 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 0310.43.
- Limit water leakage from trucks carrying saturated soils to less than 1 gallon per hour before allowing them to leave the Project Site.
- Comply with the erosion and sediment control requirements of Section 00280.
- [Protect potable water system from contamination.](#)

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

Any penalties assessed against the [City](#) 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(m).

(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 [upon request](#).

(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 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 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 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.
- The Contractor's attention is directed to City of Portland Ordinance No. 159276 which describes noise control regulations. Comply with the applicable noise control requirements of the ordinance for Project work.

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 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.

Every effort has been made to identify all sensitive cultural sites on the Project. There are no known sensitive cultural sites on this project however, if the Contractor finds a previously undiscovered sensitive cultural site, immediately cease all activities at that site, follow procedures under Section 00290.50 (Protection of Cultural Resources), and notify the Engineer. If the Contractor inadvertently disturbs unknown sensitive cultural sites, but immediately ceases all activities and follows the procedures of 00290.50, the Owner, to the extent permitted by Article XI, section 7 of the Oregon Constitution and by the Oregon Tort Claims Act, will indemnify, within the limits of the Tort Claims Act, the Contractor for costs associated with monitoring, recovery, site restoration or other required archaeological work, provided neither the Owner nor the State shall be required to indemnify the Contractor for such costs resulting from, arising out of or relating to the willful misconduct, negligence or other wrongful acts attributable to the Contractor or other persons on the Project site.

Delays to work due to new cultural resource finds will be considered for exclusion from contract time according to [00180.60\(d\)\(1\)](#).

Work required for monitoring and site restoration for newly discovered sensitive cultural sites encountered by the Contractor will be paid according to Section 00197.

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 [City](#) 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.

Section 00291 – Contaminated Media

Description

00291.00 Scope – This work includes the preparation of specific work plans and the excavation, handling, and disposal of Contaminated Media. Work shall include, but is not limited to the following:

- Developing the Health and Safety Plan
- Development of the Contaminated Media Disposal Plan
- Record Keeping
- Site Excavation Monitoring
- Material Excavation, Handling and Disposal.

00291.02 Environmental Site Assessment Report - When an environmental site assessment report has been performed that evaluated the area for on-site environmental contamination, the environmental sampling and data interpretation reports will be available for review upon request for the Contractor. The City makes no representation or guarantees concerning any reports, assessments or investigations concerning site conditions, or any information contained therein.

00291.03 Abbreviations and Definitions:

(a) Abbreviations:

CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
CIH	-	Certified Industrial Hygienist
CMDP	-	Contaminated Media Disposal Plan
CMMZ	-	Contaminated Media Management Zone
CPR	-	Cardiopulmonary Resuscitation
HASP	-	Health and Safety Plan
PCB	-	Polychlorinated biphenyl
RCRA	-	Resource, Conservation, and Recovery Act
UST	-	Underground Storage Tanks

(b) Definitions:

Contaminated Media - Soil, water, sludge, free product, UST, buried abandoned utility lines containing residual or free product, solid waste, treated wood waste, chemical containers, asbestos containing material, lead based paint, PCB containing, materials, or other solid, liquid or gas substances with hazardous substance levels above background levels. Note: The background concentration of organic hazardous substances is zero. The background concentrations of inorganic substances (i.e., metals) are site specific.

Contaminated Media Management Zone - The CMMZ is a restricted area within the project site where Contaminated Media is managed. The CMMZ includes the following zones: CM-Loading, and other related zone(s). The CMDP defines the activities allowed in each of these zones.

Environmental Laws - Any applicable statute, law, ordinance, order, consent decree, judgement, permit, license, code, covenant, deed, common law, treaty, convention, or other requirement pertaining to the protection of the environment, health or safety, natural resource, conservation, wildlife, waste management or disposal, contaminated media, hazardous substances or pollution including, but not limited to, regulation of releases to air, land, water, and groundwater.

Hazardous Substances - Those substances or materials as defined in the Environmental Protection Agency Region 9 Preliminary Remediation Goals and in the Oregon Revised Statutes 340-122, as amended. Hazardous Substances are defined by the Oregon Department of Environmental Quality (DEQ) Rules (OAR Chapter 340, Division 122) as:

- Substances defined as hazardous substances in Section 101 (14) of the Federal CERCLA
- Oil, including gasoline, fuel oil, diesel, lubricating oil, petroleum hydrocarbons or other petroleum products.

Identified Contaminated Area - Any project areas shown or described in the Special Provisions where Contaminated Media has been identified.

Oregon State-Only Hazardous Waste - As defined in OAR 340-101-033.

RCRA Hazardous Waste - All waste material, including excavation spoils, which requires management, handling, transport, treatment, storage or disposal according to the requirements of the Federal RCRA and associated regulations (42 U.S.C. § 6901 et seq. and 40 CFR Parts 260 and 261 et seq.).

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment including the abandonment or discarding of barrels, containers and other closed receptacles containing any hazardous substance, or threat thereof.

Solid Waste Disposal or Treatment Facility - Defined as a solid waste landfill or other facilities permitted by federal, state, and local agencies to receive and dispose or treat contaminated media.

00291.04 Disposal Facilities - Only transport contaminated media to facilities, listed in the Special Provisions or approved equal, for disposal of contaminated media after receiving confirmation from the facility operator that will accept the media.

Only permitted disposal facilities, Subtitle-D- Landfill for contaminated media or Subtitle-C- Landfill for hazardous waste or approved equal shall be used for offsite disposal. Unless otherwise stated the Contractor will contact the approved disposal facility, arrange for the disposal permits and all associated permitting, including any required manifesting.

00291.05 Submittals - Provide the following informational submittals and documentation prior to commencing work within the Contaminated Media areas. These submittals do not require any action by the City and will not be returned.

- The proposed HASP for the project meeting the terms and conditions of this Section within 30 days of the Notice of Award.
- All modifications to the HASP and any task-specific HASP's developed for this project.
- The proposed CMDP for the project meeting the terms and conditions of this Section within 30 days of the Notice of Award.
- Name and qualifications of the CIH that prepared the HASP, and Contractor's Safety Representative.
- Updated Traffic Control Plan to include contaminated media management activities
- Worker training certifications and related records.
- Security and training logs and worker compliance agreements.
- Safety inspection logs, daily health and safety reports, and a closeout safety report.
- Closeout CMDP.
- Emergency and accident reports.

00291.06 Environmental Laws and Hazardous Substances Encountered During Construction - Comply with all Environmental Laws and all federal, state, and local laws regarding Hazardous Substances. In the event of a conflict between the Contract Documents and those laws, the more stringent shall apply. In the event the Contractor, during the course of construction or during any other activities authorized under this Contract, should encounter Hazardous Substances or any other materials suspected of posing a threat to employees, the public, or the environment, do the following:

- Immediately cease all work activities in and around any area of the Project where Hazardous Substances have been encountered or discovered, and take appropriate measures in compliance with all applicable Environmental Laws to stop or minimize the immediate spread or release of any Hazardous Substances.

- Remove the affected employees and secure access to the area.
- Immediately contact the Engineer and deliver an oral assessment of the site conditions. Within 48 hours of the incident, deliver to the Engineer a written assessment of the occurrence, current site conditions and all actions taken.
- In order to prevent rain or storm water runoff from contacting the suspected Hazardous Substances, immediately place appropriate control measures or devices on or adjacent to the affected area in such a manner that does not disturb the site or the suspected Hazardous Substance.

Subcontracting of work does not relieve the Contractor of any of its obligations, including the Contractor's obligation to comply with all Environmental Laws as defined herein. The Contract Documents do not authorize the Contractor to remove, remediate, handle, transport, treat, or dispose of Hazardous Substances unless such activities are specifically required by the Contract.

Properly handle, store, use and dispose of any Hazardous Substances brought onto the work site in accordance with all applicable Environmental Laws as defined herein. In the event of a spill or release of any Hazardous Substances brought on to the work site by the Contractor, the Contractor shall follow the procedures set forth above.

Comply with Oregon law and Oregon DEQ requirements regarding PCB's, radioactive waste, UST, and actions to abate health hazards.

Comply with Oregon law, DEQ requirements and federal, state and local laws regarding air pollution, noise control, water pollution, oil spillage and used-oil disposal and asbestos abatement.

Prevent, control and abate pollution of federal, state, county and municipal waters as required by the Contract Plans and Specifications and local, state and federal regulations and requirements. No condition of this Contract releases the Contractor from any responsibilities or requirements under any environmental statutes, regulations or Permits. In the event of conflict between the Contract requirements and pollution control laws, rules or regulations, the more restrictive laws apply.

Comply with federal, state and local laws and regulations regarding Environmental Laws, including, but not limited to, those regarding employee health and safety and endangered and threatened species.

Complete a City BES Chain of Custody Form whenever a soil sample is collected for the purpose of laboratory chemical analysis. Completed forms shall be provided to the Engineer with all samples. Samples shall be stored in closed, waterproof plastic bags.

Work Plans

00291.07 Health and Safety Plan - Prepare a project HASP to protect workers, the public and the environment while constructing the project in areas with known or discovered Contaminated Media. The HASP shall be developed and implemented in association with the Contractor's normal construction safety program, certified by a CIH in good standing.

Submit to the Engineer within 30 days of the Notice of Award. Submission to the City does not relieve the Contractor of its safety responsibilities nor does it impose responsibility or legal liability upon the City for safety.

The HASP shall be distributed to all on-site workers and employees. Workers and employees are required to read the HASP, sign a compliance agreement, and abide by all of its provisions. The HASP shall be displayed or made available at the site at all times.

Revise the HASP plan as needed whenever new information about Contaminated Media or other potential site hazards is obtained. The Contractor's CIH or Safety Representative, as appropriate shall certify any changes, deletions, or additions to the HASP. All proposed changes, deletions or additions to the HASP shall be submitted to the City prior to implementation.

The HASP shall conform to the requirements of 29 CFR 1926.65 and all applicable federal, state, and local statutes, rules, regulations and ordinances. The HASP may be more stringent than, but shall be in accordance with the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.

The HASP shall include, but is not limited to, the following:

(a) Key Personnel - Identification of key personnel authorized to be responsible for site safety and delegation of responsibilities for ensuring compliance with the HASP. Provide the name and qualifications of:

- CIH
- Contractor's Safety Representative(s)

(b) Site Description and Location - Site address or location description.

(c) Site Control Measures - Site control measures will be defined and identified on a site map.

(d) Pre-Entry Briefings - Descriptions of pre-entry briefings to be held prior to initiation of work in areas with known contamination at the construction site, and at such other times as necessary to ensure that workers are appraised of HASP provisions and that such plan is adequate and being followed.

(e) Chemical Hazard Analysis - Identify and establish appropriate procedures for addressing suspected conditions or activities that may pose routine occupational hazards or immediate danger to life or health of site personnel. The HASP must describe the risks associated with each task and the actions to be taken to mitigate existing hazards and to make the work environment less hazardous.

(f) Contaminated Media Management Zones - Designate work zone(s) including Contaminated Media Management, contamination reduction, and support zone(s) to reduce the potential for contaminant migration and minimize personnel exposure to Contaminated Media. Describe the procedures for informing all persons at the site about CMMZ requirements. The plan must set forth the specific criteria and thresholds for designation of work zones.

(g) Personal Protective Equipment - Address levels of personal protection to be employed during work, setting forth specific criteria and thresholds for choices of protective clothing, equipment, and respirators based upon the types and concentrations of contaminants and exposure pathways that may be encountered by site workers during various site operations.

(h) Environmental Monitoring - Set forth a program for the determination of personal exposure monitoring requirements including air monitoring in the work area(s) as needed. List and describe equipment to be used.

(i) Decontamination Procedures - Set forth procedures for decontamination of personnel, materials, and equipment as needed.

(j) Confined Space Procedures - Procedures for confined spaces shall be developed in accordance with all applicable federal, state and local statutes, rules, regulations and ordinances.

(k) Spill Prevention and Cleanup - Describe the equipment and procedures to prevent releases of hazardous substances to the soil and water from the construction equipment and materials. The plan shall also describe the equipment and procedures to be used to immediately cleanup any such releases, if they occur.

(l) Storage and Handling - With information from 00291.42, develop and coordinate procedures for storage, handling and disposal of any Contaminated Media or contaminated debris to promote safe working conditions in accordance with the HASP and all applicable federal, state, and local statutes, rules, regulations and ordinances.

(m) Emergency Response - Develop an Emergency Response Plan for safe and effective response to emergencies which establishes emergency procedures including, but not limited to escape routes, signals for evacuation workers, emergency communications, procedures for communication with personnel, and response to fire and explosions. Describe emergency equipment that will be available on-site, such as portable extinguishers, first aid kit, etc.

(n) Training Requirements - Define appropriate levels of training and training procedures to promote a safe working environment in accordance with the HASP.

(o) Medical Monitoring - If the employees meet the requirements of 29 CFR 1926(f)(2)(I)-(iv), include a medical surveillance program consistent with 29 CFR 1926.65(f).

00291.08 Contaminated Media Disposal Plan – The CMDP shall contain the following:

- Site Map
- Name of Contaminated Media Disposal Facility
- Contaminated Media Management Zone
- Contaminated media handling (container, bagged, dump truck, etc.)

- On-site contaminated media storage areas as identified in plans or Special Provisions
- On-site hauling routes, entrance and exit locations, standby areas, etc.
- Decontamination and best house keeping practices

Refer to any Contaminated Media stations listed in the special provisions and on the construction plans. The approximate zones of any known Contaminated Media have been identified and are shown in the Environmental Report. Horizontal lengths are based on linear distance along the proposed construction area and the full width of the construction zone.

As new information is discovered and as otherwise required, update and maintain the CMDP to reflect the most current Contaminated Media information throughout the duration of the contract.

List the haul routes that will be used to transport the contaminated media to the approved disposal site.

Describe in the Plan, the facilities and location where any contaminated groundwater will be treated or disposed of and/or treated. If contaminated groundwater goes to the sanitary system include the City Industrial Batch Discharge Permit, and documentation of off-site disposal facility acceptance for sludge or solids created by on-site treatment processes (e.g. settling tanks).

On-site excavation work shall not begin until the CMDP has been approved.

Materials

00291.10 General - Provide materials meeting the following requirements:

Plastic Sheeting	00280.10(k)
Straw Bales	00280.10(n)

00291.11 Truck Liners - Provide plastic, 6 mil minimum, truck liners that are watertight and designed to transport contaminated media.

Labor

00291.30 General - Submit certificates demonstrating individual personnel have been properly trained to handle the excavation and dispose of contaminated media. Training shall include, but not be limited to, the 40-hour Hazardous Waste Operations and Emergency Response Training Program, and associated 8-hour annual refresher in accordance with 29 CFR 1910.120 and 1910.134. Training is required for all personnel who come in contact with, or operate equipment that handles contaminated media.

00291.31 Certified Industrial Hygienist - Submit certificates demonstrating a CIH meets the requirements stated below for oversight of all work relating to hazardous substances or Contaminated Media:

(a) Qualifications for CIH:

- (1) Certification** - Has been certified by the American Board of Industrial Hygiene (ABIH) as a CIH in good standing.
- (2) Experience** - A minimum of 3-years experience in hazardous substance or hazardous waste site remediation or related work.
- (3) Training** - Completion of all required OSHA Training in accordance with 29 CFR 1910.120, including completion of 40-hour + 8-hour supervisory training updated annually and completion of 3 days on-site training by a qualified instructor.
- (4) Regulation** - Has demonstrated knowledge of federal, state and local occupational health and safety regulations.

(b) Responsibilities:

- (1) Certifying** - Certify the Contractor's HASP, any task specified HASP, and all additions and/or modifications thereto unless the Engineer and the Contractor agree that such additions or modifications may be made by the Contractor's Safety Representative.
- (2) Assistance** - Be accessible to the Contractor's Safety Representative and assist in the identification and evaluation of potential hazards, develop appropriate procedures for addressing known or suspected conditions or activities that may pose routine occupational hazards or immediate danger to the life or health of Contractor personnel, Division personnel, or the public.

(c) Authority:

- Suspension of Activities** - Suspend field activities if health and safety of Contractor personnel, Project personnel, or the public is endangered.
- Suspension of Individuals** - Suspend individual(s) from field activities due to infractions of the HASP.

00291.32 Safety Representative – Submit certificates demonstrating the Safety Representative(s) meets the requirements stated below for all work relating to hazardous substances or Contaminated Media.

00291.33 Contractor Safety Representative Authorization - All contractor personnel, subcontractors, services vendors, sales personnel, or anyone else entering the construction site must be authorized by the CIH or Contractor's Safety Representative.

(a) Qualifications of Safety Representative(s):

- Training** - Have completed all required OSHA Training in accordance with 29 CFR 1910.120, including completion of 40-hour + 8-hour supervisory training updated annually and completion of 3 days on-site training by a qualified instructor.

- **Experience** - Have a minimum of 3-years experience in hazardous substance or hazardous waste site remediation or related work.
- **Certification** - Are currently certified in first aid and CPR
- **Knowledge** - Have demonstrated knowledge of federal, state, and local occupational health and safety regulations.
- **Pollution Control Requirements** - be familiar with and follow all pollution control requirements during implementation of the HASP.

(b) Responsibilities:

- **On-Site** - Be on site and present during work in HazMat zones identified in the HASP, in areas where Contaminated Media is encountered, and during the handling, transportation, or disposal of Contaminated Media and all work related to the presence or potential for unknown hazardous substances.
- **HASP Requirements** - Develop, implement, enforce, modify and monitor the HASP requirements.
- **Training** - Conduct the pre-construction training and other periodic training of all on-site personnel with regard to contents of the HASP(s) and other safety Requirements to be observed during construction.
- **Monitoring** - Perform all air monitoring if required by the HASP(s).
- **Compaction Testing** - All personnel testing for compaction entering the excavation shall meet the HASP requirements.

(c) Authority:

- **Work Suspension** - Suspend field activities if health and safety of Contractor personnel, Project personnel, or the public are endangered.
- **Individual Suspension** - Suspend individual(s) from field activities due to infractions of the HASP(s).

Construction

00291.40 Record Keeping - Maintain the following records on an on-going basis. Provide copies to the Engineer upon request or as identified herein.

(a) Daily Reports - Prepare reports on the same day in which any Contaminated Media management activity occurs and submit to the Engineer the next business day by 9:00 a.m. These reports shall document all monitoring and management of Contaminated Media. The report(s) shall include, as applicable, the following:

- Location and depth where Contaminated Media was excavated, pumped or removed.

- Estimated volumes of Contaminated Media excavated, pumped or removed.
- The locations of any temporary contaminated media stockpiles or storage and the volume of contaminated media placed in, or removed from, the stockpiles, and how it is stored.
- The location, depth, and nature of any potential unanticipated Contaminated Media encountered or observed and the response taken by the Contractor.

(b) Contaminated Media Bills of Lading and Weigh Slips - Use a bill of lading for each offsite shipment of Contaminated Media. The bill of lading shall include the date and time of shipment, the name of the hauling company, the name of the truck driver, the disposal site, and a brief description of the Contaminated Media (i.e., soil, water, debris). A copy of the bill of lading and the associated weigh slip showing the weight/volume of the Contaminated Media shall be provided to the Engineer within 24 hours of shipment of the Contaminated Media.

(c) Hazardous Waste Manifests - If RCRA or Oregon State-Only Hazardous Waste is encountered, follow the procedures described below:

Prepare waste manifest forms (EPA Form 8700-22) for each shipment of hazardous waste from the site. The manifest shall describe the contents of each truck carrying materials to the hazardous waste facility, including as applicable the appropriate unit of measure of the waste materials.

The Contractor's hauler shall sign and date the manifest indicating that the load has been accepted as the load described in the manifest on that particular day. The Contractor's hauler shall carry a hazardous waste manifest with each truckload. Prior to truck departure, the Engineer will sign and keep appropriate copies of the manifest and give the remaining copies to the Contractor's hauler. Provide the Engineer with the Generator's copy.

The Engineer will provide a hazardous waste generator identification number for use on the manifest while the Contractor shall provide a hazardous waste transporter's identification number and telephone number.

With 2 days of receiving a completed waste manifest, provide a copy to the Engineer confirming the receipt of the shipment at a permitted disposal facility.

Should any waste manifest not be returned within 35 days of shipment, Initiate follow-up efforts to determine what happened to the shipment, document its effort in writing with an Exception Report as required by 40 CFR 262.42 and provide a copy to the Engineer. A copy of the completed waste manifest shall be provided to the Engineer indicating each waste shipment has been received at the Solid Waste Disposal or Treatment Facility within 2 days of their return to the Contractor.

00291.41 Site Excavation Monitoring - Monitor all excavations required by the contract, including those outside areas of known contamination, for the possible presence of contaminated media using the procedures described in this Section. At all times observe for visual, olfactory, or texture indications of contamination during all excavation activities. These indications may include, but are not limited to: petroleum, oil, fuel, or gasoline odor, other unusual odors, mottled or gray appearance, unusual color, sheen, staining, debris, or other non-native material. Observations are to be recorded in reports submitted daily to the Engineer.

Notify Engineer when groundwater is encountered within excavated areas.

Immediately notify the Engineer if observations indicate the presence of contaminated media outside the areas of known contamination, and follow the procedures described below:

00291.42 Known or Anticipated Contaminated Media – Any known or anticipated contaminated media will be listed in the Special Provisions.

00291.43 Contaminated Media Management Zones and Decontamination - Before beginning excavation of contaminated media, establish a CMMZ around the excavation area where contaminated media is located. Entrance/exit locations to the CMMZ shall be established by the Contractor and described in the CMDP and HASP.

Equipment may move freely within the CMMZ. Decontamination between specific excavation areas shall consist of brooming off loose soil and removal of significant quantities of adhered soil with hand tools. Washing of equipment is not required for movement of equipment within the CMMZ.

If practicable, truck-loading areas shall be located at the boundary of the CMMZ so that trucks will not enter the CMMZ and will not require decontamination.

Trucks shall be broom cleaned before leaving the loading area.

Personnel exiting the CMMZ shall decontaminate according to the decontamination procedures to be specified in HASP.

After beginning excavation, the Engineer will take media samples at increasing distances from the area where contamination was identified and test the sampled media for contamination. If contaminated is found, continue to follow the protocol for managing and contaminated media. If through this additional sampling and testing it is determined that media is not contaminated, then follow the direction of the Engineer regarding use or disposal of this material.

00291.44 Excavation and Handling - All known contaminated media excavated or removed shall be excavated and loaded using the following requirements and procedures described in the CMDP:

- Notify the Engineer no less than 24 hours prior to beginning excavation of contaminated soil.
- Control surface water runoff, to minimize entry or collection of water in excavations.

- Initiate applicable provisions of the HASP to restrict and protect workers, and the public from exposure to contaminated media. Modify the HASP as necessary, to address new contaminants, hazards, and other contaminated media concerns discovered during construction. All modifications to the HASP shall be submitted to the Engineer no sooner than 24 hours prior to working in the area affected by the modifications. Meet all requirements necessary to provide adequate security, staging, characterization, removal, cleanup, handling, and disposal of unknown and unanticipated contaminated media.
- Excavate soil in a manner that prevents commingling of contaminated and uncontaminated soil. Minimize movement of excavation equipment over or through contaminated soil to prevent movement of contaminated soil into areas where no contaminated soil exists.
- Maintain excavation equipment in good working order. Prevent spillage of oil, fuel, or hazardous substances from equipment. Promptly repair oil leaks from equipment and clean up any contaminated soil.
- Select a location for contaminated soil stockpile. Supply drop box or sheeting and hay bales. Stockpile soil in covered drop box or on 10-mil plastic sheeting bermed by hay bales. Contaminated soil storage area will be capable of holding 80-100 cubic yards of soil. Cover contaminated soil stockpile with plastic sheeting and maintain, as necessary, until removed.
- Loading areas for contaminated soil will be located in the CMMZ.
- Load contaminated soil into trucks or approved containers in a manner that prevents spilling or tracking of contaminated soil into areas of the site with uncontaminated soil. Soil will not be accepted in drums.
- Remove loose material falling onto truck during loading before truck leaves loading area. Broom trucks clean before leaving the loading area. Any contaminated material collected in loading area shall either be placed into truck or back onto soil stockpile.
- If loading area is unpaved, notify Engineer when loading activities are complete so Engineer can collect surface soil samples from area to confirm that contaminated soil is not present. If loading area is paved, clean any loose soil from pavement by sweeping at conclusion of each day's loading activities.
- Cover all trucks before they leave the loading area.
- All vehicles leaving a CMMZ and entering right-of-way shall be cleaned of any suspected contaminated media on wheels, frames, or other non covered areas.
- If free liquid is present in excavated contaminated media, provide liquid tight liners for the trucks hauling the material to the disposal/treatment facility.

- Establish specific truck haul routes before beginning offsite contaminated media transport to reduce risk of releases of contaminated media and impact on local traffic. Establish onsite truck routes to minimize or prevent movement of trucks over contaminated media.
- Ensure that loaded truck weights are within acceptable limits.
- Personnel exiting a CMMZ shall decontaminate according to the decontamination procedures specified in the HASP.
- Comply with all applicable federal, state, and local laws, codes, and ordinances that govern or regulate contaminated media or hazardous transportation.
- Ensure that all drivers of vehicles transporting contaminated media or hazardous have in their possession during transport all applicable Oregon State and local vehicle insurance requirements, valid drivers' license, and vehicle registration and license. Responsible for informing all drivers of transport vehicles about:
 - Nature of material transported in the form of a written manifest
 - Required routes to and from the offsite disposal facility
 - Applicable City street regulations and requirements, and State of Oregon Department of Transportation codes, regulations and requirements.
- Contaminated Media shall not be spilled or tracked offsite at any time during project.
- Trucks shall be substance compatible, licensed, insured, and permitted pursuant to federal, state, and local statutes, rules, regulations and ordinances for transportation of Contaminated Media or hazardous substances offsite.
- Copies of approved disposal/acceptance permit and/or disposal manifests shall be provided by Engineer (disposal/treatment facility requires driver to have copies of permit and/or disposal manifests).

00291.45 Discovery of Unanticipated Contaminated Media - Follow procedures described in 00291.06 and comply with the following in response to unanticipated and unknown Contaminated Media. Upon notification, the Engineer will make a determination whether unanticipated and unknown Contaminated Media has been encountered. While making this determination:

- Immediately cease all work activity in and around any area where suspected Contaminated Media is encountered.
- Remove employees from the immediate area and secure the site.
- Immediately contact the Engineer and deliver an oral assessment of the site conditions.
- Do not move, haul or dispose any unknown media until the determination is made.

- Take appropriate measures in compliances with all applicable Environmental Laws to stop or minimize the immediate spread or release of any contamination.
- Immediately place appropriate control measures or devices on or adjacent to the affected area in such a manner that does not disturb the site or the suspected media. Prevent rain or storm water runoff from contacting media and becoming contaminated.
- Upon notification, the Engineer will collect and analyze test samples for laboratory analysis and make a determination whether unanticipated and unknown and Contaminated Media has been encountered.
- During analysis, cease excavation and/or dewatering activities at the sample location(s). Do not move, haul or dispose of any suspected media. Maintain and secure the construction site until the final determination is made.
- The Engineer will provide analysis results to the Contractor within 72 hours after a sample is taken.
- Update the CMDP to address this new information. All document modifications shall be reviewed by the Engineer.
- Until a determination is made, any excavated media which is suspected of contamination shall be temporarily stored in a pre-approved secure, covered, water tight location shown in the CMDP that limits possible cross contamination with other non contaminated media. Temporary storage locations shall be placed within the public rights of way and adjacent to the excavation pit. Incorporate storage locations into traffic control plans.
- Within 48 hours of discovery of unanticipated Contaminated Media deliver to the Engineer a written assessment of the occurrence, current site conditions and all actions taken.
- Update the HASP, the CMDP, and Spill Prevention and Cleanup Plan as necessary, to address new contaminations, hazards, and other Contaminated Media concerns associated with the unanticipated and unknown contamination. The Engineer will provide the Contractor unanticipated and unknown Contaminated Media sampling and analysis results to assist the Contractor in updating the CMDP and other document modifications. All document modifications shall be reviewed by the Engineer.

00291.46 Discovery of Active or Abandoned Leaking Underground Utilities or Tanks - Report discovery of leaking abandoned buried pipelines, utility conduits, or tanks to the Engineer immediately. Manage and properly dispose of associated Contaminated Media per these specifications. If encountered, Engineer may collect sample of abandoned utility (tank) discharge. If sampled, Engineer will provide Contractor results of sample characterization, and guidance on disposal options within 96 hours of sampling.

00291.47 Management of Contaminated Media – Unless approved, contaminated media excavated from the contaminated areas described in any Environmental Report, construction plans, Special Provisions and CMDP shall not be temporarily stockpiled or stored on site at any time. Contaminated media excavated from sections illustrated in the CMDP shall be directly loaded and hauled off site to the approved facility, or if approved by the Engineer, immediately used as fill material. The CMDP will be shown in the Special Provisions.

00291.48 Treatment of Contaminated Media – Unless approved, contaminated soil shall not be treated on-site.

Contaminated construction dewatering effluent may be treated on site so long as effluent meets the City Batch Discharge standards. Contaminated construction dewatering effluent may be pretreated within a suspended solid settling tank, such as a baker tank. Contaminated construction dewatering effluent determined to contain soluble forms of hazardous materials shall not be discharged directly into the City's sanitary sewer system unless approved. Contaminated construction dewatering effluent treatment guidelines include, but are not limited to, the following:

- If sampling is necessary to determine disposal options, the Engineer will collect a sample of containerized water, wait 24 hours for excavation to recharge, and re-sample water from the excavation.
- Propose a location for storage of pumped groundwater. The Engineer will approve final location.
- Supply the pump, hosing, and the holding tank or other appropriate containers.
- Evacuate water from excavation, containerize, and treat at the direction of the Engineer. Treatment options will be determined based on the type and amount of contamination. Options will range from holding for a period of 24-48 hours in an open container to allow dissipation of volatile organics, to treatment with a mobile stripping unit.

Suspended solid settling tanks shall provide continuous flow-through treatment. Suspended solid settling tanks shall have an instantaneous capacity of no less than 20,000 gallons. Each treatment tank brought onto the construction site shall be used until effluent exceeds Batch Discharge Permit concentration limits. Additional tanks shall not be installed unless effluent standards from (all) existing tanks are exceeded, or unless authorized. Multiple tanks may be installed in tandem until final unit effluent meets Batch Discharge Permit concentration limits. Total volume of construction dewatering effluent actually treated per tank, and total residence time in the treatment system (tandem tanks) will vary depending upon influent concentrations.

The Engineer will submit water samples to the City BES Water Pollution Laboratory for analysis. The Laboratory requires a minimum of 96 hours for processing sample and returning data.

- The Engineer will select a disposal method.

- Discharge of contaminated excavation de-watering effluent to the City sanitary sewer line requires an Industrial Batch Discharge Permit from the City BES Water Pollution Lab-source Control Division. This permit shall be obtained by the Contractor before commencement of dewatering activities.
- If batch discharge to the City's sanitary sewer system is permissible, provide all labor, equipment and materials necessary to complete the work.
- Concentration of effluent from the settling tank shall not exceed 1700 pounds per day of solids.
- Transport contaminated sludge from the pre-treatment to an approved disposal or treatment facility.
- Provide the Engineer with the contaminated sludge disposal receipt or a copy.

00291.49 Environmental Construction Oversight – Environmental construction oversight includes the specific environmental construction oversight tasks that will be used during the construction of this project.

The Contractor's Safety Officer's responsibilities as part of the oversight team is as follows:

- Monitor excavated media for evidence of unanticipated and unknown conditions. Notify the Engineer if potential unanticipated and unknown Contaminated Media conditions are observed.
- Remove, manage, and dispose of the known Contaminated Media in accordance with these specifications.
- Collect and analyze water discharge sample to monitor compliance with the wastewater batch discharge permit.

Measurement

00291.80 General - The estimated quantities of Contaminated Media to dispose at approved disposal facilities will be indicated in the Special Provisions.

00291.81 Contaminated Media – Contaminated Media disposal, except liquid, will be measured in the truck by the ton or cubic yard at the disposal site.

00291.82 Contaminated Groundwater Disposal – Contaminated groundwater disposal will be measured in 1,000 gallon units (M-Gallon).

00291.83 Stockpile Berm - No measurement of quantities will be made for this work.

00291.84 Decontamination of Equipment – No measurement of quantities will be made for this work.

00291.85 Truck Liners – Liners will be measured on a unit basis, per each. Re-usable liners will only be measured once regardless of how many times liner is used.

Payment

00291.90 **General** – The accepted quantities of work will be paid as follows:

	Pay Item	Unit of Measurement
(a)	Contaminated Media Disposal	Ton or Cubic Yard
(b)	Stockpile Berm	Lump Sum
(c)	Decontamination of Equipment	Lump Sum
(d)	Truck Liners	Each
(e)	HASP/CMDP WorkPlans	Lump Sum
(f)	Contaminated Groundwater Disposal	M-Gallon
(g)	Contaminated Water Storage Tank.....	Each
(h)	Drop Boxes	Each

Item (a) will be payment in full for stockpiling in a berm for testing, reloading, and disposal of the material. Payment for excavation of Contaminated Media will be paid under the appropriate pay items in Section 00330 and/or 00405.

Item (b) will be payment in full for constructing an impervious barrier and berm to contain contaminated material for testing and material to cover stockpile to prevent rainfall from coming into contact with contaminated material.

Item (c) will be to properly clean all equipment used to handle contaminated material. No payment will be made until a written report is submitted detailing the decontamination performed on the equipment.

Item (d) will be payment in full for the liner regardless of how many times the liner is re-used.

Item (f) is for contaminated groundwater disposal and includes settling tanks, permit fees, and all work, equipment and materials required to estimate, handle, store, process, and dispose of contaminated groundwater

Item (g) are storage tanks similar to Baker Tanks.

Item (h) includes a cover over the drop box.

Loading and disposal of material shown by testing to be non-contaminated media will be considered incidental with no additional payment.

Unanticipated Contaminated Media, as outlined in 00291.45 and 00291.46 shall be paid according to Section 00196.

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