



WOOLPERT, INC.
 1203 Walnut St
 Cincinnati, OH 45202
 Phone: 513.272.8300
 Fax: 937.461.0743

Project: Shawnee SF Culverts
Location: Scioto County, OH

Made By: MDK

Date: 12/13/2022

Chk'd By:

Date:

The calculations shown below are as described in the ODOT Seeding and Mulching designer note.

Enter Area to be Seeded and Mulched 294 SY

ITEM 659 SEEDING AND MULCHING 294 SY

ITEM 659 COMMERCIAL FERTILIZER

30 LBS PER 1000 SF OF PERMANENT SEEDING

30 X 294 X 9 / 1000 / 2000 = 0.04

20 LBS PER 1000 SF OF INTER SEEDING

20 X 15 X 9 / 1000 / 2000 = 0.00 0.04 TONS

ITEM 659 WATER

2 APPLICATIONS AT 300 GALLONS PER 1000 SF (PERMANENT)

294 X 9 / 1000 X (2 X 300) / 1000 = 2 MGAL

1 APPLICATIONS AT 300 GALLONS PER 1000 SF (INTER SEEDING)

15 X 9 / 1000 X 300 / 1000 = 0 MGAL 2 MGAL

ITEM 659 LIME

294 X 9 / 43560 = 0.06 ACRES

ITEM 659 REPAIR SEEDING AND MULCHING

5% OF PERMANENT SEEDING AND MULCHING

5% X 294 = 15 SY

ITEM 832 EROSION CONTROL

2000 EA

Culvert 1 End Area Calcs							
Station	Length	Cut Area (SF)	Fill Area (SF)	Cut Vol (CY)	Fill Vol (CY)	Seed Width (ft)	Seed Area (SY)
10+02.55		0.0	2.3			6.0	
	22.45			0.0	11.1		32.4
10+25.00		0.0	24.3			20.0	
	60.00			0.0	63.0		140.0
10+85.00		0.0	32.4			22.0	
	22.09			0.0	14.1		31.9
11+07.09		0.0	2.2			4.0	
TOTAL				0	89		205

Culvert 2 End Area Calcs							
Station	Length	Cut Area (SF)	Fill Area (SF)	Cut Vol (CY)	Fill Vol (CY)	Seed Width (ft)	Seed Area (SY)
20+15.00		0.0	38.8			30.0	
	10.00			0.0	15.2		24.4
20+25.00		0.0	43.2			14.0	
	25.00			0.0	21.9		34.7
20+50.00		0.0	4.2			11.0	
	25.00			0.0	5.0		29.2
20+75.00		0.0	6.7			10.0	
TOTAL				0	43		89

SCI-SF16-0628

Calculated By: JYM Date: 10/3/2022 Job No.: 83291
Checked By: PES Date: 10/7/2022 Bridge No.: Culvert 1

ESTIMATED QUANTITIES					CALC BY: JYM	DATE: 10/3/2022
					CHECK BY: PES	DATE: 10/7/2022
ITEM	EXT	QUANTITY	UNIT	DESCRIPTION		
202	11000	1	LS	STRUCTURE REMOVED		
503	11100	1	LS	COFFERDAMS AND EXCAVATION BRACING		
503	22200	308	CY	UNCLASSIFIED EXCAVATION, INCLUDING ROCK AND/OR SHALE		
509	10000	3,484	LB	EPOXY COATED STEEL REINFORCEMENT		
511	46010	17	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL, NOT INCLUDING FOOTING		
511	46510	56	CY	CLASS QC1 CONCRETE, FOOTING		
511	46610	1	CY	CLASS QC1 CONCRETE, HEADWALL		
512	10100	52	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		
512	33000	169	SY	TYPE 2 WATERPROOFING		
516	13600	30	SF	1" PREFORMED EXPANSION JOINT FILLER		
518	21200	66	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC		
601	32100	78	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER		
611	95001	52	FT	10' X 5' CONDUIT, TYPE A, 706.05, AS PER PLAN		
TOTAL						

503	22200	308	CY	UNCLASSIFIED EXCAVATION, INCLUDING ROCK AND/OR SHALE		
		30.52	sq ft	area in front of footing inlet		
		26.30	sq ft	area in front of footing outlet		
		28.67	ft	length wingwalls + culvert width		
		1628.84	cu ft	volume at inlet/outlet		
		592.65	ft	elevation bottom of culvert (outlet)		
		601.83	ft	profile grade elevation		
		9.18	ft	excavation depth		
		14.00	ft	lateral limits culvert excavation		
		64.26	sq ft	area each side of culvert		
		52.00	ft	culvert length		
		3341.52	cu ft	volume side of culvert		
		2.00	ea	each side		
		6683.04	cu ft	volume sides		
		8311.88	cu ft	total volume		
		308.00	cu yd	total		
509	10000	3484.00	LB	EPOXY COATED STEEL REINFORCEMENT		
		1163.00	lbs	wingwall reinf steel total		
		2150.00	lbs	footing reinf. steel total		
		171.00	lbs	foreslope reinf. steel total		
		3484.00	lb	total		
511	46010	17.00	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL, NOT INCLUDING FOOTING		
		4.01	cy	qty from HWDD-1		
		4.00	ea	number of wingwalls		
		16.04	cy	total		

SCI-SF16-0628

Calculated By: JYM Date: 10/3/2022 Job No.: 83291
Checked By: PES Date: 10/7/2022 Bridge No.: Culvert 1

511	46510	56.00	CY	CLASS QC1 CONCRETE, FOOTING
		7.38	cy	qty wingwall footing from HWDD-1
		4.00	ea	number of wingwalls
		29.52	cy	wingwall footing total
		0.48	cy/ft	qty culvert footing from HWDD-1
		52.00	ft	footing length
		24.96	cy	culvert footing quantity
		1.50	ft	width
		0.83	ft	height
		11.67	ft	length closure pour
		2.00	ea	no sides
		29.17	cu ft	volume
		1.08	cy	closure pour quantity
		55.56	cy	Total
511	46610	1.00	CY	CLASS QC1 CONCRETE, HEADWALL
		11.67	ft	length
		1.00	ft	width
		0.83	ft	thickness
		9.72	cf	subtotal
		2.00	ea	number headwalls
		19.44	cf	total
		0.72	cy	Total
512	10100	52.00	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)
		0.50	ft	behind wall
		1.00	ft	top width
		7.50	ft	max. wingwall height
		5.65	ft	max. exposed height
		4.50	ft	min. wingwall height
		0.50	ft	min. exposed height
		8.50	ft	wingwall length
		26.12	sq ft	surface area front face
		12.75	sq ft	surface area top and back face
		4.00	ea	number of wingwalls
		155.49	sq ft	subtotal wingwalls
		0.25	ft	behind foreslope
		1.00	ft	width
		0.83	ft	height foreslope
		0.83	ft	top box thickness
		11.67	ft	foreslope length
		2.00	ea	each end
		68.06	sq ft	subtotal foreslope
		30.00	ft	full perimeter rise and span
		2.00	ft	depth inside box (each side)
		2.00	ea	each end
		240.00	sq ft	subtotal inside box
		463.55	sf	total
		51.51	sy	Total

SCI-SF16-0628

Calculated By: JYM Date: 10/3/2022 Job No.: 83291
Checked By: PES Date: 10/7/2022 Bridge No.: Culvert 1

512	33000	169.00	SY	TYPE 2 WATERPROOFING
		52.00	ft	length of culvert
		13.67	ft	width culvert + 1ft extension each side
		710.67	sq ft	area top culvert
		7.50	ft	height culvert
		54.00	ft	length culvert + 1ft extension each end
		2.00	ea	number sides
		810.00	sq ft	area sides culvert
		1520.67	sf	total
		168.96	sy	Total
516	13600	30	SF	1" PREFORMED EXPANSION JOINT FILLER
		7.50	ft	height of wingwall joint filler
		1.00	ft	depth of wingwall joint filler
		2.00	ea	number of joints
		15.00	sq ft	total area of joint filler
		2.00	ea	x 2 headwalls
		30.00	sf	Total volume
518	21200	66	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC
		2.00	ft	thickness
		5.50	ft	average wingwall height
		8.50	ft	wingwall length
		4.00	ea	number of wingwalls
		374.00	cf	subtotal wingwalls
		2.00	ft	thickness
		6.67	ft	culvert box height
		52.00	ft	length culvert
		2.00	ea	each side
		1386.67	cf	subtotal culvert
		1760.67	cf	volume
		65.21	cy	total
601	32100	78	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER
		426.25	sq ft	surface area inlet (measured in ORD basemap BS100)
		409.34	sq ft	surface area outlet (measured in ORD basemap BS100)
		2.50	ft	depth RCP
		2088.98	cf	volume
		77.37	cy	total

SCI-SF16-0064

Calculated By: JYM Date: 10/3/2022 Job No.: 83291
Checked By: PES Date: 10/7/2022 Bridge No.: Culvert 2

ESTIMATED QUANTITIES					CALC BY: JYM	DATE: 10/3/2022
					CHECK BY: PES	DATE: 10/7/2022
ITEM	EXT	QUANTITY	UNIT	DESCRIPTION		
202	11000	1	LS	STRUCTURE REMOVED		
503	11100	1	LS	COFFERDAMS AND EXCAVATION BRACING		
503	22200	490	CY	UNCLASSIFIED EXCAVATION, INCLUDING ROCK AND/OR SHALE		
509	10000	3,861	LB	EPOXY COATED STEEL REINFORCEMENT		
511	46010	22	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL, NOT INCLUDING FOOTING		
511	46510	67	CY	CLASS QC1 CONCRETE, FOOTING		
511	46610	1	CY	CLASS QC1 CONCRETE, HEADWALL		
512	10100	55	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		
512	33000	181	SY	TYPE 2 WATERPROOFING		
516	13600	34	SF	1" PREFORMED EXPANSION JOINT FILLER		
518	21200	80	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC		
601	32100	79	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER		
611	94911	56	FT	8' X 6' CONDUIT, TYPE A, 706.05, AS PER PLAN		
TOTAL						

503	22200	490	CY	UNCLASSIFIED EXCAVATION, INCLUDING ROCK AND/OR SHALE		
		32.74	sq ft	area in front of footing inlet		
		21.88	sq ft	area in front of footing outlet		
		29.33	ft	length wingwalls + culvert width		
		1602.19	cu ft	volume at inlet/outlet		
		490.65	ft	elevation bottom of culvert (outlet)		
		502.16	ft	profile grade elevation		
		11.51	ft	excavation depth		
		18.00	ft	lateral limits culvert excavation		
		103.59	sq ft	area each side of culvert		
		56.00	ft	culvert length		
		5801.04	cu ft	volume side of culvert		
		2.00	ea	each side		
		11602.08	cu ft	volume sides		
		13204.27	cu ft	total volume		
		490.00	cu yd	total		
509	10000	3861.00	LB	EPOXY COATED STEEL REINFORCEMENT		
		1284.00	lbs	wingwall reinf steel total		
		2410.00	lbs	footing reinf. steel total		
		167.00	lbs	foreslope reinf. steel total		
		3861.00	lb	total		
511	46010	22.00	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL, NOT INCLUDING FOOTING		
		5.27	cy	qty from HWDD-1		
		4.00	ea	number of wingwalls		
		21.08	cy	total		

SCI-SF16-0064

Calculated By: JYM Date: 10/3/2022 Job No.: 83291
Checked By: PES Date: 10/7/2022 Bridge No.: Culvert 2

511	46510	67.00	CY	CLASS QC1 CONCRETE, FOOTING
		9.05	cy	qty wingwall footing from HWDD-1
		4.00	ea	number of wingwalls
		36.20	cy	wingwall footing total
		0.52	cy/ft	qty culvert footing from HWDD-1
		56.00	ft	footing length
		29.12	cy	culvert footing quantity
		1.92	ft	width
		0.67	ft	height
		9.33	ft	length closure pour
		2.00	ea	no sides
		23.85	cu ft	volume
		0.88	cy	closure pour quantity
		66.20	cy	Total
511	46610	1.00	CY	CLASS QC1 CONCRETE, HEADWALL
		9.33	ft	length
		1.00	ft	width
		1.17	ft	thickness
		10.89	cf	subtotal
		2.00	ea	number headwalls
		21.78	cf	total
		0.81	cy	Total
512	10100	55.00	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)
		0.50	ft	behind wall
		1.00	ft	top width
		8.50	ft	max. wingwall height
		6.83	ft	max. exposed height
		5.00	ft	min. wingwall height
		0.50	ft	min. exposed height
		10.00	ft	wingwall length
		36.67	sq ft	surface area front face
		15.00	sq ft	surface area top and back face
		4.00	ea	number of wingwalls
		206.67	sq ft	subtotal wingwalls
		0.25	ft	behind foreslope
		1.00	ft	width
		1.17	ft	height foreslope
		0.67	ft	top box thickness
		9.33	ft	foreslope length
		2.00	ea	each end
		57.56	sq ft	subtotal foreslope
		28.00	ft	full perimeter rise and span
		2.00	ft	depth inside box (each side)
		2.00	ea	each end
		224.00	sq ft	subtotal inside box
		488.22	sf	total
		54.25	sy	Total

SCI-SF16-0064

Calculated By: JYM Date: 10/3/2022 Job No.: 83291
Checked By: PES Date: 10/7/2022 Bridge No.: Culvert 2

Item No.	Quantity	Unit	Description
512 33000 181.00 SY TYPE 2 WATERPROOFING			
	56.00	ft	length of culvert
	11.33	ft	width culvert + 1ft extension each side
	634.67	sq ft	area top culvert
	8.50	ft	height culvert
	58.00	ft	length culvert + 1ft extension each end
	2.00	ea	number sides
	986.00	sq ft	area sides culvert
	1620.67	sf	total
	180.07	sy	Total
516 13600 34 SF 1" PREFORMED EXPANSION JOINT FILLER			
	8.50	ft	height of wingwall joint filler
	1.00	ft	depth of wingwall joint filler
	2.00	ea	number of joints
	17.00	sq ft	total area of joint filler
	2.00	ea	x 2 headwalls
	34.00	sf	Total volume
518 21200 80 CY POROUS BACKFILL WITH GEOTEXTILE FABRIC			
	2.00	ft	thickness
	6.25	ft	average wingwall height
	10.00	ft	wingwall length
	4.00	ea	number of wingwalls
	500.00	cf	subtotal wingwalls
	2.00	ft	thickness
	7.33	ft	culvert box height
	56.00	ft	length culvert
	2.00	ea	each side
	1642.67	cf	subtotal culvert
	2142.67	cf	volume
	79.36	cy	total
601 32100 79 CY ROCK CHANNEL PROTECTION, TYPE B WITH FILTER			
	427.78	sq ft	surface area inlet (measured in ORD basemap BS200)
	417.00	sq ft	surface area outlet (measured in ORD basemap BS200)
	2.50	ft	depth RCP
	2111.95	cf	volume
	78.22	cy	total