

DISTRICT 10 - BRIDGE DEPARTMENT

MUSKINGUM DRIVE, BOX 658, MARIETTA OHIO 45750

COUNTY: MOE ROUTE: 537 SECTION: 1.64

SHEET 1 OF 3

CLASS QL1 CONCRETE, RETAINING / WINGWALL			
INLET:	$\frac{1}{2}(7.3' + 10.83')(12.75')(1.25') / 27$	=	5.36 CY
	$\frac{1}{2}(4.33' + 10.83')(18.0')(1.25') / 27$	=	8.40 CY
	$(0.655F)(10.83') / 27$	=	0.26 CY
OUTLET:	$\frac{1}{2}(4.33' + 10.83')(18.0')(1.25') / 27$	=	8.40 CY
	$\frac{1}{2}(4.83' + 10.83')(28.0')(1.25') / 27$	=	10.15 CY
	$(1.25')(10.83')(1.25') / 27$	=	0.63 CY
	$33.20 - 1.81 = 31.39 \text{ CU. YD.}$		
CLASS QL1 CONCRETE, FOOTING			
INLET:	$\frac{1}{2}(11.06' + 14.79')(9.0')(2.0') / 27$	=	8.62 CY
	$\frac{1}{2}(38.48' + 42.21')(9.0')(2.0') / 27$	=	26.90 CY
	$\frac{1}{2}(11.06' + 11.68')(2.0')(1.5') / 27$	=	1.26 CY
	$\frac{1}{2}(38.48' + 39.10')(2.0')(1.5') / 27$	=	4.31 CY
	$(22.0')(4.08')(1.17') / 27$	=	3.89 CY
	$(0.295F)(22.0') / 27$	=	0.24 CY
OUTLET:	$(45.08')(9.0')(2.0') / 27$	=	30.05 CY
	$(23.92')(9.0')(2.0') / 27$	=	15.95 CY
	$\frac{1}{2}(36.08' + 37.58')(2.0')(1.5') / 27$	=	4.09 CY
	$\frac{1}{2}(23.92' + 25.42')(2.0')(1.5') / 27$	=	2.74 CY
	$(22.0')(4.08')(1.17') / 27$	=	3.89 CY
	$(0.295F)(22.0') / 27$	=	0.24 CY
	102.18 CU. YD.		
CLASS QL1 CONCRETE, HEADWALL			
INLET:	$(22.0')(0.5')(1.25') / 27$	=	0.51 CY
OUTLET:	$(22.0')(0.5')(1.25') / 27$	=	0.51 CY
	1.02 CU. YD.		

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SHEET 2 OF 3

SEALING OF CONCRETE SURFACES

INLET: $\frac{1}{2}(9.67' + 0.5')(12.75') / 9 = 7.20 \text{ SY}$

$(0.5')(1.25') / 9 = 0.07 \text{ SY}$

$(0.5')(13.25') / 9 = 0.74 \text{ SY}$

$\frac{1}{2}(9.67' + 1.5')(18.0') / 9 = 11.17 \text{ SY}$

$(1.5')(1.25') / 9 = 0.21 \text{ SY}$

$\frac{1}{2}(1.5' + 0.5')(18.0') / 9 = 2.0 \text{ SY}$

$(18.0')(1.25') / 9 = 2.5 \text{ SY}$

$(22.0')(1.25') / 9 = 3.06 \text{ SY}$

$(12.75')(1.25') / 9 = 1.77 \text{ SY}$

$(22.0')(0.5') / 9 = 1.22 \text{ SY}$

$\pi(2.5')^2 / 4 = 2.18 \text{ SY}$

$(0.65 \text{ SF}) / 9 = 0.07 \text{ SY}$

OUTLET: $\frac{1}{2}(9.67' + 1.5')(18.0') / 9 = 11.17 \text{ SY}$

$(1.5')(1.25') / 9 = 0.21 \text{ SY}$

$\frac{1}{2}(1.5' + 0.5')(18.0') / 9 = 2.0 \text{ SY}$

$\frac{1}{2}(9.67' + 1.0')(28.0') / 9 = 16.60 \text{ SY}$

$(1.0')(1.25') / 9 = 0.14 \text{ SY}$

$\frac{1}{2}(1.0' + 0.5')(29.25') / 9 = 2.44 \text{ SY}$

$(1.25')(29.25') / 9 = 4.06 \text{ SY}$

$(1.25')(22.0') / 9 = 3.06 \text{ SY}$

$(1.25')(18.0') / 9 = 2.5 \text{ SY}$

$\pi(2.5')^2 / 4 = 2.18 \text{ SY}$

$(22.0')(0.5') / 9 = 1.22 \text{ SY}$

FACE OF BOX: $2(9.17')(1') / 9 = 2.04 \text{ SY}$

$(20.0')(1.17') / 9 = 2.60 \text{ SY}$

$4 \times \frac{1}{2}(1')(1') / 9 = 0.22 \text{ SY}$

INSIDE BOX: $[(2 \times 18') + (2 \times 6') + (4 \times 1.41')] \times 2' / 9 = 11.92 \text{ SY}$

$(2.04 + 2.60 + 0.22 + 11.92) \times 2 = 33.56 \text{ SY}$

$106.97 - 2.18 - 2.18 = 102.61$

TOTAL = 102.61 SQ. YD

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SHEET 3 OF 3

TYPE 2 WATER PROOFING

$$(10.33')(119.50') / 9 = 137.16 \times 2 = 274.32 \text{ SY}$$

TYPE 3 WATER PROOFING

$$(24.0')(117.50') / 9 = 313.33 \text{ SY}$$

1" PEDESTAL

$$(10.83')(1.25') \times 4 = 54.15 \text{ SF}$$

POROUS BACKFILL

$$\frac{1}{2}(5.83' + 9.33')(12.75')(1.5') / 27 = 5.37 \text{ CY}$$

$$\frac{1}{2}(7.83' + 9.33')(18.0')(1.5') / 27 = 8.58 \text{ CY}$$

$$\frac{1}{2}(7.83' + 9.33')(18.0')(1.5') / 27 = 8.58 \text{ CY}$$

$$\frac{1}{2}(3.33' + 9.33')(29.25')(1.5') / 27 = 9.47 \text{ CY}$$

32.0 CU. YD.

LOW STRENGTH MORTAR BACKFILL

$$(2.0')(10.33')(117.5') / 27 = 89.91 \text{ CY}$$

$$\frac{1}{2}(10.33')(10.33')(117.5') / 27 = 232.19 \text{ CY}$$

SIDE WITH CULVERT

$$(7')(10.33')(117.5') / 27 = 314.68 \text{ CY}$$

$$\frac{1}{2}(10.33')(10.33')(117.5') / 27 = 232.19 \text{ CY}$$

DEDUCT CONDUIT:

$$\pi(2.27')^2(117.5') / 27 = 70.45 \text{ CY}$$

$$89.91 + 232.19 + 314.68 + 232.19 - 70.45 = 798.52 \text{ CU. YD.}$$

WEARING COURSE REMOVED

$$(30.61')(20.55') / 9 = 69.89 \text{ SQ. YD.}$$

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