

OREGON DEPARTMENT OF TRANSPORTATION
CONSTRUCTION SECTION
QUANTITY MEASUREMENT GUIDELINE

2008 STANDARD SPECIFICATIONS
Part 00200 to 01100

December 2010



This document is to be used as a measurement guide for on ODOT Construction projects and does not relieve the user of requirements specified in the Construction Project Documents. Please notify the Contract Administration Unit, In the Construction Section at the ODOT Materials Laboratory, of any changes in Standard Drawings, Special Provisions, or Specifications, etc., which would require additions to, deletions from, or changes to this listing. Please contact Holli Pick at:

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2008 STANDARD SPECIFICATIONS

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This guideline also contains measurement guides to special provisions and unique special provisions. Special provisions are denoted with a “SP” in front of the number and unique special provisions are denoted with “U” in front of the number as well as distinct color and font differences.

Standard Specifications = normal font	Special Provisions = SP00XXX.XX	Unique Special Provisions = <i>U00XXX.XX</i>
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QUANTITY MEASUREMENT GUIDELINE

Oregon 2008 Standard Specifications for Construction (Part 200)

Revision 9/28/2010

SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 00200 – TEMPORARY FEATURES AND APPURTENANCES			
00205.80 00205.81 00205.90 00205.91	Contractor /Agency Furnished Field Laboratory	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Note: <ul style="list-style-type: none"> • No separate payment made for providing a weigh house
00210.80 00210.90	Mobilization	Lump Sum	Lump Sum payment based on percent of original contract amount earned from other contract items: <ul style="list-style-type: none"> • When 5% is earned, pay 50% or 5% of the original contract amount, whichever is less. • When 10% is earned, pay 100% or 10% of the original contract amount, whichever is less. • When all work is complete, pay amount exceeding 10% of the original contract amount. Note: <ul style="list-style-type: none"> • When the Contract Schedule of Items does not indicate payment for mobilization, no separate or additional payment will be made for mobilization. • Payment will be included in payment made for the appropriate items under which this work is required.
00220.80 00220.90	Accommodations for Public Traffic	See Section 00225	<ul style="list-style-type: none"> • No separate or additional payment will be made for work performed under this Section, unless otherwise provided or pay items are provided under other Sections.
00225.80 00225.90	Work Zone Traffic Control	SF, LS or Incidental	<i>For this Section determine Method A, B or C</i>

<p>SP00225.90(a-1)</p> <p>U00225.90(a-2)</p>			<p>Note: 00225.80(a) Quantity Limitations:</p> <ul style="list-style-type: none"> • Must be on the TCP • Measure initial installation of necessary quantities • Initial installation of added TCD-Engineer and Contractor agree are necessary • Replacement of TCD & TCM, except temporary signing, electrical and portable traffic signals, damaged by public and replaced by Contractor • Payment for replacing damaged TCD will only be made when Engineer orders it, replacement devices are used on the project & damaged devices are disposed of to the Engineer's satisfaction. <p>Pay Basis:</p> <ul style="list-style-type: none"> • Method A- Unit Basis by the Each (also refers to lump sum in 00225.90) • Method B- Lump Sum (no measurement) • Method C- Incidental (no measurement) <p><i>**SP 00225.90(a-1)- 3rd Paragraph- Omit sentence "Replacement temporary impact attenuator component(s) will be paid according to Section 00196 (Extra Work)" (see 00225.92(n) "Repair Temporary Impact Attenuator")</i></p> <p><u>Unique Specs:</u></p> <ul style="list-style-type: none"> • <i>U00225.90(a-2) Providing electrical power and furnishing, placing, maintaining, adjusting, and removing temporary false work illumination.</i> • <i>U00225.90(a-2) Pole base excavation covers</i>
<p>00225.81 00225.91</p>	<p>a) Temporary Signs- Signs</p>	<p>SF</p>	<p>Method A: Default to 00190.10(c) – Measure at least to the nearest 0.1 ft and determine area at least to the nearest 0.1 SF.</p> <ul style="list-style-type: none"> • Nominal area determined by multiplying height and width. • Includes all signs on Traffic Control Plan (TCP), regardless

			<p>sections.</p> <ul style="list-style-type: none"> • <u>Length Method – 00225.82(b-1-b)</u> – Default to 00190.10(b) – At least to the nearest 0.1 ft – from center to center of end posts, each run.
00225.82(b-2) 00225.92(c-e)	<p>(c) Temporary Guardrail Terminals, ____</p> <p>(d) Temporary Guardrail Transitions</p> <p>(e) Temporary Bridge Connections</p>	Each	<p>Method A:</p> <ul style="list-style-type: none"> • Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <p>Note:</p> <ul style="list-style-type: none"> • <u>Items (d) and (e) include each device, regardless of size or type.</u>
00225.82(b-3) 00225.92(f-h)	<p>(f) Temporary Concrete Barrier, Reflectorized</p> <p>(g) Temporary Concrete Barrier, Tall, Reflectorized</p> <p>(h) Moving Temporary Concrete Barrier</p>	Foot	<p>Method A:</p> <ul style="list-style-type: none"> • <u>Count Method, 00225.82(b-3-a)</u> – Number of standard sections multiplied by the laying length as shown in the standard drawings (currently, 12'-7"). • <u>Length Method – 00225.82(b-3-b)</u> – Default to 00190.10(b) – At least to the nearest 0.1 ft – from end to end of barrier, each run. <p>Note:</p> <ul style="list-style-type: none"> • Items (f) and (g) includes Type 5 delineators. No separate or additional payment will be made for pinning or restraining barrier. • Item (h) includes moving temporary concrete barriers, regardless of size or type, from one location of actual use to another, and for removing and replacing Type 5 delineators on the barriers, as necessary. <p>Unique Specs:</p> <ul style="list-style-type: none"> • <i>Per U00225.82(b-3-b) Includes tall concrete barrier transitions.</i>
<u>U00225.82(b-3-b)</u>	<i>Tall Concrete Barrier Transitions</i>		
00225.82(c) 00225.92(k-l)	(k) Temporary Glare Shields	Foot	<p>Method A:</p> <ul style="list-style-type: none"> • Default to 00190.10(b) – At least to the nearest 0.1 ft. • From center to center of glare shield blades as installed for

	(l) Moving Temporary Glare Shields		each run. Note: <ul style="list-style-type: none"> Item (l) includes moving the devices from one location on the concrete barrier to another.
00225.82(d) 00225.92(m)	(m) Reflective Barrier Panels	Each	Method A: <ul style="list-style-type: none"> Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Note: <ul style="list-style-type: none"> Item (m) includes panels installed on the concrete barrier and replacing damaged panels.
SP-00225.82(e) SP-00225.92(n) 4/10/2010	<u>(n) Temporary Impact Attenuator Repair</u>	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Sand barrel systems will be the replacement of damaged sand modules. All other systems will be the repair or complete replacement of the attenuator system. (n) Repair Temporary Impact Attenuator, “ _____” Item (n) includes replacement of sand modules damaged by public traffic or includes repair or complete replacement of impact attenuators damaged by public traffic. (see SP-00225.92(n) for exclusions 4/10/2010)
00225.83(a) 00225.93(a-f)	(a) Temporary Surface Mounted Tubular Markers (b) Replace Temp. Surface Mounted Tubular Markers (c) Temp. Plastic Drums (d) Temp. Delineators	Each	Method A: <ul style="list-style-type: none"> Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Note: <ul style="list-style-type: none"> Item (a) includes furnishing and installing the complete assembly of each device in its initial location and for removing the device from the surface. Item (b) includes furnishing new or refurbished devices to replace damaged or missing devices.

			<ul style="list-style-type: none"> • No adjustments allowed for wider lines improperly placed or deviated. • No separate or additional payment will be made for mobilization.
00225.83(d-1) 00225.93(k)	(k) Stripe Removal	Foot	<p>Method A: To the nearest foot. Actual length of 4 inch wide stripe in place as accepted to the nearest ft.</p> <ul style="list-style-type: none"> • Skip intervals will not be included in the measurement. • If strips other than 4 inches wide are to be removed, measurement will be adjusted to equivalent length of nominal 4 inch width. • Includes removal of painted and durable stripes required for stage construction. <p>Note:</p> <ul style="list-style-type: none"> • Item (k) includes removal of painted and durable stripes required for stage construction. • No separate or additional payment will be made for mobilization
00225.83(d-2) 00225.93(l)* SP-00223.93(l) 4/10/2010	(l) Legend Removal	SF	<p>Method A: Default to 00190.10(c) – Measure at least to the nearest 0.1 ft and determine area at least to the nearest 0.1 SF.</p> <ul style="list-style-type: none"> • Nominal area determined by multiplying the width times the length of the legend. • No deduction will be made for corners or irregular shapes. <p>Note:</p> <ul style="list-style-type: none"> • * Item (l) includes removal of durable and non-durable legends required for stage construction. • No separate or additional payment will be made for mobilization <p>SP-00223.93(l) - includes removal of painted and non-durable legends <i>“and bars”</i> required for stage construction.</p>

<p>U00225.87 U00225.90(a-2) U00225.97</p> <p>U00225.87(a) U00225.97</p>		(incidental)	<ul style="list-style-type: none"> *Need written cost justification if Flagger hours exceeds the quantity shown in the Contract Schedule of Items. Basis of rates given in Section 00197. Payment will be payment for the additional work will be made according to Section 00196. <p>Unique Specs:</p> <ul style="list-style-type: none"> Flagging will be incidental to the contract no measurement made. Maximum number of hours allowed for a pay quantity.
<p>00225.87(b) 00225.97(b)*</p>	(b) Flagger Station Lighting	Each or Hour	<p>Method A:</p> <ul style="list-style-type: none"> Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Default to 00190.10(f) – At least the nearest 0.5 hour. No measurement will be made for the backup unit in event it is used or not. <p>Note:</p> <ul style="list-style-type: none"> *Item (b) includes furnishing, operating, moving, and removing the flagger station lighting. No separate or additional payment will be made for back-up unit in event it is used or not.
<p>SP-00225.87(c)</p> <p>SP-00225.97(c)</p> <p>4/10/2010</p>	(c) Automated Flagger Assistance Device	Each or Hour	<p>Measured on the unit basis, default to 00190.10(a) –unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> “(c) Automated Flagger Assistance DeviceEach” <p>Measured on the time basis, of the actual number of hours, to the nearest hour, the AFAD's are operating and in use to control traffic.</p> <ul style="list-style-type: none"> “(c) Automated Flagger Assistance Device.....Hour”
<p>00225.88 00225.98</p>	Traffic Control Supervisor (TCS)	Each	<p>Method A:</p> <p>Each, Work shift will be any work shift or portion of a work shift where any of the following occur:</p>

			<ul style="list-style-type: none"> • Full lane closure or lane shifts implemented on a daily basis on freeway or highway with ADT greater than 10,000. • When TCS is called to a traffic-related issue during non-work hours. • Other construction operations as requested by the Engineer. <p>Other Notes:</p> <ul style="list-style-type: none"> • Maximum quantity of 2 TCS construction work shifts allowed for each 24 hour period. <p>Note:</p> <ul style="list-style-type: none"> • Payment Includes vehicle and equipment • Need written cost justification if (TCS) hours exceeds the quantity shown in the Contract Schedule of Items. Basis of rates given in Section 00197. • Payment will be payment for the additional work will be made according to Section 00196.
00225.89 00225.99	Pilot Cars	Hour	<p>Method A: Default to 00190.10(f) – At least the nearest 0.5 hour.</p> <p>Note:</p> <ul style="list-style-type: none"> • Need written cost justification if Pilot Car hours exceeds the quantity shown in the Contract Schedule of Items. Basis of rates given in Section 00197. • Payment will be payment for the additional work will be made according to Section 00196. • Includes all signs and equipment
SP-00230.80 5/16/2008	Temporary Detours	Lump Sum	No measurement of quantities will be made for work performed under this Section. Material estimate of approximate quantities will be listed in the special provisions
SP-00235.80 6/26/2008	Agency Provided Material Sources and Disposal site		No payment under this item.

00240.80 00240.90	Temporary Drainage Facilities	Lump Sum	Method B: <ul style="list-style-type: none"> Lump Sum (no measurement)
SP-00250.80 SP-00250.90 4/22/2010	Temporary Bridges	Lump Sum	No measurement of quantities will be made for work performed under this Section. <ul style="list-style-type: none"> Temporary detours will be paid for according to 00230.90.
SP-00251.80 3/31/2008	Agency Provided Temporary Bridges	Lump Sum	No measurement of quantities will be made for work performed under this Section. <ul style="list-style-type: none"> Temporary detours will be paid for according to 00230.90.
SP-00252.80 SP-00252.90 4/22/2010	Temporary Work Bridges (Bridge or Trestle)	Lump Sum	No measurement of quantities will be made for work performed under this Section. <u>Pay as follows:</u> Progress payments and retained amounts will be made according to 00195.50 (Progress Payments and Retained Amounts) except for the following: <ul style="list-style-type: none"> No payment will be made for materials on hand. 20 percent of the bid amount will be retained until satisfactory removal of the work bridges is done.
SP-00253.80 3/31/2008	Temporary Work Platform	Lump Sum	No measurement of quantities will be made for work performed under this Section.
SP-00254.80 3/31/2008	Temporary Work Access (Platforms or Scaffolding)	Lump Sum	No measurement of quantities will be made for work performed under this Section.
SP-00256.80 SP-00256.90	Temporary Retaining Walls	SF	Field measurement of each temporary retaining wall area will not be made. Measure the theoretical area shown, in a vertical plane, for each temporary retaining wall.

4/22/2010			<p>Default to 00190.10(c) – Measure at least to the nearest 0.1 ft and determine area at least to the nearest 0.1, SF</p> <p>If changes are ordered (in writing), an adjustment will be made only for the quantity difference involved in the ordered plan changes.</p> <p>Note: Subexcavation and backfill will be paid for on an Extra Work basis according to Section 00196.</p>
SP-00270.80 SP-00270.90(a) 3/31/2008	(a) Temporary Fences- Fence and Gateways	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT.</p> <ul style="list-style-type: none"> • 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. • “(a) Temporary Type.....Fence”
SP-00270.81 SP-00270.90(b) 3/31/2008	(b) Temporary Fences- Gates	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> • “(b) Temporary Gates....Each”
SP-00270.82 SP-00270.92 3/31/2008	Rock Protection Fence – barrier mounted rock protection fence	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT.</p> <ul style="list-style-type: none"> • Measurement will be from center to center of posts, measured along the line and grade of each separate continuous run.
00280.80(a) 00280.90(a)	Erosion Control	Lump Sum	<p>Lump Sum Erosion Control paid as follows:</p> <ul style="list-style-type: none"> • 25% when initial Contractor developed ESCP, narrative, and schedule are complete and accepted, and initial erosion control devices are installed. • 25% when 50% of Contract is complete, excluding advances on materials. • 25% when 75% of Contract is complete, excluding advances on materials. • 25% at completion of Contract and all erosion devices are removed from Project site or are fully functioning as permanent

<p>SP-00280.90(a) 4/22/2010</p>			<p>BMP.</p> <p>Note:</p> <ul style="list-style-type: none"> When only item (a) is listed in the Contract Schedule of Items, no separate or additional payment will be made for modifications or additions to the BMP that become necessary for permit compliance during construction. <p>SP-00280.90(a) Add "Item (a) includes...":</p> <ul style="list-style-type: none"> Erosion control signs
<p>00280.80(d)</p> <p>SP-00280.90(f) 4/22/2010</p>	<p><u>Erosion Prevention:</u></p> <p>(b) Plastic Sheeting</p> <p>(f) Matting</p>	<p>SF or SY) CCO to correct 00280.80(d)</p>	<p>Default to 00190.10(c) – Measure at least to the nearest 0.1 ft and determine area at least to the nearest 0.1 SY.</p> <ul style="list-style-type: none"> Measure along ground surface. <p>Note:</p> <ul style="list-style-type: none"> Item (b) includes protecting exposed slopes with plastic sheets, anchoring devices, and toe protection maintenance. <p>SP-00280.90(f) Add "Item (f) includes..." It also includes the bonded fiber matrix matting application</p>
<p>00280.80(d)</p>	<p><u>Erosion Prevention:</u></p> <p>(c) Chemical Soil Binder</p> <p>(d) Chemical Dust Control</p> <p>(e) Temporary Mulching</p>	<p>Acre</p>	<p>Default to 00190.10(c) – Measure at least to the nearest 0.1 ft and determine area at least to the nearest 0.1 acre.</p> <ul style="list-style-type: none"> Measure along ground surface. <p>Note:</p> <p>No separate or additional payment will be made for applying dust control</p>
<p>00280.80(b)</p>	<p><u>Runoff Control:</u></p> <p>(g) Check Dam</p> <p>(i) Temporary Slope Drain</p>	<p>Each</p>	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <p>Note:</p> <ul style="list-style-type: none"> Item (g) includes the biofilter bags, sand bags, and sediment fence as applicable.
<p>00280.80(c)</p>	<p><u>Runoff Control:</u></p> <p>(h) Temporary Diversion</p>	<p>Foot</p>	<p>Default to 00190.10(b) – At least to the nearest 0.1 ft.</p> <ul style="list-style-type: none"> Item (j) & (h) measured along the long axis. Item (i) measured from beginning of metal end pieces to end of drain. Measurement made when each installation is

	Dike / Swale (i) Temporary Slope Drain (j) Flow Spreader		at maximum length. Note: <ul style="list-style-type: none"> Items (j) can also paid for at the Each
00280.80(b) 00280.90	<u>Sediment Control:</u> (k) Construction Entrance (l) Tire Wash Facility (n) Inlet Protection (o) Sediment Barrier (q) Temporary Scour Basin (r) Temporary Sediment Trap	Each Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Note: <ul style="list-style-type: none"> Items (n) and (o) includes the biofilter bags, sand bags, and sediment fence as applicable. Items (o) can also paid for at the nearest foot
00280.80(b)	<u>Sediment Control:</u> (m) Sediment Fence, _____ (o) Sediment Barrier	Foot	Default to 00190.10(b) – At least to the nearest 0.1 ft. Note: <ul style="list-style-type: none"> Item (o) includes the biofilter bags, sand bags, and sediment fence as applicable.
00280.80(c)	<u>Sediment Control:</u> (p) Sediment Mat	SF or SY) CCO to correct 00280.80(d)	Default to 00190.10(c) – Measure at least to the nearest 0.1 ft and determine area at least to the nearest 0.1 SY. <ul style="list-style-type: none"> Measure along ground surface.
00290.90	Pollution Control Plan	Lump Sum	Lump Sum: Pollution Control Plan paid as follows: <ul style="list-style-type: none"> 20% when initial PCP is approved. 20% when 30% of Contract is complete, excluding advances on materials.

			<ul style="list-style-type: none"> • 20% when 60% of Contract is complete, excluding advances on materials. • 20% when 90% of Contract is complete, excluding advances on materials. • 20% at completion of Contract and all waste is removed from Project site and all reports, receipts, and documents have been submitted.
SP-00290.90 5/7/2009	Environmental Protection- Work Containment Plan and System	Lump Sum	<p>No measurement of quantities will be made for work performed under this Section.</p> <ul style="list-style-type: none"> • No separate or added payment for orange mesh fencing

QUANTITY MEASUREMENT GUIDELINE

Oregon 2008 Standard Specifications for Construction (Part 300)

Revision 9/28/2010

SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 00300 - ROADWORK			
SP-00305.80 SP-00305.90 2-25-2010	Construction Survey Work	Lump Sum	No measurement required unless changes are ordered in writing by the Engineer. Costs incurred caused by survey errors will be at the Contractor's expense. <ul style="list-style-type: none"> • These costs include price adjustments for failure to meet requirements of the "Construction Surveying Manual for Contractors", • Repair or removal and replacement of deficient product, • Over-run of material.
00310.80 00310.91(a) 00310.91(b)	(a) Removal of Structures and Obstructions (b) Removal of _____	Lump Sum	No measurement required unless changes are ordered in writing by the Engineer. <ul style="list-style-type: none"> • Includes all removal work done on a lump sum basis
00310.80 00310.92(a) 00310.92(b)	(a) Removal of Pipes (b) Removal of Curbs	Foot	Default to 00190.10(b) – At least to the nearest 0.1 ft. <ul style="list-style-type: none"> • Limited to neat lines shown or directed.
00310.80 00310.92(c) 00310.92(d)	(c) Removal of Sidewalk/ Driveways (d) Removal of Surfacing	SY	Default to 00190.10(c) – Measure at least to the nearest 0.1 ft and determine area at least to the nearest 0.1 SY. <ul style="list-style-type: none"> • Limited to neat lines shown or directed. <p>Note:</p> <ul style="list-style-type: none"> • Item (d) includes the removal of all surfacings, except for walks and driveways, as defined in 00110.20 under "Existing Surfacing".
00310.80 00310.92(e) 00310.92(f)	(e) Removal of Inlets (f) Removal of Manholes	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.

<p>SP- 00330.92 12/11/2008</p>	<p><u>Kinds of Incidental Earthwork</u></p>		<p>SP- 00330.92- Kinds of Incidental Earthwork</p> <ul style="list-style-type: none"> • Delete: the 6th Bullet “if shown on plans” • Add: Added clearing and grubbing w/in embankment limits • Add: (if required) Earthwork required for driveways and road approaches will be outside neat line limits shown on typical sections.
<p>00330.81 00330.93(a) 00330.93(b) 00330.93(c) 00330.93(d) 00330.93(e)</p>	<p><u>Excavation:</u> (a) Ditch (b) Foundation (c) Toe Trench (d) General (e) Borrow</p>	<p>CY</p>	<p>Default to 00190.10(e) – At least to the nearest 0.1 CY</p> <ul style="list-style-type: none"> • Excavation – Materials will be measured in their original position before excavation. • (Confidence points required on original ground, paid by DTM) • See 00330.91- “Kinds of Pay Excavation” <p>Includes:</p> <ul style="list-style-type: none"> • Abandoned pipe and miscellaneous matter within excavation limits. • Materials removed below subgrade in roadbed excavations according to 00330.41(a-9) and 00330.91(d). • Overbreak determined to be unavoidable according to 00330.41(a-10).
<p>00330.82 00330.94(a) 00330.94(b) 00330.94(c) SP-00330.82 12/11/2008 SP-00330.94 12/11/2008</p>	<p><u>Embankment:</u> (a) In Place (b) Stone (c) Extra for Selected _____ Materials</p>	<p>CY</p>	<p>Default to 00190.10(e) – At least to the nearest 0.1 CY</p> <ul style="list-style-type: none"> • (Confidence points required on original ground, paid by DTM) <p><u>Note:</u></p> <ul style="list-style-type: none"> • Item (c) includes preserving, sorting, stockpiling, and handling of the specified selected materials <p><u>Special Provisions:</u></p> <ul style="list-style-type: none"> • SP-00330.82: Embankment Measurement – Materials will be measured (limited to lines, grades & slopes) in their original position before work begins. • SP-00330.82- Embankment measured for payment will not include any additional quantities required due to clearing and grubbing operations. • SP-00330.94 Deleted: Excavation of unstable material that

			is below subgrade in roadbed excavation areas, according to 00330.41(a-9), will be paid for according to 00195.20.
00331.80 00331.90	Subgrade Stabilization	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> • Measurement of surface area stabilized to full depth – adjust other depths by conversion. <p>Note:</p> <ul style="list-style-type: none"> • Excavation, geotextile, stone embankment, aggregate backfill material, and water are included in this item
SP-00333.80 SP-00333.90 3/31/2008	Aggregate Ditch Lining	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> • Measured on the area basis of the actual surface area of the wetted perimeter of the lined ditch • Ditch excavation will be measured according to 00330.80 and 00330.81. <p>Note:</p> <ul style="list-style-type: none"> • Ditch excavation will be paid for according to 00330.90, 00330.91, and 00330.93.
SP-00334.80 3/31/2008	Preparation of Shoulders	Lump Sum or Mile	<p>Lump Sum: No measurement required unless changes are ordered in writing by the Engineer.</p> <p><i>Length:</i> Default to 00190.10(b) – At least to the nearest 0.1 Mile</p> <ul style="list-style-type: none"> • Both shoulders- measured along the center line of the highway excluding the length of bridges • One shoulder- the pay length will be 1/2 the length as measured above.
00335.80	Perimeter Controlled Blast	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT

00335.90	Holes		<ul style="list-style-type: none"> Quantities shown are from theoretical plan length using 30 inch hole spacing Divide slope cut surface area** by perimeter control blast hole spacing. <p>Note:</p> <ul style="list-style-type: none"> Cut slope surface area-determined by cross section measurement from the top of the blasted rock to the finished ditch bottom elevation.
SP-00335 5/16/2008	Blasting Methods and Protection of Excavation Backslopes		No added measurements or pay requirements
00340.80 00340.90(a) 00340.90(b)	Watering	Mgal / gal	<p>(a) M-gal Measurement:</p> <ul style="list-style-type: none"> Item (a) (These units are not covered under 00190.10(d) or (e).) (pending CCO) Measure to at least the nearest 0.1 Mgal Only quantities used in the “work” performed will be measured. <p>(b) Gallon Measurement: Default to 00190.10(e) – At least to the nearest 1.0 gal</p> <p>Quantity Variations-</p> <ul style="list-style-type: none"> Payment for watering items performed beyond 25% of the quantity shown in the Contract Schedule of items will be made at the Contract unit prices if engineer determines that the CU Price doesn’t exceed the value of the work per Section 00197. If contract unit prices exceed value of work, payment for added work will be made per Section 00196. <p>Note:</p> <ul style="list-style-type: none"> Can be measured by Mass, Volume, Meters, or in tank trucks of predetermined capacity.

00340.91			<ul style="list-style-type: none"> If given weight use 8.34 lbs / gal or 62.4 lbs/ CF or tons to lbs for conversion (1,000 gal =1 M-gal)
00344.80 00344.90(a)	(a) Treated Subgrade, ___inches Thick	SY	Default to 00190.10(c) – At least to the nearest 0.1 SY <ul style="list-style-type: none"> Measured along the lines and grades of the area actually treated.
00344.90 00344.90(b) 00344.90(c) 00344.90(d) 00344.90(e)	<u>Treated Subgrade Materials:</u> (b) Lime (c) Portland Cement (d) Calcium Chloride (e) Sodium Chloride	Ton	Default to 00190.10(d-2) – At least to the nearest 0.01 Ton <ul style="list-style-type: none"> Measured by volumes (dry weight basis) shown on delivery tickets. Will not include any which is lost, displaced, used in reworking, or restoration work.
00350.80 00350.90(a) 00350.90(b) 00350.90(c) 00350.90(d) 00350.90(e)	<u>Geosynthetic Installation:</u> (a) Drainage Geotextile (b) Embankment (c) Riprap (d) Subgrade (e) Pavement Overlay	SY	Default to 00190.10(c) – At least to the nearest 0.1 SY <ul style="list-style-type: none"> Measured along lines and grades of surface area actually covered. Drainage Geotextile = multiply length of trench by the perimeter of the trench as determined from the neat lines. No measurement for laps, seams or joints. <u>Note:</u> <ul style="list-style-type: none"> Item (e) includes preparation work, sealant, and geotextile. Geosynthetics- more stringent, a price adjustment for difference in material costs if ordered by engineer.
00360.80 00360.90(a) 00360.90(b)	<u>Drainage Blankets:</u> (a) Sand Drainage Blanket (b) Granular Drainage	CY or Ton	Default to 00190.10(d-2) – At least to the nearest 0.01 Ton, Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Measured in place, limited to neat lines, grades, and dimensions shown or directed, or by weight basis

	Blanket		
00370.80 00370.90(a) 00370.90(b)	Finishing Roadbeds- Obliterating surfacings	Lump Sum	No measurement required; unless changes are ordered in writing by the Engineer.
SP-00380.80 SP-00380.80(a) SP-00380.90(a) SP-00380.90(b) SP-00380.90(d) 3/31/2008	Roadwork, Hourly Rate Basis (a) Equipment and Operators- (b) Labor (d) Overtime Work	Hours	Measured to the nearest 0.25 Hour. <ul style="list-style-type: none"> (a) and (b) will not include idle periods greater than 15 minutes duration (a) No payment will be made for time used to oil, service, or repair equipment, or to change equipment attachments (b) Pay time measured per labor agreement, if applicable. Note: <ul style="list-style-type: none"> Item (c) Material And Other Items- per approved change order Item (d) Overtime Work - if ordered will be measured for payment according to 00380.32 and Section 00197. Item (e) Work Zone Traffic Control - measured for paid per Section 00225.
SP-00380.90(d) 3/31/2008	Roadwork, Hourly Rate Basis- (d) Moving Costs	Lump Sum	No measurement required
SP-00380.91 3/31/2008	Road Work Hourly Basis- Required Alternate and Approved Substitute Equipment	New Contract unit prices	See SP-00380.91 for: <ul style="list-style-type: none"> (a) Approved Equipment or (b) Rental Rate Ratio Method Calculation
00390.80(a) 00390.90(a)	(a) Riprap - Filter Blanket	SY	Default to 00190.10(c) – At least to the nearest 0.1 SY <ul style="list-style-type: none"> Measurement on an area basis of finished surface within the neat lines shown or directed.

00390.80(b) 00390.90(b)	(b) Riprap Backing	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> Measurement of finished geotextile or blanket surface within the neat lines shown or directed. <p>Note: Riprap geotextile will be paid for according to 00350.90, except when it is included in item (b).</p>
00390.80(c) 00390.90(c) 00390.90(d) 00390.90(e)	<p>Riprap:</p> <p>(c) Loose</p> <p>(d) Keyed</p> <p>(e) Grouted</p>	CY or Ton	<p>Default to 00190.10(d) – At least to the nearest 0.01 Ton, or Default to 00190.10(e) – at least to the nearest 0.1 CY</p> <ul style="list-style-type: none"> Conversion from in-place to hauling vehicle = 1.00 CY vehicle measure= 0.70 CY in place. <p>Note:</p> <ul style="list-style-type: none"> Item (d) grout is included in the pay items.
00390.80(d) 00390.90(f)	(f) Rip Rap Basins	Each	Default to 00190.10(a)- Unit will be each, unless otherwise specified
00396.80 00396.90	Shotcrete Slope Stabilization	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> Measurement on finished shotcrete surface area.
00398.80(a-b) 00398.90(a) 00398.90(b)	<p><u>Rock Slope Stabilization and Reinforcement:</u></p> <p>(a) Wire Mesh Slope Protection</p> <p>(b) Post-Supported Wire Mesh Slope Protection</p>	SF	<p>Default to 00190.10(c) – At least to the nearest 0.1 SF</p> <ul style="list-style-type: none"> Item (a) Measurements on the area basis, along the surface area of wire mesh fabric on the slope. Item (b) Measurements on the area basis, along the surface area of wire mesh from center to center of end posts. <p>Note:</p> <ul style="list-style-type: none"> No separate or additional payment will be made for rock and soil anchors, wire rope, rail, concrete, grout, polyester resin, steel posts, and hardware.

00398.80(c) 00398.90(c) 00398.90(d) 00398.90(e) 00398.90(f)	(c) Rock Protection Screen Behind Concrete Barrier and Guard (d) Barrier Mounted Rock Protection Screen (e) Rock Reinforcing Bolt (f) Rock Reinforcing Dowel	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> • Items (c) & (d) measurements on the length basis, from center to center of end posts along the line and grade of each separate run. • Item (e-f) – measurement on the length basis, along the entire length of each rock reinforcing bolt and rock reinforcing dowel (embedded and protruding). <p>Note:</p> <ul style="list-style-type: none"> • Item (d) includes the concrete barrier • No separate or additional payment will be made for rock and soil anchors, wire rope, rail, concrete, grout, polyester resin, steel posts, and hardware.
00398.80(f) 00398.90(g)	(g) Rockfall Net System	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> • Item (g) – measurement on the length basis, from center to center of end posts along the line and grade of each separate run. <p>Note:</p> No separate or additional payment will be made for rock and soil anchors, wire rope, rail, concrete, grout, polyester resin, steel posts, and hardware.

QUANTITY MEASUREMENT GUIDELINE Oregon 2008 Standard Specifications for Construction (Part 400)			Revision 9/28/2010
SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 00400 – DRAINAGE AND SEWERS			
00405.81(a) 00405.90(a)	(a) Rock Excavation	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> • Measurement limits defined in 00405.81(a) • Length- horizontal distance measured along centerline of trench excluding manholes, inlets and other structures. • Width-width of rock removed but not greater than the outside diameter of pipe bell plus 12-inches. • Depth- measured at 30 foot intervals, or as specified, along the centerline of the trench. The depth will not be greater than 6 inches below the outside bell of the pipe. • Manholes & Inlets- calculated to a depth 6 inches below the bottom of the structure and an area within a line parallel with, and 12 inches outside of, the actual dimensions of the manhole, inlet, or structure
00405.81(b) 00405.90(b)	(b) Boulder Excavation	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> • <u>Volume = (L x 85%) x (W x 85%) x H x 85%). CF to CY</u> • Measure after removal from excavation, but prior to removal from site.
00405.82 00405.90(c)	(c) Trench Foundation	Ton	Default to 00190.10(d) – At least to the nearest 0.01 Ton <ul style="list-style-type: none"> • Material will be based on weigh tickets from scales meeting the requirements of Section 00190. • <i>Present weigh tickets to the Engineer for signature on the day the material is delivered.</i>
00405.82 00405.90(c)	(c) Trench Foundation	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> • Measurement limits defined in 00405.82 • <u>Length</u> - Horizontal distance measured along centerline of trench <u>Measurement will be continuous through manholes or structure locations.</u> • Width - Nominal inside diameter of the pipe plus two times

			<p>dimension "B" from "Table A" shown on the standard drawings.</p> <ul style="list-style-type: none"> • Depth - Vertical distance from the top of the underlying surface (following excavation of unsuitable material) to the bottom of the pipe bedding. The depth will be measured at intervals of 30 feet, or as specified, along the centerline of the trench and the average depth between points will be used for the volume computation. <p>Note:</p> <ul style="list-style-type: none"> • Item (c) includes removal of unsuitable material and replacement as necessary to provide a stable foundation for the pipe.
00406.80 00406.90	Tunneling, Boring & Jacking	Lump Sum	<p>No measurement required; unless changes are ordered in writing by the Engineer.</p> <ul style="list-style-type: none"> • The additional effort required to install conduits, pipes, casings, linings, and sleeves by tunneling, boring, or jacking (other than under a railroad) will be paid for at the Contract lump sum amount for the item "Tunneling, Boring, and Jacking". • Pipe will be paid for according to the appropriate items under which this work is required.
00410.80 00410.80(a) 00410.90(a) 00410.90(b) 00410.90(c)	<p><u>Pipe Lining-</u> (a) Pipe Bursting and HDPE Liner, ___ inch (b) HDPE Liner, ___ inch (c) CIPP Liner, ___ inch</p>	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <p>Note:</p> <ul style="list-style-type: none"> • Items (a-c)- Length will be measured, with <i>no deduction</i> for structures or fittings, along the pipe flow line from center to center of manholes, inlets, structures, special sections, or the ends of pipe, whichever is applicable.

00410.80 00410.80(b) 00410.90(d)	<u>Pipe Lining-</u> (d) Sag Repair	Foot	Measured on the length basis, to the nearest foot
00410.80 00410.80(c) 00410.90(e) 00410.90(f)	<u>Pipe Lining-</u> (e) Point Repairs (f) Service Line Reconnections	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <u>Note:</u> <ul style="list-style-type: none"> Item 00410.80 (c) unit basis, regardless of size
00410.80 00410.80(d) 00410.90(g)	<u>Pipe Lining-</u> (g) Video Inspection	Foot	Measured on the length basis, to the nearest foot <ul style="list-style-type: none"> Measurement will be made twice: pre-installation and post-installation video inspection. <u>Note:</u> <ul style="list-style-type: none"> The length will be measured, with no deduction for structures or fittings, along the pipe flow line from center to center of manholes, inlets, structures, special sections, or the ends of pipe, whichever is applicable.
00420.80 00420.90(a) 00420.90(b)	Salvaging Pipe- (Salvage, Stockpiling and Relaying)	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT (see added info with re-laid pipe) <u>Note:</u> <ul style="list-style-type: none"> Measurement regardless of size, kind or type that is removed, cleaned and stockpiled or relaid. Re-laid pipe will be measured according to Section 00445.80 (determined by length and depth) Maximum depth to flow line is determined along the pipe centerline, measured vertically from flow line to original ground surface, subgrade, paved surface, and slopes of other excavations, whichever is less.
00430.80	<u>Subsurface Drains:</u>	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT

00430.90(a)	(a) ___ Inch Drain Pipe		<p>Note:</p> <ul style="list-style-type: none"> • Payment for drainage geotextile, delineators and trench resurfacing will be made separately
00430.80 00430.90(b)	Subsurface Drains: (b) Subsurface Drain Outlets	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <p>Note:</p> <ul style="list-style-type: none"> • Payment for drainage geotextile, delineators and trench resurfacing will be made separately
00432.80 00432.90(a)	(a) Wearing Surface Drains	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT
00432.80 00432.90(b)	(b) Wearing Surface Drain Outlets	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <p>Note:</p> <ul style="list-style-type: none"> • Includes the protection block, drain pipe, and rodent screen.
00435.80(a) 00435.90(a)	(a) Prefabricated Vertical Drains	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> • Measure the distance the installation mandrel tip penetrates below the surface, plus the required cutoff length above working surface.
00435.80(b) 00435.90(b)	Prefabricated Vertical Drains: (b) Obstruction Clearance	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> • Length from the designed working surface to the depth penetrated by the auger or spud, or to the bottom of the obstruction (Payment only when authorized by the Engineer)
00440.80	Commercial Grade Concrete (CGC)		<ul style="list-style-type: none"> • No separate measurement or payment – included in the payment for the items of work using CGC.
00442.80	Controlled Low Strength		<ul style="list-style-type: none"> • Measurement and payment measured as specified for the

	Materials (CLSM)		application where used.
00445.80(a) 00445.90(a-b) <i>SP-00445.90(a)</i> <i>6/4/2009</i>	Pipe: (Sanitary, Storm, Culvert, Siphon and Irrigation Pipe) (a) ___ Inch ___ Pipe, ___ Depth (b) ___ Inch ___ Pipe	Foot	<ul style="list-style-type: none"> Length measured along flow line from center to center of manholes, inlets, special sections or the end(s) of pipe, whichever is applicable. Per SP-00445.90(a)- <i>to the nearest foot</i> Note: <ul style="list-style-type: none"> Excavation and backfill for pipes greater than 72 inches in diameter will be paid for according to Section 00510.
00445.80(b) - (g) 00445.90(c) 00445.90(d) 00445.90(e) 00445.90(f) 00445.90(g) 00445.90(h) 00445.90(i)	Pipe: (c) Pipe Tees, ___ inch (d) Pipe Wye, ___ inch (e) Slip Joints, (f) Sloped End Section, (g) Safety End Sections, (h) Concrete Pipe Anchors, (i) Concrete Closure Collars	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> Item 00445.80(b) No deduction will be made from measurement of pipe for the length of fitting. Note: <ul style="list-style-type: none"> Item (g) includes safety bars, when required
00445.80(h) 00445.90(j)	Pipe: (j) Concrete in Blocks	CY	<p>Default to 00190.10(e) – At least to the nearest 0.1 CY</p> <ul style="list-style-type: none"> Volume- In place
00445.80(i) 00445.90(k)	Pipe: (k) Reinforcement in Blocks	Lump Sum or Pound	<ul style="list-style-type: none"> Lump Sum: No measurement required; unless changes are ordered in writing by the Engineer. Weight- Default to 00190.10(d)- At least to the nearest 1.0 Pound (lbs) Measurement made to 00530.80 (density information).
00445.80(j) 00445.90(l)	(l) Video Inspection	Foot	<p>Default to 00190.10(b) – At least to the nearest foot</p> <ul style="list-style-type: none"> Along pipe flow line from center to center of manholes No deduction for structures or fittings. Measure pipes with sloped ends to the top of the sloped

			end sections.
00445.80(k) 00445.90(m)	(m) Installation Under Railroad	Lump Sum	<ul style="list-style-type: none"> Lump Sum: No measurement required; unless changes are ordered in writing by the Engineer. No measurement will be made for additional work necessary to install pipe under railroads. <p>Note:</p> <ul style="list-style-type: none"> Pipe installed will be measured separately per 00445.80(a)
SP-00446.80 SP-00446.90 6/4/2009	Trench Drains, Type “_____”	Foot	<p>Per SP-00446.80- Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> Measure from the beginning of the trench drain to the center of the receiving structure
00450.80 00450.90(a) 00450.90(b) 00450.90(c) 00450.90(d) 00450.90(e)	a) Plate Pipe Arches, b) Pipe Arches c) Structural Plate Pipes, d) Horizontal Ellipses, and e) Vehicular Underpasses	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> Measured along bottom centerline of the structures (excludes overlap). <p>Note:</p> <ul style="list-style-type: none"> Excavation & Backfill for pipes over 72-inches measured per section 00510.
00450.80 00450.90(f)	(f) Structural Plate Concrete Footings and Headwalls	CY	<p>Default to 00190.10(e) – At least to the nearest 0.1 CY</p> <ul style="list-style-type: none"> Measured within the neat lines of the structure shown. <p>Note:</p> <ul style="list-style-type: none"> Reinforcement for footings will be paid for under 00530.90(a) or (b) for Lump Sum or Weight, respectively.
SP-00459.80 SP-00459.90	“_____” inch Cast In-Place Concrete Pipe	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> Measured along the pipe flow line from center to center of

			<p>manholes, inlets, special sections, the ends of pipe, or the ends of the sloped or skewed ends, whichever is applicable</p> <ul style="list-style-type: none"> Includes trench excavation and backfill
00460.80	Paved Culvert End Slopes	SF	<p>Default to 00190.10(c) – Plans show to the 0.1 SF</p> <ul style="list-style-type: none"> No actual field measurements made unless changes ordered. Otherwise, pay plan quantity (table on plans) If changed, measurement based on actual paved surface area (not including the culvert opening) plus the face area of the cut-off wall.
00470.80 00470.90(a) – (k)	Manholes, inlets, catch basins, siphon boxes, slope protectors and other structures.	Each	<p>Default to 00190.10(a) – Unit will be each.</p>
00475.80 00475.90(a)	(a) Drain Wells (8-inch)	Each	<p>Default to 00190.10(a) – Unit will be each.</p> <ul style="list-style-type: none"> Includes all costs involved in drilling 8-inch drain wells up to 100 feet in depth.
00475.80 00475.90(b)	(b) Extra for Drain Wells Deeper than (100 ft)	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> Pay amounts greater than (100 ft).
00475.80 00475.90(c)	(c) NPS 8-inch Steel Well Casting	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> Includes furnishing and installing.
00480.80	Drain Curbs (Commercial Grade & Asphalt Concrete)	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> Each continuous run measured along the line and grade of the curb.
00490.80	Work on Existing Sewers	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p>

QUANTITY MEASUREMENT GUIDELINE
Oregon 2008 Standard Specifications for Construction
(PART 500)

Revision 9/28/2010

SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 00500 - BRIDGES			
00501.80 SP-00501.90	Bridge Removal Extra for Salvaging and Stockpiling Bridge	Lump Sum	Lump Sum: No measurement required; unless changes are ordered in writing by the Engineer.
00503.80	Bridge Deck- Cold Plane Pavement Removal	SY	Measure width and length of the bridge deck surface, to the nearest 0.1 foot and calculated to the nearest SY .
SP-00503.80 SP-00503.90 6-26-2008	Bridge Deck- Cold Plane Pavement Removal (latex and microsilica)	Incidental	No separate measurement will be made for removing asphalt concrete surfacing from bridge decks for the preparation of latex or microsilica modified concrete resurfacing. Payment included in latex or microsilica modified concrete resurfacing work
00510.80(a) 00510.90(a)	(a) Shoring, Cribbing and Cofferdams	Lump Sum	Lump Sum: No measurement required; unless changes are ordered in writing by the Engineer. Footing Elevation Changes/ Compensation: <ul style="list-style-type: none"> • 0 to 3 Feet Below Elevations- No Extra Payment • More than 3 feet Below Excavation- determined according to Section 00196.00
00510.80(b-1) 00510.90(b)	(b) Structure Excavation	Lump Sum	Lump Sum: No measurement required; unless changes are ordered in writing by the Engineer. <ul style="list-style-type: none"> • Estimate of quantities listed in Special Provisions

<p>00510.80(b-2.a-c)</p> <p>00510.90(b)</p>	<p>(b) Structure Excavation</p>	<p>CY</p>	<p>Default to 00190.10(e) – At least to the nearest 0.1 CY</p> <ul style="list-style-type: none"> • Measured in original position before excavation. <p>Limited to neat lines shown, if not shown see 00510.80(b-2-a & b)</p> <ul style="list-style-type: none"> • Lower limit – elevations shown for the bottoms of structure footing or bases, including bedding. • Upper limit – <ul style="list-style-type: none"> a) Within Embankments – planes of new embankment at elev. Specified. b) Within Roadbed or Channel Change Excavation- planes of the bottoms and side slopes of excavations. c) All other cases- ground surface immediately before starting the excavation. • Horizontal limit-00510.80 (b.2.c) Horizontal limits will be vertical planes parallel to and 1 foot outside the neat lines of the footings or bases of all structures, except for structural plate structures and pipe culverts over 72 inches in diam. • Structure excavations less than specified horizontal limits will measure per the actual excavations made.
<p>00510.80(c-1)</p> <p>00510.90(c-1)</p> <p>SP-00510.90(c-2/26/2009)</p>	<p>(c) Structure Excavation Below Elevations Shown</p>	<p>Lump Sum</p>	<p>Lump Sum based on elevations:</p> <ul style="list-style-type: none"> • More than 3 feet Below Excavation- determined according to Section 00196.00 • 0 to 3 Feet Below Elevations- measurement according to 00190.10(h)
<p>00510.80(c-2)</p> <p>00510.90(c-2)</p>	<p>(c) Structure Excavation Below Elevations Shown- (Volume)</p>	<p>CY</p>	<p>Default to 00190.10(e) – At least to the nearest 0.1 CY</p> <ul style="list-style-type: none"> • Measured in original position before excavation. • Excavation is below lower limits shown on plans; see 00510.80(b-2-a). Bottom limits will be measured to the new lower limits of the excavation. • Horizontal limits will be vertical extensions of the quantity limits per 00510.80 (b-2-c)

00510.80(d) 00510.90(d) <u>SP-00510.90(d)</u>	(d) Granular Wall / Structure Backfill	CY (or) <u>Lump Sum</u>	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Determined by cross section measurement. This may be deleted per the special provisions: <u>Special Provisions:</u> <ul style="list-style-type: none"> Per SP-00510.90(d) – No Measurement required, Payment will be on the lump sum basis
00512.80(a) & 00512.90(a)	(a) Furnish Drilling Equipment	Lump Sum	Lump Sum based on the following: <ul style="list-style-type: none"> Pay 60% when all drilling equipment is on the job, assembled and ready to excavate the shaft Pay remaining 40% when all shafts have been excavated and all shaft concrete has been placed and accepted.
00512.80(b) 00512.90(b)	(b) Permanent Casing	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT
00512.80(c) 00512.90(c)	(c) Drilled Shaft Excavation	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> Vertical excavated length from the bottom of the shaft to the top of the shaft or mud line if under water. If contractor chooses, no additional payment will be made for the larger shaft diameter casing, excavation, etc. Requires drilled shaft report (Form- 734-2604)
00512.80(d) 00512.90(d)	(d) Drilled Shaft Concrete	Lump Sum	Lump Sum: No measurement required, estimated quantities of concrete will be listed in the Special Provisions.
00512.80(e) 00512.90(e)	(e) Drilled Shaft Reinforcement	Lump Sum	Lump Sum: No measurement required, estimated quantities of concrete will be listed in the Special Provisions.
00512.80(f) 00512.90(f)	<u>Crosshole Sonic Log (CSL):</u> (f) CSL Equipment Mobilization	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Measured each time the Contractor mobilizes all testing equipment and personnel onto Project as required for CSL testing. Note: <ul style="list-style-type: none"> Once mobilized, no separate or additional payment will be

			made for equipment mobilization required to access test shafts at different locations within the Project limits.
00512.80(g) 00512.90(g)	(g) CSL Test Access Tubes	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> Length of tubes installed in drilled shafts
00512.80(h) 00512.90(h)	(h) CSL Tests	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Includes CSL all testing, interpretation, analysis, electronic data, and final report for each tested and accepted shaft. No separate measurement for CSL tests performed at the Contractor's option.
00520.80(a) 00520.90(a)	<u>Driven Piles:</u> (a) Furnish Pile Driving Equipment	Lump Sum	Lump Sum: No measurement required, pay as followed: <ul style="list-style-type: none"> Pay 75% when equipment is furnished and is satisfactorily driving piles. Pay remaining 25% driving pile is complete and equipment has been removed from the site.
00520.80(b) 00520.80(b-1,2,3) 00520.90(b) 00520.90(c)	(b) Furnish ____ Piles (f-1) Steel (f-2) Prestressed Concrete and Timber (c) Furnish ____ Test Piles (f-1) Steel (f-2) Prestressed Concrete and Timber	Foot	<u>Measurement will be to the nearest foot.</u> <ul style="list-style-type: none"> <u>(b-1) Steel Piles:</u> Length of each pile remaining in the completed work, from pile tip to the cutoff plane, measured to the nearest foot. <u>(b-2) Concrete/Timber Piles:</u> Sum of the lengths of each pile, measured to the nearest foot, and stockpiled in good condition at the site. Test Piles: Measured according to (b-1) and (b-2) above as applicable <u>Note:</u> <ul style="list-style-type: none"> No separate or additional payment will be made for welding inspection performed according to 00520.43(g-2).
00520.80(c) 00520.90(d)	(d) Drive ____ Piles (f-1) Steel (f-2) Prestressed	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Item (d) includes cutting off piles, treating and capping pile

00520.90(e)	Concrete and Timber (e) Drive Test Piles (f-1) Steel (f-2) Prestressed Concrete and Timber		heads, attaching anchor brackets, lugs or other attachments, and finishing concrete piles. Note: <ul style="list-style-type: none"> Items (d) and (e) includes all expenses involved in driving piles which have not attained the required bearing resistance and are required to stand for a "set period".
00520.80(c) 00520.90(f)	<u>Driven Pipes:</u> (f) Preboring Piles	Foot	<u>Measurement will be to the nearest foot.</u> Note: <ul style="list-style-type: none"> No separate or additional payment will be made for preboring and jetting of piles if not included in the Contract Schedule of Items but requested by the Contractor. Differing Site Conditions, per 00140.40, paid according to section 00196
00520.80(c) 00520.90(g)	<u>Driven Pipes:</u> (g) Jetting Piles	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Note: <ul style="list-style-type: none"> No separate or additional payment will be made for preboring and jetting of piles if not included in the Contract Schedule of Items, requested by the Contractor. Differing Site Conditions, per 00140.40, paid according to section 00196
00520.80(d) 00520.90(h) 00520.90(i)	Pipe Load Test: (h) Static or (i) Dynamic	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Paid for the number of specified load tests completed and accepted.
00520.80(e) 00520.90(j)	(j) Reinforced Pipe Tips	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Item (j) includes attaching the tips to the piles.
00520.80(f-2)	(f-2) Prestressed		No measurement of quantities will be made as shown or specified:

	Concrete		<ul style="list-style-type: none"> Additional splices required to complete the work will be done as extra work per Section 00196.
00520.80(f-1) 00520.90(k)	(k) ___ Steel Pile Splices (f-1) Steel	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> Only one splice will be measured per pile < 60 feet +/- 5 feet or more >60 feet +/- 10 feet or more No measurement for splices to steel piles within the estimated lengths listed in 00520.11 of the special provisions.
00530.80(a) 00530.80(b) 00530.90(a) 00530.90(b)	(a) Reinforcement (b) Coated Reinforcement	Lump Sum or Pound (lbs)	<p><u>Lump Sum:</u> No measurement required; estimated quantities of reinforcement will be listed in the Special Provisions, (except prestressed beams, slabs, piles, etc.)</p> <p><u>Weight-</u> Default to 00190.10(d)- At least to the nearest 1.0 Pound (lbs) Measurement made to 00530.80 (density information).</p> <ul style="list-style-type: none"> Weight of mesh computed from the theoretical weight of plain wire. Use weight per square foot, if shown. Use weights published in the CRSI “Manual of Standard Practice”. No additional payment for bars substituted at the Contractor’s request, as a result increase the amount of steel used or (greater than specified). Pay specified amount. When laps are made for the convenience of the contractor, the extra rebar quantities will not be paid for. Payment for reinforcement will be made when the reinforcement is incorporated into the concrete. <p><u>Unique Specs:</u></p> <ul style="list-style-type: none"> <i>U00530.80(b) Weight- Stainless Steel- 500 lbs/CF</i> <i>U00530.90(c) Stainless Steel Reinforcement...LS or Pound</i>
<i>U00530.80(b)</i> <i>U00530.90(c)</i>			

SP-00532.80 SP-00532.90 3-31-2008	<u>Rebar Continuity</u>	<u>Lump Sum</u>	<u>Lump Sum: No measurement required, estimated quantities will be listed in the Special Provisions</u>
00535.80 00535.90	Resin Bonded Anchor Systems	Incidental	No separate measurement or payment – included in the payment for the items of work using anchor system fastens.
SP-00536.80 SP-00536.90(a) 2-5-2009	<u>Internal Shear Anchors:</u> (a) Top (b) Bottom	<u>Lump Sum</u>	<u>Lump Sum: No measurement required unless changes are ordered in writing by the Engineer.</u>
SP-00536.80 SP-00536.90(b) 2-5-2009	<u>Internal Shear Anchors:</u> (c) Anchor Demonstration	<u>Each</u>	<u>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</u>
SP-00538.80 SP-00538.90 2-5-2009	<u>Crack Injecting Existing Bridges</u>	<u>Foot</u>	<u>Measured on the length basis, to the nearest foot.</u> <ul style="list-style-type: none"> <u>Length- straight line distance between the beginning point and ending point of each filled crack</u>
00540.80(a) 00540.90(a) 00540.90(b) 00540.90(c)	<u>Structural Concrete:</u> (a) Foundation Concrete, Class ____ (b) Deck Concrete, Class ____ (c) General Structural, Class ____	Lump Sum -or- CY	Lump Sum: No measurement required, estimated quantities will be listed in the Special Provisions -or- Volume: Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Measured within the neat lines of the structure as shown No deductions will be made for the volume of pile heads, metal reinforcement, scoring, chamfer strips or structural steel embedded in the concrete.
00540.80(b) 00540.90(d) SP-00540.80(b)	<u>Structural Concrete:</u> (d) Saw Cut Texturing (d) Saw Cut Texturing	SY	Calculated to the nearest SY for each bridge. <ul style="list-style-type: none"> Area will be determined by surface measurement of the width of bridge deck or end panel from curb face to curb face minus 16 inches on each side and the full length of the bridge deck or end panel.

1-14-2010			<p>SP-540.80(b) "surface measurements" Replace/ delete Standard Specification paragraph and replace:</p> <p>The area will be calculated to the nearest square yard for each bridge deck or end panel.</p> <ul style="list-style-type: none"> No field measurement will be made Area of each bridge deck or end panel from curb face to curb face shown, less 16 inches on each side
00545.80 00545.90	Reinforced Concrete Bridge End Panel	SY	<p>Measured to the nearest square yard (SY) for each bridge.</p> <ul style="list-style-type: none"> Surface measurement determined by the width and length of each separately constructed end panel.
00550.80 00550.90(a) 00550.90(b) 00550.90(c)	<p>(a) ___ Precast Prestressed Girders</p> <p>(b) ___ Precast Prestressed Slabs</p> <p>(c) ___ Precast Prestressed Box Beams</p>	Foot	<p>No field measurement.</p> <ul style="list-style-type: none"> Sum of the theoretical horizontal lengths shown in the plans (nearest 0.1 FT) for each member, then added together for a total for each member type which is then rounded to the nearest (foot) for payment.
00555.80	Post Tensioning	Lump Sum	<p>Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; estimated quantities will be listed in the Special Provisions.</p> <ul style="list-style-type: none"> No separate or additional payment will be made for anchorage devices, ducts, tendons, prestressing steel, grout and admixtures, or for preparation and testing of grout.
SP-00557.80 SP-00557.90(a) 1-14-2010	<p><u>Premixed Polymer Concrete Pavement Overlays:</u></p> <p>(a) Class 2 Preparation</p>	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> No separate or additional payment will be made for Class 1 preparation work or for constructing and disposing of the trial overlays. Class 3 preparation will be paid for as Extra Work

			according to Section 00196.
SP-00557.80 SP-00557.90(b) 1-14-2010	Premixed Polymer Concrete Pavement Overlays: (b) Furnishing Premixed Polymer Concrete	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Determined by converting the weight identified on the mixer's automatic metering device to volume using yield factor per (ASTM C 138) by batch.
SP-00557.80 SP-00557.90(c) 1-14-2010	(c) Constructing Premixed Polymer Concrete Overlay	SY	Default to 00190.10(c) – At least to the nearest 0.1 SY <ul style="list-style-type: none"> Field measurements will not be made. Area determined by calculating the area from the dimensions shown.
SP-00557.80 SP-00557.90(d) 1-14-2010	PPC Pavement Overlays: Crack Sealant Removal	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; estimated quantities will be listed in the Special Provisions.
SP-00558.80(a) SP-00558.90(a) 3-31-2008	Latex Modified Concrete (LMC) Resurfacing of Bridge Decks and Pavements: (a) Class 2 Preparation	SY	Measured to the nearest SY <ul style="list-style-type: none"> No separate or additional payment will be made for Class 1 preparation. Class 3 preparation will be paid for as Extra Work according to Section 00196.
SP-00558.80(b) SP-00558.90(b) 3-31-2008	(b) Furnish LMC	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Measurement determined from the certified tickets from delivery vehicle. Checked by yield test performed. (w/ no deductions for materials tested) If delivered other than a mobile mixer, the contractor and the engineer will initial certified load ticket Deduction for material removed beyond 2" outside the saw cut. (Depth will be amount shown)
SP-00558.80(c) SP-00558.90(c)	(c) Constructing LMC	SY	Measured to the nearest SY <ul style="list-style-type: none"> Measurement will be determined by measuring the actual

3-31-2008			surface area of bridge deck or pavement
SP-00559.80(a) SP-00559.90(a) 3-31-2008	Microsilica Concrete (MC) Resurfacing of Bridge Decks and Pavement: (a) Class 2 Preparation	SY	Measured to the nearest SY <ul style="list-style-type: none"> • Measurement will be determined by measuring the actual surface area of bridge deck or pavement • No separate or additional payment will be made for Class 1 preparation. • Class 3 preparation will be paid for as Extra Work according to Section 00196.
SP-00559.80(b) SP-00559.90(b) 3-31-2008	(b) Furnish Microsilica Concrete	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> • Measurement determined from the certified tickets from delivery vehicle. • Checked by yield test performed. (w/ no deductions for materials tested) • If delivered other than a mobile mixer, the contractor and the Engineer will initial certified load ticket • Deduction for material removed beyond 2" outside the saw cut. (Depth will be amount shown) • Includes MC used above the lower limit of Class 2 preparation
SP-559.80(c) SP-559.80(c)	(c) Constructing MC	SY	Measured to the nearest SY <ul style="list-style-type: none"> • Measurement will be determined by measuring the actual surface area of bridge deck or pavement • All additional depth of placement is included in this item, including deteriorated concrete removed below specified depths via hydro-demolition.
00560.80 SP00560.90 4-10-2009	Structural Steel Bridges (Misc. Metals): Steel Plate Girder, with	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; estimated quantities will be listed in the Special Provisions.

	Haunch, Horizontal Curved Steel Plate Girder, Steel Box Girder, Trapezoidal Steel Box Girder & Haunch, Steel Rolled Beam, Structural Steel Maintenance.		
00570.80 00570.90(a) 00570.90(b)	Timber Structures (a) Timber & Lumber (b) Glued Laminated Timber	MFBM	<p>Default to 00190.10(e) – At least to the nearest 0.1 MFBM</p> <ul style="list-style-type: none"> • Timber & Lumber – will be measured using the nominal dimensions of the members and the actual dimensioned length. (No allowance for waste) • Glued Laminated Timber - will be measured using the net dimensions of the members. <p><i>Calculation: Thousand Foot Board Measure</i> $\left(\left(\text{Thickness (inches)} \times \text{Width (inches)} \times \text{Length (Feet)} \right) / 12 \right) / 1000$</p>
00581.80 00581.90	Bridge Drainage System	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> • No additional payment made for drain pipe connected to bridge drains or water used in testing the drain system
00582.80(a) 00582.90(a)	(a) Composite Bearings	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> • Includes all components from the bearing seat attachment through the superstructure attachment.
00582.80(b) 00582.90(b)	(b) Elastomeric Bearing Pads	Incidental	<ul style="list-style-type: none"> • No separate measurement or payment – included in the payment in one or more listed items.
00583.80 00583.90	Electrical Conduit in Structures	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> • Length of each size of conduit, including the length of stub-outs if shown.

00584.80 00584.90(a)	(a) Elastomeric Concrete Nosing <i>Check Special Provisions for Warranty Deletion</i>	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> Length of joint from face of curb to face of curb for depths of (2 inch) Item (a) includes elastomeric concrete nosing installed to nominal depth of 2 inches. Note: <ul style="list-style-type: none"> Payment will be limited to 75% of the amount due until the Agency has received the signed warranty.
00584.80 00584.90(b)	(b) Elastomeric Concrete Nosing Material- <i>Check Special Provisions for Warranty Deletion</i>	CY	Joint seal material will be measured according to 00585.80, the estimated quantities of material will be listed in special provisions and will be based on a nominal depth of 2 ¼ inches. <ul style="list-style-type: none"> If depth exceeds (2 inch) measure on the volume basis to the nearest 0.05 CY. Item (b) includes materials only for concrete nosing depths greater than 2 inches. Note: <ul style="list-style-type: none"> Payment will be limited to 75% of the amount due until the Agency has received the signed warranty. See Special Provisions
SP-00584.80 SP-00584.90(a) 6-10-10	(a) Elastomeric Concrete Nosing	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT SP-00584.80- Determines which method is used in the Special Provisions. <ul style="list-style-type: none"> This is for new materials, deletes the nominal 2 inches measurement and volume measurement to the 0.05 CY. Item (a) includes new elastomeric concrete nosing installed at depths shown

			<ul style="list-style-type: none"> • SP00584.75- Deletes Warranty Requirement • Joint seal material will be paid for according to 00585.90. • No separate or additional payment will be made for providing the manufacturer's representative.
<p>SP-00584.80 SP-00584.90(a)</p> <p>SP-00584.90(b)</p> <p>SP-00584.90(c) 6-10-10</p>	<p>(b) Repair Elastomeric Concrete Nosing Material</p> <p>(c) Repair Elastomeric Concrete Nosing</p>	<p>Foot</p> <p>CY</p>	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <p>SP-00584.80- Option- Deletes the nominal 2 inches measurement and volume measurement to the nearest 0.05 CY, except for existing concrete repair.</p> <ul style="list-style-type: none"> • Item (b) includes existing concrete repair, epoxy injection and elastomeric nosing installed to a nominal dept of 2 inches. • Item (c) Includes materials only for concrete nosing depths greater than 2 inches for existing concrete repair. Volume measurement to the nearest 0.05 CY. • SP00584.75- Deletes Warranty Requirement • No separate or additional payment will be made for providing the manufacturer's representative.
<p>00585.80 00585.90(a)</p> <p><i>Deleted CY Pay Item Per SP-0585.80) 00585.90(b) 2/25/2010</i></p> <p>00585.90(c)</p> <p>00585.90(d)</p>	<p><u>Expansion Joints:</u></p> <p>(a) Asphaltic Plug Joint Seals</p> <p>(b) Asphaltic Plug Joint Seal Materials-(Deleted per SP)</p> <p>(c) Poured Joint Seals</p> <p>(d) Type ___ Preformed Polychloroprene Compression Joint Seals</p>	<p>Lump Sum</p> <p>-or-</p> <p><u>CY**</u></p>	<p>Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; estimated quantities will be listed in the Special Provisions.</p> <ul style="list-style-type: none"> • Payment will not be prior to passing leakage test per 00585.41(e) • SP-00585.90 Deleted: Estimated quantities based on nominal depth of 2 ¼ inches • SP-00585.90 Deleted: "Payment will be limited to 75% of the amount due until the Agency has received the signed warranty." • SP-00585.90 ADD: Provide Manufacturer's Representative <p>Note: (DELETED PER SP-00585.80 & 90)</p>

00585.90(e)	(e) Preformed Elastomeric Strip Seals		<ul style="list-style-type: none"> • ** Joints deeper than 2 ¼ inches will be measured on the volume basis. • Default to 00190.10(e) — At least to the nearest 0.1 CY
00585.90(f)	(f) Type ___ Modular Expansion Joint Seals		
00587.80	Bridge Rails	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; estimated quantities will be listed in the Special Provisions.
SP-00589.80 SP-00589.90 3-31-2008	Utility Attachments on Structures	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer.
00591.80	Waterproofing Membrane	SF	<p>Default to 00190.10(c) – At least to the nearest 0.1 SF</p> <ul style="list-style-type: none"> • Measure surface area sealed, excluding curb and rail faces, limited to the neat lines. (No overlaps) • Section will be limited to 75% of the amount due until Agency has received the signed warranty
00593.90(a) 00593.90(b)	<u>Powder Coating:</u> (a) New Metal Structures (b) Existing Metal Structures	Incidental	No measurement required unless changes are ordered in writing by the Engineer.
00594.80 00594.90(a)	<u>Preparing and Coating Metal Structures:</u> (a) New Metal Structures	Incidental	No measurement required unless changes are ordered in writing by the Engineer.
00594.80 000594.90(b)	<u>Preparing and Coating Metal Structures:</u> <u>(Existing Metal Structures)</u> (a) Containment	Lump Sum	<p>No measurement required; unless changes are ordered in writing by the Engineer.</p> <ul style="list-style-type: none"> • Partial payments for items (c), (d) and (e) will be made only for portions of the structure that have been prepared and

00594.90(b-(a-e)) <i>SP-00594.75 Warranty Changes 5-06-10</i>	(b) Moving Bridge Containment system (c) Surface Preparation (d) Coating Applications (e) Coating Materials		coated with all coats specified. <ul style="list-style-type: none">Partial payment will represent an estimate of the work completed as a percentage of the total coating system work to be done. <i>SP-00594.75 Coating System Warranty - Unconditionally warrant to the Agency that all coating work and the coating system(s), both above deck and below deck, performed and applied on this Project are and shall be free of all defects for a period of 36 months. Use agency supplied warranty.</i>
00595.80 00595.90(a)	(a) Reinforced Concrete Box Culverts	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none">Measured along the centerline of the box culvert, from end to end of the box.Excludes wingwalls and aprons
00595.80 00595.90(b) <i>SP-00595.80 12-9-2009</i>	(b) Wingwalls and Aprons <i>SP- will have estimated quantity</i>	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; estimated quantities will be listed in the Special Provisions.
00596.80 00596.90(a) 00596.90(b) 00596.90(c) 00596.90(d) 00596.90(e) 00596.90(f)	<u>Retaining Walls:</u> (a) Cast-In-Place Concrete (b) Gabion (c) Prefabricated Modular (d) Conventional Segmental (e) MSE (f) Contractor’s Option	SF	Default to 00190.10(c) – At least to the 0.1 SF (or area shown) No field measurement required. <ul style="list-style-type: none">The quantity paid will be the theoretical area shown unless changes are ordered in writing.If changes are ordered, (in writing) an adjustment will be made only for the quantity difference involved in the ordered plan changes. <i>(See Special Provisions)</i> <i>The area for each retaining wall will be the theoretical area shown in the Schedule of Items unless changes are ordered in writing by the Engineer</i>

SP-00596.80 8-10-2010			
00596.80 00596.90(g)	Retaining Walls: (g) Type "F" Coping	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> Measured from end to end of coping Includes reinforcing steel and concrete
00596.80 00596.90(h)	Retaining Walls: (h) Sidewalk Coping	SF	Default to 00190.10(c) – At least to the nearest 0.1 SF <ul style="list-style-type: none"> Measured from end to end and from top of curb to exterior edge coping Includes reinforcing steel and concrete
(01-13-2010)	Retaining Walls: Mechanically Stabilized Earth (MSE) Prefabricated Modular Gravity Cast-In-Place Concrete Rigid Gravity Cast-In-Place Concrete, Semi-Gravity Cantilever	Lump Sum	No measurement of quantities will be made for retaining walls.
SP- 0A596 SP- 0B596 SP- 0C596 SP- 0C596			
SP- 0A596, 0B596 & 0C596 (01-13-2010)	____ inch Type "f" Traffic Barrier Coping with Moment Slab	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> Type "F" traffic barrier coping with moment slab will be measured on the length basis, from end to end of coping.
SP- 0A596, 0B596 & 0C596 (01-13-2010)	Sidewalk Coping	SF	Default to 00190.10(c) – At least to the nearest 0.1 SF <ul style="list-style-type: none"> Coping will be measured on the area basis, from end to end and from top of curb to exterior edge of coping. Excavation below elevations shown will be measured according to 00510.80(b).

00597.80 00597.90	Sound Walls	SF	Measured to the area basis, <u>to the nearest SF</u> <ul style="list-style-type: none"> Measurement will be made of the wall face area projected onto a vertical plane along one side of the wall.
00599.80(a) 00599.90(a)	(a) Concrete Slope Paving	SF	Measured on the area basis, <u>to the nearest SF</u> <ul style="list-style-type: none"> Measurement of slope paving surface for each bridge end slope.
00599.80(b) 00599.90(b)	(b) Berm Paving	SF	Measured on the area basis, <u>to the nearest SF</u> <ul style="list-style-type: none"> Measurement of berm paving surface for each berm.
00599.80(c) 00599.90(c)	(c) Slope Paving Curbs	Foot	Measured on the area basis, <u>to the nearest SF</u> <ul style="list-style-type: none"> Measurement of slope paving curbs will be the length of curb.

QUANTITY MEASUREMENT GUIDELINE
Oregon 2008 Standard Specifications for Construction
(PART 600)

Revision 12/1/2010

SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 00600 – BASES			
00610.80	Reconditioning Existing Roadway	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer. <ul style="list-style-type: none"> • If no item is indicated, considered incidental
00620.80	Cold Plane Pavement Removal, ____ Deep	SY	Default to 00190.10(c) – At least to the nearest 0.1 SY <ul style="list-style-type: none"> • No separate or additional payment will be made for temporary wedges constructed, maintained and removed under 00620.40(d), or for replacement of cutting teeth.
00635.80 00635.90	Grid Rolled Aggregate Subbase, ____ inches Thick	SY	Default to 00190.10(c) – At least to the nearest 0.1 SY <ul style="list-style-type: none"> • Thickness identified on plans. • Horizontal measurements <p>Note:</p> <ul style="list-style-type: none"> • Thickness other than identified by the plans, the area will be calculated by converting to an equivalent number of SY on a proportion volume basis. • No added payment for water used to bring the mixture to optimum moisture.
00640.80 00640.90(a) 00640.90(b)	(a) Aggregate Base (b) Aggregate Shoulders	Ton	Default to 00190.10(c) – At least to the nearest 0.01 Ton.

00641.80(a) 00641.90(b)	(a) Aggregate Subbase (b) Aggregate Base	Ton or CY	Default to 00190.10(d) – At least to the nearest 0.01 Ton, <ul style="list-style-type: none"> Measurement of weight (Ton) will be after mixing. 	
00641.90(c)	(c) ___ Aggregate Base		Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Measurement of volume (CY) in the hauling vehicle, per 00190.10. 	
00641.90(d)	(d) Plant Mix Aggregate Base	CY	Default to 00190.10(c) – At least to the nearest 0.1 SY <ul style="list-style-type: none"> Measurement of area (SY) to the full thickness. Areas constructed of varying thickness, as direct or shown will be adjusted by converting it to an equivalent area at the pay item thickness on a proportionate volume basis. 	
00641.90(e)	(e) Plant Mix ___ Aggregate Base		SY	Note: <ul style="list-style-type: none"> Excess water will be deducted from measurement (exceeds the % established in the mix design by more than 2%) Use 00641.12 procedure to determine water content or converted to equivalent volume.
00641.90(f)	(f) Aggregate Shoulders	SY		
00641.90(g)	(g) Aggregate Base, ___ Inches Thick			
SP-00645.80 SP-00645.90 3-31-08	(a) Recycled Asphalt Products in Base, ___ Inches Thick	SY	Measured to the nearest SY to the full nominal thickness <ul style="list-style-type: none"> Areas can be adjusted by converting equivalent SY(s) to full nominal thickness proportionate to volume basis. 	
U00660.80 U00660.90	Lean Concrete Base ___ Inches Thick.	SY	Default to 00190.10(c) – At least to the nearest 0.1 SY <ul style="list-style-type: none"> Determined by measuring width and length of each separately constructed panel. Width- design width or measured edge to edge on the surface (whichever is less) Length- Horizontal measurement from end to end of LCB along the centerline of the strip. Measurement of “extra” thickness will be proportionate volume basis to an equivalent number of SY 	

SP-00670.80 SP-00670.90(a) 3-31-08	Concrete Pavement Undersealing: (a) Drilled Holes	Each	Default to 00190.10(a) – Measurement will be each unless otherwise specified in the contract
SP-00670.80 SP-00670.90(b) 3-31-08	(b) Concrete Undersealing Grout	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY
00680.80 00680.90	Stockpiled Aggregates	Ton or CY	Default to 00190.10(d) – At least to the nearest 0.01 Ton, or Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> • Measurement of volume (CY) will be by cross section of completed stockpiles. • Measurement of weight, in the hauling vehicle, per 00190.10.
00680.81	Materials Taken from Stockpiles Prior to Completion	Ton or CY	Default to 00190.10(d) – At least to the nearest 0.01 Ton, or Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> • Measurement of volume (CY)- vehicle measurement (1.00 CY) to (0.95 CY) Stockpile measurement (V.M. of 1 CY x .95%) • Measurement of weight will be same, in hauling vehicle, per 00190.10. • Materials taken by the Agency per Section 00680.43 will be measured in Agency's Hauling vehicle.

QUANTITY MEASUREMENT GUIDELINE
Oregon 2008 Standard Specifications for Construction
(PART 700)

Revision 12/14/2010

SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 00700 – WEARING SURFACES			
00705.80 00705.90(a)	(a) Emulsified Asphalt in Prime Coat	Ton	Default to 00190.10(d) – At least to the nearest 0.01 Ton, or <ul style="list-style-type: none"> Measured according to 00190.10.
00705.80 00705.90(b)	(b) Emulsified AC in Fog Coat	Ton	Default to 00190.10(d) – At least to the nearest 0.01 Ton <ul style="list-style-type: none"> Measured according to 00190.10. Includes water required to dilute the emulsified asphalt, per 00705.11(c)
00705.80 00705.90(c)	(c) Aggregate Cover Material	Ton or CY	Default to 00190.10(d) – At least to the nearest 0.01 Ton, or Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Volume measurement will be in the hauling vehicle.
00706.80 00706.90(a)	(a) Slurry Seal Crack Seal	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT
00706.80 00706.90(b)	(b) Slurry Seal	SY	Measure to the nearest SY
00710.80 00710.90(a)	(a) Aggregate in Emulsified Asphalt Surface Treatment	Ton or CY	Default to 00190.10(d) – At least to the nearest 0.01 Ton, or
00710.90(b)	(b) Asphalt in Emulsified Asphalt Surface Treatment	Ton	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Volume measurement will be in the hauling vehicle.
00710.90(c)	(c) Extra for Emulsified Asphalt Surface Treatment Approaches	Each	Item (c) - Default to 00190.10(a) – Measurement will be each unless otherwise specified in the contract. (Single application of emulsified asphalt surface treatment)
<i>U00712.80</i>	<i>(a) Aggregate in Dry Key</i>	<i>CY or Ton</i>	<i>Default to 00190.10(e) – At least to the nearest 0.1 CY</i>

<i>U00712.90(a)</i>	<i>Emulsified Asphalt Surface Treatment</i>	<i>Ton</i>	<ul style="list-style-type: none"> <i>Volume measurement will be in the hauling vehicle.</i>
<i>U00712.90(b)</i>	<i>(b) Asphalt in Dry Key Emulsified Asphalt Surface Treatment</i>	<i>Ton</i>	<i>Default to 00190.10(d) – At least to the nearest 0.01 Ton, or</i>
<i>U00712.90(c)</i>	<i>(c) Extra for Dry Key Emulsified Asphalt Surface Treatment Approaches</i>	<i>Each</i>	<i>Default to 00190.10(a) – Measurement will be each unless otherwise specified in the contract</i>
<i>00715.80</i> <i>00715.90(a)</i>	<i>(a) Aggregate in Multiple Application Emulsified Asphalt Surface Treatment</i>	<i>CY or Ton</i>	<i>Default to 00190.10(e) – At least to the nearest 0.1 CY</i> <ul style="list-style-type: none"> <i>Volume measurement will be in the hauling vehicle.</i>
<i>00715.90(b)</i>	<i>(b) Asphalt in Multiple Application Emulsified Asphalt Surface Treatment</i>	<i>Ton</i>	<i>Default to 00190.10(d) – At least to the nearest 0.01 Ton</i>
<i>00715.90(c)</i>	<i>(c) Extra for Multiple Application Emulsified Asphalt Surface Treatment Approaches</i>	<i>Each</i>	<i>Item (c) - Default to 00190.10(a) – Measurement will be each unless otherwise specified in the contract. (Single application of emulsified asphalt surface treatment)</i>
<i>U00718.80</i> <i>U00718.90</i>	<i>Hydrated Lime Slurry In Cold-In-Place Recycling</i>	<i>Ton</i>	<i>Default to 00190.10(d) – At least to the nearest 0.01 Ton,</i> <ul style="list-style-type: none"> <i>“Hydrated Lime in CIR- Ton”</i>
<i>U00719.80</i> <i>U00719.90</i>	<i>Pre-Recycle Lime Treatment</i>	<i>Ton</i>	<i>Default to 00190.10(d) – At least to the nearest 0.01 Ton,</i> <ul style="list-style-type: none"> <i>Limited to the dry weight of quicklime incorporated in the work at the rate and in the quantity specified or directed.</i>
<i>U00720.80</i> <i>U00720.90(a)</i>	<i>(a) Cold In-Place Recycled Asphalt Concrete Pavement (CIR)</i>	<i>SY</i>	<i>Default to 00190.10(c) – At least to the nearest 0.1 SY</i> <ul style="list-style-type: none"> <i>Measurement based on the paved widths and milled depths shown, horizontal length along the centerline of the recycled pavement.</i>

U00720.90(b)	(b) Recycling Agent in CIR	Ton	<ul style="list-style-type: none"> No measurement made for depths deviating from the plan depths unless directed to mill a depth of $\pm 1/4$ inch from the thickness shown on the plans Addition thickness or areas will be adjusted by converting, $\pm 1/4$ inch increments, to the equivalent number of square yards of nominal thickness on a proportionate volume basis above or below the specified tolerance limits. <p>Default to 00190.10(d) – At least to the nearest 0.01 Ton</p> <ul style="list-style-type: none"> Recycling Agent in CIR
U00721.80 U00721.90 (a)	(a) Cold Recycled Emulsified Asphalt Pavement	Ton	<p>Default to 00190.10(d) – At least to the nearest 0.01 Ton</p> <ul style="list-style-type: none"> Measurement of quicklime will be limited to the weight of dry quicklime used to produce hydrated lime slurry at the rate specified or directed. Fog coat and aggregate cover material will be measured according to 00705.80 & paid according to 00705.90 Emulsified asphalt surface treatment will be measured according to 00710.80 paid according to 00710.90
U00721.90 (b)	(b) Recycling Agent in CREAP		
U00721.90 (c)	(c) Lime in CREAP		
U00725.80 U00725.90(a)	(a) Hot In-Place Recycled Asphalt Concrete Pavement (HIR)	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> Measured finished surface of the completed pavement within the neat lines shown or established.
U00725.90(b)	(b) Recycling Agent in HIR-Ton	Ton	<p>Default to 00190.10(d) – At least to the nearest 0.01 Ton</p> <ul style="list-style-type: none"> Recycling agent in the HIR mixture New asphalt concrete mixture will be measured according to 00745.80 & paid per 00745.90.
00730.80 00730.90	Emulsified Asphalt Tack Coat	Ton	<p>Default to 00190.10(e), At least to the nearest 0.01 Ton</p> <ul style="list-style-type: none"> No payment will be made for water added to dilute the

<p>SP-00730.80 3-31-2008</p>	<p>On projects with less 10 tons of tack coat</p>	<p>No Payment</p>	<p>emulsified asphalt used as tack coat</p> <p>SP-00730.80 Deleted :Tonnage measurement-Default to 00190.10(d) – At least to the nearest 0.01 Ton</p> <ul style="list-style-type: none"> • SP-00730.80 Add: No separate payment will be made for Emulsified Asphalt Tack Coat
<p>00735.80 00735.90(a) 00735.90(b) 00735.90(d) 00735.90(e) 00735.90(f)</p>	<p>(a) Emulsified Asphalt Concrete Pavement (b) Emulsified Asphalt in Mixture (c) <i>See next item.</i> (d) Emulsified Asphalt Concrete in Leveling and / or Patching (e) Haul & Place Emulsified AC Mixture (f) Haul & place Choke Aggregate</p>	<p>Ton</p>	<p>Default to 00190.10(d) – At least to the nearest 0.01 Ton</p> <ul style="list-style-type: none"> • No deduction will be made for the weight of the emulsified asphalt used in the EAC.
<p>00735.80 00735.90(c)</p>	<p>(c) Choke Aggregate</p>	<p>Ton or CY</p>	<p>Default to 00190.10(d) – At least to the nearest 0.01 Ton, or Default to 00190.10(e) – At least to the nearest 0.1 CY</p> <ul style="list-style-type: none"> • Volume measurement will be in the hauling vehicle.
<p>00744.80 <i>See special provisions</i></p>	<p>Minor HMAC Pavement</p>	<p>Ton</p>	<p>Default to 00190.10(d) – At least to the nearest 0.01 Ton</p>
<p>00745.80</p>	<p>HMAC</p>	<p>Ton</p>	<p>Default to 00190.10(d) – At least to the nearest 0.01 Ton</p> <ul style="list-style-type: none"> • No deductions for admixtures (lime, etc. see 00745.93 for additional items) • RAP Mixtures- measure total asphalt quantity, based on QC test averages to the nearest 0.01%
<p>00745.80</p>	<p>Asphalt Cement</p>	<p>Ton</p>	<p>Default to 00190.10(d) – At least to the nearest 0.01 Ton Methods of Measurements:</p>

<p>SP-00745.80 11-12-2009</p> <p>SP-00745.90</p>			<ul style="list-style-type: none"> • QC Test Result (Calculate using Statspec) • Small Quantity <p>Note: (when listed in Special Provisions)</p> <ul style="list-style-type: none"> • SP-00745.80 ADD: "Non-RAP mixtures-measure total asphalt quantity base on QC 0.01% when Engineer determines invoice & tank sticking is impractical. • SP-00745.80- No Separate measurement will be made for asphalt cement used in mixture •
<p>00745.83 00745.83</p> <p>SP-00745.93 11-12-2009</p>	<p>Other Items: Approaches, driveways, walks, misc.</p>	<p>See also 00749.80 (Area or Length)</p>	<p>Measure according to 00749.80 through 00749.82.</p> <ul style="list-style-type: none"> • No separate or additional payment will be made for reconditioning the roadway, leveling work, lime, QC testing and anti-stripping additives. • Per SP-00745.93 Delete: No separate or additional payment will be made for Anti-stripping additives. • Per SP-00745.93 Add: Anti-stripping <u>will</u> be paid for at the Contractor's actual documented cost w/ no markup allowed <p>Any of the options added under 745.11(c) &11(d) (aggregate treatments) are not paid for.</p>
<p>00746.80 00746.90</p>	<p>Crack Sealing Flexible Pavements</p>	<p>Foot or Pound</p>	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT or, Default to 00190.10(d-1) – At least to the nearest 1.0 lbs</p>
<p>00748.80 00748.90</p>	<p>____ inch Asphalt Concrete Pavement Repair</p>	<p>SY</p>	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY to the depth as shown.</p> <ul style="list-style-type: none"> • Determined by horizontal methods • If depth changes, adjust area by converting to an equivalent number of square yards on a proportionate volume basis. • EAC and HMAC will be paid for according to 00735.90 or 00745.90 as applicable. • Includes excavation, Geotextile, stone embankment, aggregate and water.

00749.80 00749.81	<u>Misc. AC Structures</u> <u>Method A:</u>	Each	Method A: <u>Weight and Extra Basis</u> (Pay Material Separately (in addition to), this bid item is for extra cost for placement) <ul style="list-style-type: none"> • Payment will be for extra or additional costs, these cost are in addition to asphalt concrete will be measure for payment under 000745.80. • Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Note: <ul style="list-style-type: none"> • Street connections not noted on the plans as being pay items will not be measured for payment.
00749.91(a)	(a) Extra for Asphalt Approaches		
00749.91(b)	(b) Extra for Asphalt Drains		
00749.91(c)	(c) Extra for Pedestrian Landings		
00749.80 00749.91(d)	<u>Misc. AC Structures</u> <u>Method A:</u>	Foot	Method A: <u>Weight and Extra Basis</u> (Pay Material Separately (in addition to), this bid item is for extra cost for placement) <ul style="list-style-type: none"> • Payment will be for extra or additional costs, these cost are in addition to asphalt concrete will be measure for payment under 000745.80. • Default to 00190.10(b) – At least to the nearest 0.1 FT
00749.91(e)	(d) Extra for Asphalt Dikes		
00749.80 00749.81	<u>Misc. AC Structures</u> <u>Method A:</u>	SF	Method A: <u>Weight and Extra Basis</u> (Pay Material Separately (in addition to), this bid item is for extra cost for placement) <ul style="list-style-type: none"> • Payment will be for extra or additional costs, these cost are in addition to asphalt concrete will be measure for payment under 000745.80. • Lengths limited to neat lines of the structure, converted to the nearest SF
0749.91(f)	(e) Extra for Asphalt Islands		
0749.91(g)	(f) Extra for Asphalt Walks		
0749.91(h)	(g) Extra for Asphalt Ditch Lining		
0749.91(i)	(h) Extra for Asphalt Slope Repair		
	(i) Extra for Pavement Repair		
00749.80 00749.82	<u>Misc. AC Structures</u> <u>Method B:</u>		Method B: <u>Complete in Place Basis</u> (Material is included / incidental to this bid item)
00749.92(a)	(a) Asphalt Approaches	Each	<ul style="list-style-type: none"> • <u>Item (a)</u> - Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.

00749.92(b)	(b) Asphalt Dikes	Foot	<ul style="list-style-type: none"> • <u>Item (b)</u> - Default to 00190.10(b) – At least to the nearest 0.1 FT
00749.80 00749.82 00749.92(c) SP-0749.92(c) 3-31-2008 00749.92(d) 00749.92(e) 00749.92(f)	<u>Misc. AC Structures</u> <u>Method B:</u> (c) Asphalt Islands (d) Asphalt Walks (e) Asphalt Ditch Lining (f) Asphalt Slope Paving	SF	<p>Method B: <u>Complete in Place Basis</u> (Material is included / incidental to this bid item)</p> <ul style="list-style-type: none"> • Lengths limited to neat lines of the structure, converted to the nearest SF <p>Note:</p> <ul style="list-style-type: none"> • <u>SP-00749.92 Method “B” Add:</u> “Item (c) also includes concrete curbs constructed with the asphalt islands.”
00755.80 00755.90(a) 00755.90(b) 00755.90(c) 00755.90(d)	(a) Continually Reinforced Concrete Pavement (b) Continually Reinforced Concrete Pavement ____ Inches Thick (c) Reinforced Concrete Pavement (d) Reinforced Concrete Pavement ____ Inches Thick	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> • Area will be the length and width of each panel measured separately. • Width is design width or measured edge-to-edge width, whichever is less. Length is horizontal measurement from end to end along centerline of strip. • Measurement of extra thickness of pavement, as shown or as ordered, will be determined by conversion on a proportionate volume basis to an equivalent number of square yards of specified thickness pavement.
00755.80 00755.90(e)	(e) Terminal Expansion Joints	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> • Measure along the center line.
00756.80 00756.90(a)	(a) Plain Concrete Pavement, Undowelled, ____ Inches Thick	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> • Area will be the length and width of each panel measured separately. • Width is design width or measured edge-to-edge width, whichever is less. Length is horizontal measurement from end to end along centerline of strip.

00756.90(b)	(b) Place Concrete Pavement, Dowelled, ____ Inches Thick		<ul style="list-style-type: none"> • Measurement of extra thickness of pavement, as shown or as ordered, will be determined by conversion on a proportionate volume basis to an equivalent number of square yards of specified thickness pavement. • Includes all materials to complete the work.
SP-00758.80(a) 3-31-2008	(a) Continuously Reinforced Concrete Pavement Repair (CRCPR)	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> • Width measured edge-to-edge width on the surface of the pavement, perpendicular to the centerline. • Length is measured from end to end along centerline of the roadway, including the length of bar lap splices. • Extra thickness of pavement as shown or ordered will be determined on a proportionate volume basis equivalent to SY.
SP-00758.90(a)			
SP-00758.90(b)	(b) Reinforced Concrete Pavement Repair		
SP-00758.80(b)		Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> • Includes providing bar lap areas as specified using tied laps. • Reinforced bar lap area consists of an area of one 12 foot lane width and from 24 inches to 30 inches long. • Areas less than one lane width- quantity of bar lap area will be adjusted by converting to a proportionate quantity based on a 12 foot lane width. • A six foot wide repair will be counted as one-half of a bar lap area. • No added payment for intermediate bar lap splices necessary to accommodate staging or reopen the roadway to traffic.
SP-00758.90(c) 3-31-2008	(c) Extra for Reinforced Bar Lap Areas		
SP-00758.80(c)		SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> • Measured width and length of each separate repair. • Width is measured edge-to-edge width on the surface of
SP-00758.90(d)	(d) Concrete Pavement		

3-31-2008	Spall Repair		<p>the pavement.</p> <ul style="list-style-type: none"> Length is measured from end-to-end along centerline of the roadway. Extra thickness of pavement as shown or ordered will be determined on a proportionate volume basis equivalent to SY.
SP-00758.80(d) SP-00758.90(e) SP-00758.90(f) SP-00758.90(g) 3-31-2008	(e) Extra for Expansion Joint Repair (f) Extra for Terminal Expansion Joint Repair (g) Extra for Terminal Expansion Joint Repair	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> Items (e), (f), and (g) include removing existing joints and all portions of existing steel beams.
SP-00758.80(e) SP-00758.90(h) 3-31-2008	(h) Concrete Pavement Base, ____ Inches Thick	SY	<p>Default to 00190.10(c) – At least to the nearest 0.1 SY</p> <ul style="list-style-type: none"> Measured width and length of plain concrete pavement placed. Extra thickness of pavement as shown or ordered will be determined on a proportionate volume basis equivalent to SY.
00759.80 00759.90(a) SP-00759.80 6-4-2009	(a) Concrete Curbs	Foot or CY	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT, or Default to 00190.10(e) – At least to the nearest 0.1 CY</p> <p>SP-00759.80 Length Basis- Measurement of concrete items will be along the face of the structure, from end-to-end including curb tapers or depressed lengths at driveways and ramps.</p>
00759.80 00759.90(b) 00759.90(c) 00759.90(d) 00759.90(e) 00759.90(g)	(b) Concrete Islands (c) Concrete Driveways (d) Concrete Driveways, Reinforced (e) Concrete Walks (g) ____ Concrete Surfacing	SF	<p>Default to 00190.10(c) – At least to the nearest 0.1 SF</p> <ul style="list-style-type: none"> Item (b)- Includes traffic separators Item (c) and (d) include monolithic curb at driveway locations Item (e) includes sidewalk ramps

SP-00759.90(e)			SP-00759.90- Delete "Items (e) and (f) include sidewalk ramps."
00759.80 SP-00759.80 6-4-2009 00759.90(f) SP-00759.90(f)	(f) Monolithic Curb and Sidewalks	Foot or SF	Default to 00190.10(b) – At least to the nearest 0.1 FT, or Default to 00190.10(c) – At least to the nearest 0.1 SF <ul style="list-style-type: none"> Item (f) includes sidewalk ramps SP-00759.80 Length Basis- Measurement of concrete items will be along the face of the structure, from end-to-end including curb tapers or depressed lengths at driveways and ramps. SP-00759.90- Delete "Items (e) and (f) include sidewalk ramps." See 00759.90(l)
00759.80 00759.90(h)	(h) Concrete Stairs	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY SP-00759.80 Length Basis- Measurement of concrete items will be along the face of the structure, from end-to-end including curb tapers or depressed lengths at driveways and ramps.
00759.80 00759.90(i)	(i) Concrete Bus Shelter Pads	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.
00759.80 00759.90(j) SP-00759.80 6-4-2009	(j) Concrete Mowing Strip	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT SP-00759.80 Length Basis- Measurement of concrete items will be along the face of the structure, from end-to-end including curb tapers or depressed lengths at driveways and ramps.
SP-00759.80 SP-00759.90(k) 6-4-2009	(k) Concrete Driveway Connections	SF	Default to 00190.10(c) – At least to the nearest 0.1 SF
SP-00759.80 SP-00759.90(l) 6-4-2009	(l) Concrete Sidewalk Ramps	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Includes saw cutting, removing existing concrete walks, curbs, rams and replacement.
SP-00759.80	(m) Metal Handrail,	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT

SP-00759.90(m) 6-4-2009	Rails		SP-00759.80 Length Basis- Measurement of metal handrail will be along the top rail member, from center of end post to center of end post.
SP-00760.90 SP-00760.95 (12-11-2008)	Unit Pavers	SF	Default to 00190.10(c) – At least to the nearest 0.1 SF <ul style="list-style-type: none"> Includes all base prep

QUANTITY MEASUREMENT GUIDELINE
Oregon 2008 Standard Specifications for Construction
(PART 800)

Revision 12/1/2010

SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 00800 – PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES			
00810.80 00810.90(a) 00810.90(b)	(a) Guardrail, Type _____ (b) Metal Median Barrier	Foot	<ul style="list-style-type: none"> • <u>Count Method</u> – Number of standard sections multiplied by 12-1/2 ft of completed guardrail or median barrier. • Non-standard sections will be measured from center to center of post and add to total standard sections. • <u>Length Method</u> – Default to 00190.10(b) – At least to the nearest 0.1 FT – from center to center of end posts, each run.
00810.80 00810.90(c) 00810.90(d) 00810.90(e) 00810.90(f) 00810.90(g)	(c) Guardrail Anchors, Type _____ (d) Guardrail End Pieces, Type _____ (e) Guardrail Transition (f) Guardrail Connections (g) Guardrail Terminals, _____	Each	<p>Default to 00190.10(a) – Unit will be each (by actual count), unless otherwise specified in the Contract.</p> <p>Note:</p> <ul style="list-style-type: none"> • <u>Items (d) - (g)</u> include all necessary appurtenances and hardware. • No separate payment for excavation and backfill
00810.80 00810.90(h) 00810.90(i)	(h) Extra for ____ Foot Posts (i) Guardrail Posts	Each	<p>Default to 00190.10(a) – Unit will be each (by actual count), unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> • Item (h) standard is 6, but can include 8 foot or longer posts. The extra costs for longer post are included in the unit price of one or more of the other listed pay items. <p>(SP-00810.90(j))</p> <ul style="list-style-type: none"> • 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.
SP-00810.90(j) 1-14-2010			

SP-00810.90(j) 1-14-2010	(j) Extra for hand dug post holes	Each	Default to 00190.10(a) – Unit will be each (by actual count), unless otherwise specified in the Contract. <ul style="list-style-type: none"> Requires a cost justification for overrun
U00810.90(j)	Guardrail Flares	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. (Approximate quantities listed in the special provisions) <ul style="list-style-type: none"> Includes excavation and embankment work, aggregate, and asphalt concrete mix.
U00810.90	Weatherized Guardrail & Coating		No separate or additional payment will be made for painting galvanized metal guardrail material. <ul style="list-style-type: none"> See Section 00594 – Payment will be for appropriate guardrail item.
00811.80 00811.90(a) 00811.90(b)	(a) Cable Barrier, Test Lvl 3 (b) Cable Barrier, Test Lvl 4	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT – from center to center of end posts, each run. <ul style="list-style-type: none"> Measurement will be made through the ends of the terminal and guardrail connections.
00811.80 00811.90(c) 00811.90(d)	(c) Cable Barrier Terminals (d) Cable Barrier Guardrail Connections	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Items (c) and (d) include all necessary appurtenances and hardware.
00812.80	Adjusting Guardrail	Foot	<ul style="list-style-type: none"> <u>Count Method</u>– Number of standard sections multiplied by 12-1/2 ft. Non-standard sections will be measured from center to center of post (<i>to the nearest</i>) and add to total standard sections. <u>Length Method</u>– Default to 00190.10(b) – To nearest ft – measurement from center to center of end posts, each run.

			<ul style="list-style-type: none"> • See SP-00812.80 & 90 for other unit of measurements
SP-00812.80 SP-00812.90	Adjusting Guardrail- Metal Beam Rails, Guardrail Posts & Blocks	Each	<ul style="list-style-type: none"> • Unit Method- SP-00812.90- will be measured on the unit basis. • Metal Beam rail is 12 ½ feet long • No separate payment for hardware, adjusting terminal ends, replacement of items damaged by the Contractor's equipment or operations.
00815.80 00815.90(a) 00815.90(b)	(a) Bollards (b) Removable Bollards	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> • No separate payment for excavation
00820.80 00820.90(a) 00820.90(b) <i>U00820.49</i>	(a) Concrete Barrier (b) Concrete Barrier, Tall <i>Single Slope Barrier</i>	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> • <u>Cast-In-Place</u>: measured along line and grade of each separate run (including terminal sections and transition sections) • <u>Precast</u>: Laying length of standard section shown in standard drawing (currently, 12'-7"), multiplied by number of sections installed in each run. Non-standard sections measured and added to total length of standard sections.
00822.80 00822.90	Glare Shields	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> • Measured along line and grade of each run.
00830.80 00830.90	Impact Attenuators, Type	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p>

			<ul style="list-style-type: none"> Measured by actual count at each location a system is installed.
00840.80 00840.90(a) 00840.90(b) SP-00840.90	(a) Delineators, Type (b) Milepost Maker Posts	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <ul style="list-style-type: none"> Per SP-00840.90- Replace/ Remove: Milepost marker signs will be paid for according to 00940.90. Per SP-00840.90- Replace /Add: Signs mounted on milepost marker posts will be paid for according to 00940.90.
00850.90	Common Provisions for Pavement Markings-		Ends at 00850.75- Manufacturer's Warranty- Measurement & Payment Items are in 00851 & 00855
00851.81 00851.90	Pavement Line Removal Pavement Bars Removal Pavement Legends Removal	Foot, SF, Each	<p><u>Lines:</u></p> <ul style="list-style-type: none"> Length, measured <i>to the nearest FT</i> of a (4") striping line. If other than 4 inch, measurement adjusted by converting length nominal 4-inch line on a proportionate area basis <p><u>Bars:</u></p> <ul style="list-style-type: none"> Area, measured to the nearest SF <p><u>Legends:</u></p> <ul style="list-style-type: none"> Default to 00190.10(a) – Unit will be each, (by actual count) unless otherwise specified in the Contract. One legend includes all letters, characters and all markings associated with it.
00855.80 00855.90(a) 00855.90(c)	(a) Mono- Directional White Type I Markers (c) Bi-Directional Yellow Type I Markers	Each	<p>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</p> <p>Note: Type I = Reflective</p>

00855.80 00855.90(e) 00855.90(f)	(e) White Type II Markers (f) Yellow Type II Markers	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Note: Type II = Nonreflective
00855.90(b) 00855.90(b) 00855.90(g) 00855.90(h)	(b) Mono-Directional White Type IAR Markers (d) Bi-Directional Yellow Type IAR Markers (g) Mono-Directional White Type IAR Markers, Recessed (h) Bi-Directional Yellow Type IAR Markers, Recessed	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Note: Type IAR = Reflective, Abrasion Resistance
00856.80	Surface Mounted Tubular Markers	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Refer to markers from the QPL
00857.80 00857.90(a) 00857.90(b) SP-00857.80 6-28-2008	Rumble Strips Continuous Transverse	Mile / Each	<u>Item (a)</u> <ul style="list-style-type: none"> Measured <u>to the nearest 0.01 mile</u> along the shoulder. Breaks at intersections, interchange ramps, etc. will not be measured <u>Item (b)</u> <ul style="list-style-type: none"> Measured on the unit basis, by actual count of rumble strip cluster SP-00857.80 Replace with: New: "Measurement will be made along each continuous rumble strip run, regardless of location or width of strip."

00860.80 00860.90	Longitudinal Pavement Markings- Paint	Foot	<p><u>To the nearest Foot:</u></p> <ul style="list-style-type: none"> • Measured length of (4”) striping lines. • If other than 4 inch, measurement adjusted by converting length nominal 4-inch line on a proportionate area basis • Gaps or skips not measured <p>Note:</p> <ul style="list-style-type: none"> • Do not double the length for two applications
00865.80 00865.90	<p><u>Longitudinal Pavement Markings- Durable:</u></p> <p>Method A- Profile</p> <p>Method B- Non-Profile</p> <p>Method C- Inlaid</p> <p>Method D- Profile Wet Weather</p> <p>Method E- Non-Profile Wet Weather</p> <p>Method F- Spray</p> <p>Method G- Pavement Marking Tape</p>	Foot	<p><u>See various Methods (Profile, non-Profile, inlaid, wet weather, spray & tape)</u></p> <p><u>To the nearest Foot</u></p> <ul style="list-style-type: none"> • Measured length of (4”) striping lines. • If other than 4 inch, measurement adjusted by converting length nominal 4-inch line on a proportionate area basis • Gaps or skips not measured <p>Note:</p> <ul style="list-style-type: none"> • Limit payment to 75% until a (original) signed warranty is received. (See 00865.90) 3 or 4 year <p>Warranty: Thermoplastic Items (c), (d), (g), (h), (m), (o), (s) and (t) are all 3 years, all the rest in this section are 4 year.</p>
00866.80 00866.90(a) 00866.90(b)	<p><u>Longitudinal Pavement Markings- High Performance:</u></p> <p>(a) Modified Urethane, 25 mil, Sprayed</p> <p>(b) Modified Urethane, 25 mil,</p>	Foot	<p><u>To the nearest Foot</u></p> <ul style="list-style-type: none"> • Measured length of (4”) striping lines. • If other than 4 inch, measurement adjusted by converting length nominal 4-inch line on a proportionate area basis • Gaps or skips not measured <p>Note:</p> <ul style="list-style-type: none"> • Limit payment to 75% until a signed warranty is received.

<p>SP-00866.90(c)</p> <p>SP-00866.90(d)</p>	<p>Protected Inlaid</p> <p>(c) Hi-Build Paint, 25 mil, Sprayed</p> <p>(d) Polyurea, 20 mil, Sprayed</p>		<p>(See 00865.90). (Warranty is for 1 year)</p>
<p>00867.80</p> <p>00867.90(a) – (i)</p> <p>SP-00867.90 1-14-2010</p>	<p>Transverse Pavement Markings- Pavement Legends, Type_____ :</p> <p>(a) Arrows (b) Only (c) School (d) School Crossing (e) School Xing (f) Railroad Crossing Markings (g) Bicycle Lane Symbol (h) Diamonds (i) _____</p>	<p>Each</p>	<p>Default to 00190.10(a) – Unit will be each (by actual count), unless otherwise specified in the Contract.</p> <p>Note:</p> <ul style="list-style-type: none"> • Limit payment to 75% until a signed warranty is received. (See 00867.90). (18 mos) • Item (a) includes single or multiple headed arrows. • Item (f) includes RR symbol & three 24 inch wide pavement bars. <p>SP-00867.90- See Pay Item List for additional items (various pavement legends)</p>
<p>00867.80</p> <p>00867.90(j)</p> <p>SP-00867.90 1-14-2010</p>	<p>(j) Transverse Pavement Markings- Pavement Bar, Type_____</p> <p>(cross walks and stop bars)</p>	<p>SF</p>	<p>Measured to the nearest SF for each stop bar and crosswalk bar</p> <p>Note:</p> <ul style="list-style-type: none"> • Limit payment to 75% until a signed warranty is received. (See 00867.90). <p>SP-00867.90- See Pay Item List for additional items (various pavement legends)</p> <ul style="list-style-type: none"> • "Including but not limited to, stop bars, crosswalk bars, chevron bars, transverse median bars, and transverse shoulder bars."

QUANTITY MEASUREMENT GUIDELINE
Oregon 2008 Standard Specifications for Construction
(PART 900)

Revision
12/1/2010

SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 00900 – PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEM			
SP-00902.80 3-31-2008	Crosswalk Closure Barricades	Incidental or Each	Incidental to work under the "Traffic Signal Installation". -OR- Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.
00905.80 00905.90(a-b)	Remove and Reinstallation of Existing Signs	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer;
00910.80 00910.90	Wood Sign Posts	FBM	<u>To the nearest 0.01 FBM</u> <ul style="list-style-type: none"> • Use nominal size for FBM. • Determine the post length and round to the nearest higher commercial length shown in the standard drawings. <u>Calculation: Foot Board Measure</u> (Thickness (inches) x Width (inches) x Length (Feet)) / 12
00920.80 SP-00920.80 & 90 5-16-2008	Sign Support Footings	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; <ul style="list-style-type: none"> • Estimated Quantities will be listed <i>Per SP-00920.80& 90</i>
00930.80 00930.90(a) 00930.90(b)	<u>Major Sign Supports:</u> (a) Truss Sign Bridge (b) Monotube Sign Bridge	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; <ul style="list-style-type: none"> • Estimated quantity of structural steel will be in Special Provisions

00930.90(c) 00930.90(d)	(c) Butterfly Sign Structures (d) Monotube Cantilevered Sign Structures		
00930.80 00930.90(e) 00930.90(f) 00930.90(g) 00930.90(h) 00930.90(i) 00930.90(j)	Mounts: (e) Bridge Structure Mounts (f) Exit Number Sign Mounts (g) Signal Pole Mounts (h) Adjustable Sign Mounts (i) Vertical Sign Mounts on Existing Structures (j) Secondary Sign Mounts	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; <ul style="list-style-type: none"> • Estimated quantity of structural steel will be in Special Provisions • If lengths increase or decrease by more than 25% of the length specified, adjustment will be made according to 00190.10(h)
00930.80 00930.90(k) 00930.90(l) 00930.90(m) SP-00930.90(n) 00930.90(o) 00930.90(p) SP-00930.90(q)	Minor Sign Supports: (k) Multi-Post Breakaway Sign Supports (l) Triangular Base Breakaway Sign Supports (m) Pipe Breakaway Sign Supports (n) Perforated Steel Square Tube Breakaway Sign Supports (o) 90 Degree Rotational Sign Supports (p) Pipe Sign Supports (q) Perforated Steel Square Tube Sign Supports	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; <ul style="list-style-type: none"> • Estimated quantity of structural steel will be in Special Provisions • If lengths increase or decrease by more than 25% of the length specified, adjustment will be made according to 00190.10(h) SP-00930.90 ADD: No separate or additional payment will be made for route marker frames, wind bracing, pole clamps, stainless steel clamps, mast arm street name sign mounts, or special sign brackets.
SP-00937.80	Preparing and Coating Metal Sign Structures	incidental	No separate measurement will be made for work under this Section.
00940.80 00940.90	Type ____ Signs in Place	SF	Default to 00190.10(c) – At least to the nearest 0.1 SF <ul style="list-style-type: none"> • Area by multiplying height and width, using the dimensions

			<p>shown.</p> <ul style="list-style-type: none"> No deductions made for irregular shapes cut from rectangle. No separate payment for sign flag boards or sign flags. <p>Note:</p> <ul style="list-style-type: none"> Route markers and other signs fastened to the face of larger signs will be measured as separate signs. Limit payment to 75% until a signed warranty is received. (See 02910.75).
00941.80	Sign Covers Fabrication or Alternate	Incidental	No separate measurement or payment – included in the payment for the items of which this work or listed in 00941.42 is required.
<i>U00942.80</i> <i>U00942.90</i>	<i>Permanent Barricades</i>	<i>Each</i>	<p><i>Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.</i></p> <ul style="list-style-type: none"> <i>"Permanent Type III Barricades"</i> <i>Excavation & Backfill included</i>
00950.80 00950.90 SP-00950.90	Removal of Electrical Systems	Method A or B	<p>Method A (Remove and Install New):</p> <ul style="list-style-type: none"> No separate measurement or payment – included in the payment for the new electrical systems. <p>Method B (Removed and not replaced):</p> <ul style="list-style-type: none"> <u>Lump Sum:</u> Per SP-00950.90- Add: No separate or additional payment will be made for salvaging and stockpiling materials.
00960.70	Common Provisions for Electrical Systems	Incidental	No measurement or payment in this section
00963.80 00963.90(a) 00963.90(b)	(a) 36 Inch Diameter Signal Support Drilled Shafts (b) 42 Inch Diameter Signal Support Drilled Shafts	Foot	<p>Default to 00190.10(b) – At least to the nearest 0.1 FT</p> <ul style="list-style-type: none"> Measured by vertical excavating length from bottom of shaft to the ground surface. If changed, measure from revised bottom shaft. Payment includes, excavating shafts and disposing of the

			excavation material, furnishing, placing splicing, and removing temporary shaft, forms, concrete and all reinforcement.
SP-00965.80 SP-00965.90 2-26-2009	Camera Poles and Foundations	Lump Sum	Lump Sum: No measurement required
00970.80 00970.90(a) 00970.90(b) 00970.90(c) 00970.90(d) 00970.90(e) 00970.90(f) 00970.90(g) SP-00970.90 6/4/2009	Highway Illumination: (a) Pole Foundations (b) Lighting Poles, Fixed Base (c) Lighting Poles, Slip Bases, (d) Lighting Poles Arms (e) Luminaries, Lamps and Ballasts, (f) Switches, Conduit, wires, etc. (g) Refurbish and Reinstall Existing Illumination Systems	Lump Sum	Lump Sum: No measurement required. <ul style="list-style-type: none"> If lengths increase or decrease by more than 3 feet of the estimated quantity, adjustment will be made according to 00190.10(h) (only then will changes are made) <p>Per SP-00970.80- Replace: Estimated quantity of lighting poles and arms will be in Special Provisions</p> <p>Replace with: Per SP-00970.80- Add: The quantities of lighting poles and arms are listed on the Project plans.</p>
00990.80 00990.90(a) 00990.90(b) 00990.90(c) 00990.90(d) 00990.90(e) 00990.90(f) 00990.90(g) SP-00990.90	Traffic Signals: (a) Traffic Signal Installation (b) Traffic Signal Modifications (c) Loop Detector Installation (d) Ramp Meter Signal Installation (e) Interconnect System (f) Flashing Beacon Installation (g) Automatic Traffic Recorder Installation	Lump Sum	Lump Sum: No measurement required. Item (a) includes the fire preemption system, the controller, controller cabinet equipment and detection system. Per SP-00990.90- Standard mast arm pole foundations (and standard strain pole foundations) will be paid for according to 00963.90.

QUANTITY MEASUREMENT GUIDELINE
Oregon 2008 Standard Specifications for Construction
(PART 1000)

Revision 12/2/2010

SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 01000 – RIGHT OF WAY DEVELOPMENT AND CONTROL			
01030.80 01030.90(b)	Fertilizing, Mulching, and Seeding: (b) Seeding Mobilization	Each	Item (b), Default to 00190.10(a) – Unit will be each (by actual count), unless otherwise specified in the Contract <ul style="list-style-type: none"> For each required mobilization for hydraulically or airborne applied seeding, fertilizing and mulching.
01030.80 01030.90(c) 01030.90(d) 01030.90(e) 01030.90(f) 01030.90(g) 01030.90(h) 01030.90(i)	Fertilizing, Mulching, and Seeding: (c) Temporary Seeding, ___ (d) Permanent Seeding, ___ (e) Wetland Seeding, ___ (f) Water Quality Seeding, ___ (g) Plant Seeding, ___ (h) Native Plant Seeding, ___ (i) Wildflower Seeding, ___	Acre	Default to 00190.10(c) –At least to the nearest 0.1 Acre <ul style="list-style-type: none"> Measured on ground surface One time payment when temporary seeding, applied according to 1030.43(a), and later accepted as permanent seeding per 01030.43(b), <p>Note (Partial Payments):</p> <ul style="list-style-type: none"> 70% at completion of seeding 30% at completion of seeding establishment period
01030.80 01030.90(k)	Fertilizing, Mulching, and Seeding: (k) Lawn Seeding	Acre or SY	Default to 00190.10(c) – At least to the nearest 0.1 SY or Acre <ul style="list-style-type: none"> Measured on ground surface One time payment when temporary seeding, applied according to 1030.43(a), and later accepted as permanent seeding per 01030.43(b), <p>Note (Partial Payments):</p> <ul style="list-style-type: none"> 70% at completion of seeding 30% at completion of seeding establishment period
01030.80 01030.90(a) 01030.90(l) 01030.90(m)	Fertilizing, Mulching, and Seeding: (a) Weed Control (l) Fertilizing (m) Mulching	Acre	Default to 00190.10(c) –At least to the nearest 0.1 Acre <ul style="list-style-type: none"> Measured on ground surface Weed control will be specified in the special provisions for the duration and payment schedule. Select weeds will be listed in the special provisions.

01040.80(a) 01040.90(a)	Planting- (a) Soil Testing (soil fertility and amendment report)	Each	Default to 00190.10(a) – Unit will be each (test), unless otherwise specified in the Contract <ul style="list-style-type: none"> Includes mobilization, soil sampling, testing, etc.
01040.80(b) 01040.90(b) 01040.90(c)	(b) Topsoil and Wetland Topsoil (c) Soil Conditioners	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Measured in the hauling vehicle. *Item(c) measured in hauling or containers <p>Note:</p> <ul style="list-style-type: none"> Topsoil taken from excavations per 00330.10 will be measured according to 00330.82
01040.80(d) 01040.90(d)	(d) Plant Materials <i>1 year plant establishment starts at time when all original planting has been completed.</i>	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Average Area method- Area is greater than or equal to 3,000SY (see 01040.80(d) for more info) Calculate to the nearest SY, use this method to calculate each of the plants for large areas. Material on hand per 00195.60 <p>Note (Partial Payments):</p> <ul style="list-style-type: none"> 30% original planting 10% at 1st plant establishment for all surviving & replacement planting 10% at 2nd plant establishment for all surviving & replacement planting 10% at 3rd plant establishment for all surviving & replacement planting 40% at end of establishment period.
01040.80(e) 01040.90(e)	(e) Sod Lawn <i>1 year plant establishment starts at time when all original planting has been completed.</i>	SY	Measured on the area basis, to the nearest SY <ul style="list-style-type: none"> Measured on the ground surface
01040.80(f)	(f) Mulches	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY

01040.90(f) SP01040.90(f) 7/22/2010	Bark, Cinder, & Wood Chip Grass straw or rock (f) Compost Mulch	Ton CY	<ul style="list-style-type: none"> Measured in the hauling vehicle. Default to 00190.10(d) – At least to the nearest 0.01 Ton,
01040.80(g) 01040.90(g)	(g) Misc.- Tree Grates, Woody Course Debris	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract <ul style="list-style-type: none"> One grate includes two half grates, frames, hardware, etc.
01040.80(g) 01040.90(g)	(g) Misc.- Boulders	Each or Ton	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. Default to 00190.10(d) – At least to the nearest 0.01 Ton,
01040.80(g) 01040.90(g)	(g) Misc.- Root Barrier	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT
01040.80(g) 01040.90(g)	(g) Misc.- Weed Control Geotextile	SF	Measured on the area basis, to the nearest SF <ul style="list-style-type: none"> Measured on the ground surface
01050.80(a) 01050.90(a)	<u>(a) Barbed & Woven Wire Fence</u> (a) Type ___ Fence	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> Measured from center to center of posts along the line and grade of each continuous run through gate opening, pay for actual gates separately.
01050.80(b) 01050.90(a)-(b) 01050.90(a)-(c)	<u>(a) Barbed & Woven Wire</u> (b) ___ Foot Single Gates (c) ___ Foot Double Gates	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Width of gate opening per bid item
01050.80(c) 01050.90(b)-(a) 01050.90(b)-(b)	<u>(b) Chain Link Fence</u> (a) ___ Chain Link Fence (b) ___ Chain Link Fence	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> Measured from center to center of posts along the line and grade of each continuous run, exclusive of gates.

01050.80(d) 01050.90(b)- (c) 01050.90(b) -(d)	(b) Chain Link Fence (c) ___ Foot x ___ inch Chain Link Single Gate (d) ___ Foot x ___ inch Chain Link Double Gates	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Height & Width of gate opening per bid item
01050.80(e) 01050.90(c)	(c) Protective Fences for Bridges	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> Measured between beginning and ending locations as shown.
01050.80(f) 01050.90(d)	(d) Removing and Rebuilding Fence	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> Measured from center to center of posts along the line and grade of each continuous run, including gates removed and reconstructed.
SP-01060.80 SP-01060.90	Metal Cattle Guards	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.
01070.80 01070.90(a) 01070.90(b) 01070.90(c) SP-01070.90(d)	Mailbox Supports: (a) Single (b) Multiple (c) Concrete Collars (d) Remove & Reinstall	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract. <ul style="list-style-type: none"> Measurement is regardless of type SP-01070.90(d)- Remove & Reinstall Mailbox Supports
01090.80 01090.90(a)	(a) Gravel Beds	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY
01090.80 01090.90(b)	(b) Gravel Blanket	SY	Default to 00190.10(c) – At least to the nearest 0.1 SY <ul style="list-style-type: none"> Measurement of material in place, limited to neat lines and grades. No separate or additional payment will be made for excavation, soil sterilant, or weed control Geotextile.

SP-01091.90(a)	(a) Streambed Enhancement-	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer;
SP-01091.90(b)	(b) Fish Rocks-	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.
SP-01091.90(c)	(c) Barrier Rocks-	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.
SP-01091.90(d)	(d) Fish Logs-	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.
SP-01091.90(e)	(e) Streambed Gravel-	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> Measured in the hauling vehicle.
SP-01092.80 10-23-2008	Stormwater Control Facilities - Water Quality Swale	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer; <ul style="list-style-type: none"> Estimate of Quantities in Special Provisions.
SP-01095.80 SP-01095.90(a) SP-01095.90(b) SP-01095.90(c) SP-01095.90(d) SP-01095.90(e) SP-01095.90(f) SP-01095.90(g)	Site Furnishings- (a) Benches, (b) Picnic Tables, (c) Litter Receptacles, (d) Bicycle Racks, (e) Sand Urns, (f) Aeration Systems, (g) Plant Trellis	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.

QUANTITY MEASUREMENT GUIDELINE
Oregon 2008 Standard Specifications for Construction
(PART 1100)

Revision 12/1/2010

SPEC NUMBER	ITEM NAME	UNIT	MEASUREMENT AND PAYMENT
PART 01100 – Water Supply Systems			
01120.80 01120.90	Irrigation Systems	Lump Sum	Lump Sum: No measurement required unless changes are ordered in writing by the Engineer;
01140.80(a) 01140.90(a) 01140.90(b)	(a) __ inches Potable Water Pipe, Fittings and Couplings with __ Class __ backfill (b) ____ Inch Potable water Pipe, Fittings and Couplings with Restrained Joints and Class ____ Backfill	Foot	Default to 00190.10(b) – At least to the nearest 0.1 FT <ul style="list-style-type: none"> • Measured horizontally along top of finished trench with no deductions for fittings, valves and couplings. • 12 pipe diameter allowance for bend, sleeve, reducer or coupling • 18 pipe diameters allowance for tee or cross, (added to the quantity for pipe of the same diameter.) <p>Example:</p> <ul style="list-style-type: none"> • 4 bends x (12-inch (1') pipe) x (12-inch diameter allowance) = or extra <u>48 feet</u> added to the length of the pipe. • 2 cross x (12-inch (1') pipe) x (18 diameter allowance) = or an extra <u>36 feet</u> added to the length of the pipe.
01140.80(b) 01140.90(c)	(c) Extra Trench Excavation	CY	Default to 00190.10(e) – At least to the nearest 0.1 CY <ul style="list-style-type: none"> • Measured by the actual depth removed for the changed line or grade as directed. • Width will not exceed allowable widths specified in 00405.41(c)
01140.80(c) 01140.90(d) 01140.80(d) 01140.90(e)	(d) Blowoff Assemblies (e) Connection to Existing Mains	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.

01150.80	Potable Water Valves	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.
01150.90(a)	(a) ___ Inch ___ Valve		
01150.90(b)	(b) ___ Inch ___ Valve w/ ___ actuator		
01150.90(c)	(c) ___ Inch ___ Check Valve		
01150.90(d)	(d) Inch ___ Backflow Prevention Assembly		
01150.90(e)	(e) ___ Inch Hydraulically Operated Valve		
01150.90(f)	(f) ___ Inch Combination Air Release/ Air Vacuum Valve Assembly		
01150.90(g)	(g) ___ Inch Tapping Sleeve and ___ Inch Valve Assembly		
001160.80	Hydrants and Appurtenances	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.
001160.90(a)	(a) Hydrant Assemblies		Note:
001160.90(b)	(b) Resetting Existing Hydrants		• New pipe for hydrant connections to existing mains and lateral tees will be paid for per 001140.90
001160.90(c)	(c) Moving Existing Hydrants		
001160.90(d)	(d) Reconnecting Existing Hydrants		
001160.90(e)	(e) Hydrant Guard Posts		
001160.90(f)	(f) Hydrant Extensions		
01170.80	Potable Water Service Connections- 2 inch and smaller	Each	Default to 00190.10(a) – Unit will be each, unless otherwise specified in the Contract.
01170.90(a)	(a) ___ Inch Water Service		• Includes piping and all other materials. • Water meters will be furnished and installed by others,

01170.90(b)	Connections		unless specified in the Special Provisions or Plans.
01170.90(c)	(b) Reconnection Existing Water Services, ____ Inch		
	(c) Water Sampling Stations		