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CLI-28-0452 Quantities - Tracings

Item 202 Ext. 11000, Structure Removed **LUMP**

Item 204 Ext. 13000, Excavation of Subgrade

Used for undercutting and replacing material beneath the culvert per details in the structure notes.

Width = bottom width of box + 2 feet on each side		
= 12' span + 1' thick wall + 1' thick wall + 2' + 2' =	18	FT
Length = length of culvert =	62	FT
Depth = 2' per details =	2	FT
Volume = (18' x 62' x 2')/27 =	**83**	**CU YD**

Item 204 Ext. 30041, Granular Material, Type E, As Per Plan

Used for undercutting and replacing material beneath the culvert per details in the structure notes.

Width = bottom width of box + 2 feet on each side		
= 12' span + 1' thick wall + 1' thick wall + 2' + 2' =	18	FT
Length = length of culvert =	62	FT
Depth = 2' per details =	2	FT
Volume = (18' x 62' x 2')/27 =	**83**	**CU YD**

Item 204 Ext. 50001, Geotextile Fabric, As Per Plan

Used for undercutting and replacing material beneath the culvert per details in the structure notes.

Width = bottom width of box + 2 feet on each side + 2 feet trench depth each side		
= 12' span + 1' thick wall + 1' thick wall + 2' + 2' + 2' + 2' =	22	FT
Length = length of culvert =	62	FT
Area = (22' x 62')/9 =	**152**	**SQ YD**

Item 503, Ext. 11100, Cofferdams and Excavation Bracing **LUMP**

Item 503, Ext. 21300, Unclassified Excavation **LUMP** *

* Use unit "Lump" for plan quantities. For "CU YD" units for filing, see calcs on pages 6 and 7.

Item 509, Ext. 10000, Epoxy Coated Reinforcing Steel

See "Reinforcing Schedule" in plans.

Inlet Headwall, Wingwalls, and Footing	1554	LB
Outlet Headwall, Wingwalls, and Footing	1743	LB
Total	**3297**	**LB**

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Item 511, Ext. 46011, Class QC1 Concrete, Retaining/Wingwall Not Including Footing					
As Per Plan due to option for pre-cast headwalls and wingwalls					
Inlet Wingwalls:	No. 1 (Right)Wall:	Ave. Height = (6.5' + 3.5')/2 =	5.0	ft	
		Width = 1.0'			
		Length = 6.5'			
		Volume = (5.0' x 1.0' x 6.5') =			32.50 CU FT
	No. 2 (Left)Wall:	Height = 6.5'			
		Width = 1.0'			
		Length = 10.5'			
		Volume = (6.5' x 1.0' x 10.5') =			68.25 CU FT
Outlet Wingwalls:	No. 1 (Right)Wall:	Ave. Height = (7.0' + 4.0')/2 =	5.5	ft	
		Width = 1.0'			
		Length = 9.0'			
		Volume = (5.5' x 1.0' x 9.0') =			49.50 CU FT
	No. 2 (Left)Wall:	Ave. Height = (7.0' + 4.0')/2 =	5.5	ft	
		Width = 1.0'			
		Length = 9.0'			
		Volume = (5.5' x 1.0' x 9.0') =			49.50 CU FT
				Total	199.75 CU FT
					7.40 CY YD
				Roundup =	**8 CY YD**
Item 511, Ext. 46510, Class QC1 Concrete, Footing					
Inlet Wingwalls:	Wall Footing:	Ave. Length = (33.54' + 29.63')/2 =	31.6	ft	
		Width = 4.75'			
		Depth = 1.5'			
		Volume = (31.6' x 4.75' x 1.5')/27 =			8.3 CU YD
	Inv. Footing:	Length = 14.0'			
		Width = 1.67'			
		Depth = 1.0'			
		Volume = (14.0' x 1.67' x 1.0')/27 =			0.9 CU YD

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	Cutoff Wall:	Ave. Length = (30.86' + 29.63')/2 =	30.2	ft
		Width = 1.5'		
		Depth = 2.5'		
		Volume = (30.2' x 1.5' x 2.5')/27 =	4.2	CU YD
Outlet Wingwalls:	Wall Footing:	Ave. Length = (36.88' + 29.08')/2 =	33.0	ft
		Width = 5.5'		
		Depth = 1.5'		
		Volume = (33.0' x 5.5' x 1.5')/27 =	10.1	CU YD
	Inv. Footing:	Length = 14.0'		
		Width = 2.08'		
		Depth = 1.0'		
		Volume = (14.0' x 2.08' x 1.0')/27 =	1.1	CU YD
	Cutoff Wall:	Ave. Length = (31.18' + 29.08')/2 =	30.1	ft
		Width = 1.5'		
		Depth = 2.5'		
		Volume = (30.1' x 1.5' x 2.5')/27 =	4.2	CU YD
		Total	**29**	**CU YD**

Item 511, Ext. 46610, Class QC1 Concrete, Headwall

Inlet Headwall:	Length = 14.0'			
	Width = 1.0'			
	Height = 0.5'			
	Volume = (14.0' x 1.0' x 0.5')/27 =	0.3	CU YD	
Outlet Headwall:	Length = 14.0'			
	Width = 1.0'			
	Height = 1.0'			
	Volume = (14.0' x 1.0' x 1.0')/27 =	0.5	CU YD	
	Total	**1**	**CU YD**	

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Item 512, Ext. 10100, Sealing of Concrete Surfaces (Epoxy-Urethane)

Inlet:	No 2 (Left) Wingwall:	Back of Wall = 10.5'L x 0'H (grnd. flush w/ top) =	0.0	SQ FT
		Top of Wall = 10.5'L x 1.0'W =	10.5	SQ FT
	aprox. exposed side height=>	Side of Wall = 1.0'H x 1.0'W =	1.0	SQ FT
		Front of Wall =((1.0'+5.5')/2)'H x 10.5'W =	34.1	SQ FT
	No 1 (Right) Wingwall:	Back of Wall =((0'+0.5')/2)'H x 6.5'W =	2.6	SQ FT
		Top of Wall = 6.5'L x 1.0'W =	6.5	SQ FT
	aprox. exposed side height=>	Side of Wall = 1.0'H x 1.0'W =	1.0	SQ FT
		Front of Wall =((1.0'+5.5')/2)'H x 6.5'W =	21.1	SQ FT
	Headwall:	Back of Wall = 14.0'L x 0'H (grnd. flush w/ top) =	0.0	SQ FT
		Top of Wall = 14.0'L x 1.0'W =	14.0	SQ FT
		Front of Wall = 14.0'L x 0.5'H =	7.0	SQ FT
Outlet:	No 2 (Left) Wingwall:	Back of Wall = 9.0'L x 0.5'H =	4.5	SQ FT
		Top of Wall = 9.0'L x 1.0'W =	9.0	SQ FT
	aprox. exposed side height=>	Side of Wall = 1.0'H x 1.0'W =	1.0	SQ FT
		Front of Wall =((1.0'+6.0')/2)'H x 9.0'W =	31.5	SQ FT
	No 1 (Right) Wingwall:	Back of Wall = 9.0'L x 0.5'H =	4.5	SQ FT
		Top of Wall = 9.0'L x 1.0'W =	9.0	SQ FT
	aprox. exposed side height=>	Side of Wall = 1.0'H x 1.0'W =	1.0	SQ FT
		Front of Wall =((1.0'+6.0')/2)'H x 9.0'W =	31.5	SQ FT
	Headwall:	Back of Wall = 14.0'L x 0.5'H =	7.0	SQ FT
		Top of Wall = 14.0'L x 1.0'W =	14.0	SQ FT
		Front of Wall = 14.0'L x 1.0'H =	14.0	SQ FT
Culvert Ends:		Exterior 1' for wall, slab, and top thickness of the culvert plus the last 2' of the culvert interior. See details in structure plans.		
	Area = (12' + 4' + 12' + 4', length) x (3', width) x 2 ends =		192.0	SQ FT
		Total	416.8	SQ FT
			46	**SQ YD**

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Item 512, Ext. 33000, Type 2 Waterproofing

Applied to vertical sides of the culvert. Top of culvert is covered with Type 3 due to pavement contact.

Height = height of box = 4' rise + 1' thick top + 1' thick bottom = 6 FT

Length = length of culvert + 1' along wingwall at each end = 64 FT

Area = (6' x 64' x 2 sides)/9 = **85 SQ YD**

Item 512, Ext. 33010, Type 3 Waterproofing

Due to low cover, most of the pavement will be directly on top of the culvert box.

Width = top surface of box + 1 foot vertical down each side

= 12' span + 1' thick wall + 1' thick wall + 1' vert. + 1' vert. = 16 FT

Length = length of culvert = 62 FT

Area = (16' x 62')/9 = **110 SQ YD**

Item 516, Ext. 13600, 1" Preformed Expansion Joint Filler

Inlet: Height = height of wingwall interface with the culvert box and headwall = 6.5 FT

Width = width of wingwall = 1.0 FT

Area = (6.5' x 1') x 2 sides = 13.0 SQ FT

Outlet: Height = height of wingwall interface with the culvert box and headwall = 7.0 FT

Width = width of wingwall = 1.0 FT

Area = (7.0' x 1') x 2 sides = 14.0 SQ FT

Total **27.0 SQ FT**

Item 518 Ext. 21230, Porous Backfill with Geotextile Fabric **LUMP** *

* Use unit "Lump" for plan quantities. For "CU YD" units for filing, see calcs on pages 8.

Item 611, Ext. 95601, 12' x 4' Conduit, Type A, 706.05, As Per Plan **62 FT**

Note: This item includes the Structural Backfill Type 1

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Item 503, Ext. 21100, Unclassified Excavation CU YD *

* For Information Only. Unit "CU YD" quantity used for filing of plans.

Applies to excavation for constructing headwalls and wingwalls.

Excavation for the culvert is included in Item 611.

CMS 503.09.C, use 1' outside the outer edge of the footing or wall.

Dimensions measured in CADD.

Inlet Section View

(dimensions measured in CADD)

Outlet Section View

(dimensions measured in CADD)

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Item 503, Ext. 21100, Unclassified Excavation (Cont'd)

Outlet Footing

Inlet Footing

Inlet:
Length = 1′ + 10.5′ + 7′ + 7′ + 6.5′ + 1′ = 33′

Volume at Inlet = (39 Sq Ft, ave.) x (33 Ft length) =	1287.0	CU FT
Volume at Outlet = (28 Sq Ft, ave.) x (34 Ft length) =	952.0	CU FT
Total	2239.0	CU FT
	83	**CU YD**

For Information Only

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Item 518 Ext. 21200, Porous Backfill with Geotextile Fabric	CU YD	*	
*	For Information Only. Unit "CU YD" quantity used for filing of plans.		
	Applies to areas behind wingwalls. 1' (+/-) below grade down to the weepholes. See plan details.		

Inlet Elevation (Developed)

Inlet:
Area Behind Left Wingwall = 21 Sq Ft (cadd)
Area Behind Right Wingwall = 15 Sq Ft (cadd)

SECTION VIEW
(TYPICAL)

Approx. Limits of
Porous Backfill

Outlet Elevation (Developed)

Outlet:
Area Behind Left Wingwall = 21 Sq Ft (cadd)
Area Behind Right Wingwall = 17 Sq Ft (cadd)

Volume at Inlet = (21 Sq Ft + 15 Sq Ft) x (1.5 Ft thick) =	54.0	CU FT
Volume at Outlet = (21 Sq Ft + 17 Sq Ft) x (1.5 Ft thick) =	57.0	CU FT
Total	111.0	CU FT
	4	**CU YD**
	For Information Only	