

# BUTLER COUNTY ENGINEERS OFFICE

Depot Bridge Rehab Project

# Depot Bridge Rehab Project

- ▣ Urban and Rural with a population of 370,589+/-
- ▣ Butler County Operations employs 33 employees
- ▣ Maintain 607 lane miles of road
- ▣ 404 Bridges
- ▣ 1,025 culverts



# Depot Bridge Rehab Project

- ▣ In-House Bridge Inspection
- ▣ Create Work Order for Maintenance
- ▣ Designate Bridge for rehab or replacement
- ▣ Contract or BCEO forces





# Depot Bridge Rehab Project



# Depot Bridge Rehab Project

<b>BUTLER COUNTY BRIDGE MANAGEMENT SYSTEM BRIDGE INSPECTION RECORD</b>	County Bridge Name: <b>DEPOT ROAD - 0.114</b>
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ELEVATION LOOKING NORTH.



ENDVIEW LOOKING WEST.

Structure File Number: 0931713 Inspected By: BRIAN D. DIETRICH  
 General Appraisal Operating Status: 5 A  
 Sufficiency Rating: 63.4 Inspection Date: 0 / 7 / 23 / 10  
 Inspection No: 2010 Township: MILFORD

## STRUCTURE INFO

NO. OF SPANS: 1 O.A. LENGTH: 15 FT. DECK WIDTH: 17.9 FT.  
 YEAR BUILT / REHAB: 1915  
 STRUCTURE TYPE: CONCRETE SLAB ON STONE MASONRY ABUTMENTS

## INSPECTION FINDINGS

DECK COMMENT: SPALLING WITH EXPOSED REBAR IN THE S FASCIA & S END OF THE FLOOR. SECTION LOSS TO THE REBAR.  
 SUPERSTRUCTURE COMMENT: SPALLING WITH EXPOSED REBAR IN THE S FASCIA & S END OF THE FLOOR. SECTION LOSS TO THE REBAR.  
 SUBSTRUCTURE COMMENT: VERTICAL CRACK IN THE SOUTH CORNER OF THE WEST ABUTMENT. SPALLING OF THE WINDOW WALLS.  
 CULVERT COMMENT:  
 SCOUR COMMENT: SCOUR ALONG THE WEST ABUTMENT.  
 CHANNEL COMMENT: CHANNEL FLOWS NO DEPENDS TO THE BRIDGE CAUSING SCOUR.  
 APPROACH COMMENT:

## RECOMMENDED MAINTENANCE

COMPONENT	PRIORITY	DESCRIPTION
CONCRETE	M	CLEAN & PAINT THE EXPOSED REBAR WITH CORROSION INHIBITOR. PATCH SPALLS IN THE SOUTH FASCIA AND THE SOUTH END OF THE FLOOR.
STEEL		
GUARDRAIL	M	ADD GUARDRAIL. REPLACE SOUTHEAST BRIDGE END MARKER.
PAVEMENT		
EMBANKMENT		
CHANNEL	M	PLACE RIP-RAP ALONG WEST ABUTMENT.
EROSION		



<b>0931713</b>		BRIDGE NUMBER	BUT	T0089	0011	MILFORD	YEAR BUILT	1915	
STRUCTURE FILE NUMBER		CO	ROUTE	UNIT	VILLAGETOWN				
0931713	BRIDGE TYPE	Concrete Slab	Simple Span	TYPE SERVICE	115	SREAM	BUTLER		
DECK		SPALLING WITH EXPOSED REBAR IN THE S FASCIA & S END OF THE FLOOR. SECTION LOSS TO THE REBAR.							
1. FLOOR	2	2. WEARING SURFACE							
3. CURBS, SIDEWALKS, WALKWAY		4. MEDIAN							
5. RAILING	2	6. DRAINAGE							
7. EXPANSION JOINTS		8. SUMMARY							
SUPERSTRUCTURE		SPALLING WITH EXPOSED REBAR IN THE S FASCIA & S END OF THE FLOOR. SECTION LOSS TO THE REBAR.							
9. ALIGNMENT	1	10. BEAMS/GIRDERS/SLAB							
11. DIAPHRAGMS or CROSSFRAMES		12. JOISTS/STRINGERS							
13. FLOOR BEAMS		14. FLOOR BEAM CONNECTIONS							
15. VERTICALS		16. DIAGONALS							
17. END POSTS		18. TOP CHORD							
19. LOWER CHORD		20. LOWER LATERAL BRACING							
21. TOP LATERAL BRACING		22. SWAY BRACING							
23. PORTAL		24. BEARING DEVICES							
25. ARCH		26. ARCH COLUMNS or HANGERS							
27. SPANDREL WALLS		28. PCS							
29. PINS/HANGERS/SANGLES		30. FATIGUE PRONE CONNECTIONS							
31. LIVE LOAD RESPONSE	S	32. SUMMARY							
SUBSTRUCTURE		VERTICAL CRACK IN THE SOUTH CORNER OF THE WEST ABUTMENT							
33. ABUTMENTS	2	34. ABUTMENT SEATS							
35. PIERS		36. PIER SEATS							
37. BACKWALLS		38. WINDOW WALLS							
39. FENDERS and DOLPHINS		40. SCOUR							
41. SLOPE PROTECTION		42. SUMMARY							
CULVERT		VERTICAL CRACK IN THE SOUTH CORNER OF THE WEST ABUTMENT. SPALLING OF THE WINDOW WALLS.							
43. GENERAL		44. ALIGNMENT							
45. SHAPE		46. SEAMS							
47. HEADWALLS or ENDWALLS		48. SCOUR							
49. CHANNEL		50. SUMMARY							
51. ALIGNMENT	4	52. PROTECTION							
53. WATERWAY ADEQUACY	1	54. SUMMARY							
55. APPROACHES		56. APPROACH SLABS							
57. GUARDRAIL		58. RELIEF JOINTS							
59. EMBANKMENT	2	60. SUMMARY							
61. NAVIGATION LIGHTS		62. WARNING SIGNS							
63. SIGN SUPPORTS		64. UTILITIES							
65. VERTICAL CLEARANCE	N	66. GENERAL APPRAISAL and OPERATIONAL STATUS							
67. INSPECTED BY		BRIAN D. DIETRICH		PE		B D D		PE	
68. REVIEWED BY				PE				INITIALS	
PE# 65481		BURGESS & NIPLE, INC.		PE#					
DATE		07/23/10		0000NN11		DATE			
				69 SURVEY					





# Depot Bridge Rehab Project





# Depot Bridge Rehab Project

- ▣ 2010 rated 5A
- ▣ Findings
  - Spalling with exposed rebar fascia and deck
  - Vertical crack in abutment
  - Scour along west abutment



# Depot Bridge Rehab Project

- ▣ 2012 rated 4A
- ▣ Findings
  - Spalling with more exposed rebar
  - More cracking in the stone abutments

Recommended for  
replacement





# Depot Bridge Rehab Project

- ▣ Stream alignment
- ▣ Dead end road
- ▣ One day closure
- ▣ Force Account Limits
- ▣ Utilities



SCANNED

ERNST GOOS AND  
M. FRANCES GOOS  
AKA FRANCES GOOS  
D.B. 8065 P.G. 1310  
F2610-024-000-001

CHRISTIAN G. HAEHNLE AND  
ARMEDA RUTH HAEHNLE  
D.B. 774, P.G. 247  
F2610-024-000-013

RAILROAD SPIKE POINT

CONCRETE MONUMENT FOUND IN SOUTH WEST SUBDIVISION CORNER OF MILFORD MEADOWS P.B. 22, P.G. 32

POINT 1

73.77'

S83°34'44"W

159.55'

S55°17'44"W

510.65'

S90°25'44"W

2680.46'

S80°46'

588.12'

S88°13'44"W

179.70'

S60°07'

OXFORD MILFORD  
WATER ASSOCIATION  
D.B 1205, P.G. 336  
F2610-024-000-026

ALL BEARINGS SHOWN ARE FOR PROJECT USE ONLY

THE BEARINGS SHOWN HEREON ARE BASED ON OHIO STATE PLANE COORDINATES SOUTH ZONE. CONTROL FOR THE BEARINGS SHOWN HEREON WERE DETERMINED BY GPS OBSERVATION OF THE BUTLER COUNTY ENGINEERS OFFICE MONUMENTS "0007", "08FC55" AND "08FC57A".

PARCEL NO.	OWNER	OWNERS RECORD BOOK PAGE	AUDITOR'S PARCEL	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	B.L.D.O.
1B	DAVID BICKNELL	6304 1724	F2610-024-000-003	0.110	0.043	0.072	
1B	DAVID BICKNELL	6304 1154	F2610-024-000-003	0.078	0.008	0.018	
1-WA	DAVID BICKNELL	6304 1124	F2610-024-000-003	0.087		0.067	
2	ERNEST GOOS AND M. FRANCES GOOS	8085 1309	F2610-024-000-001	0.062	0.015	0.010	
2-WA	ERNEST GOOS AND M. FRANCES GOOS	8085 1510	F2610-024-000-001	0.021		0.002	
3	CHRISTIAN G. HAHNLE AND ARMEDA	774 247	F2610-024-000-015	0.025	0.012	0.017	
3-WA	RUTH HAHNLE						
3-WA	CHRISTIAN G. HAHNLE AND ARMEDA	774 247	F2610-024-000-015	0.009		0.009	
	RUTH HAHNLE						

RIGHT OF WAY  
DEPOT ROAD BRIDGE 00.114

**B-0069-00,114**

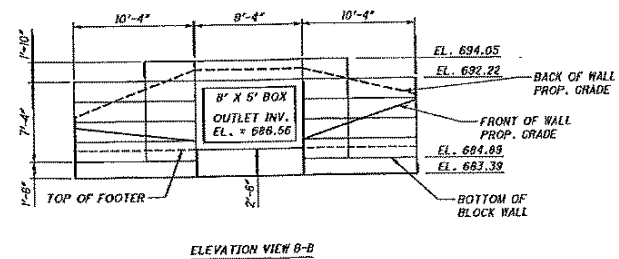
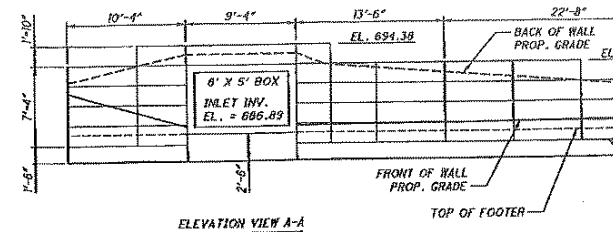
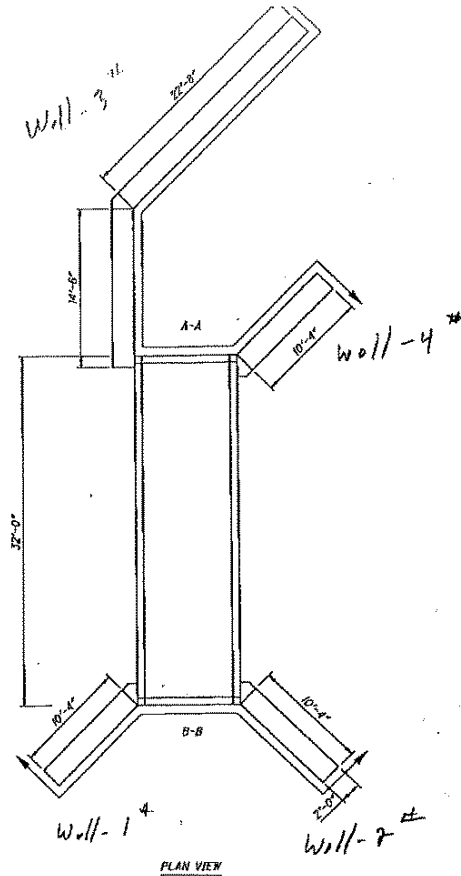


E:\Design\Projecta\Depot\142A\10714\structures\EUT269\_001C\steel\20120901.dgn 9/3/2012 2:39:53 PM berraga



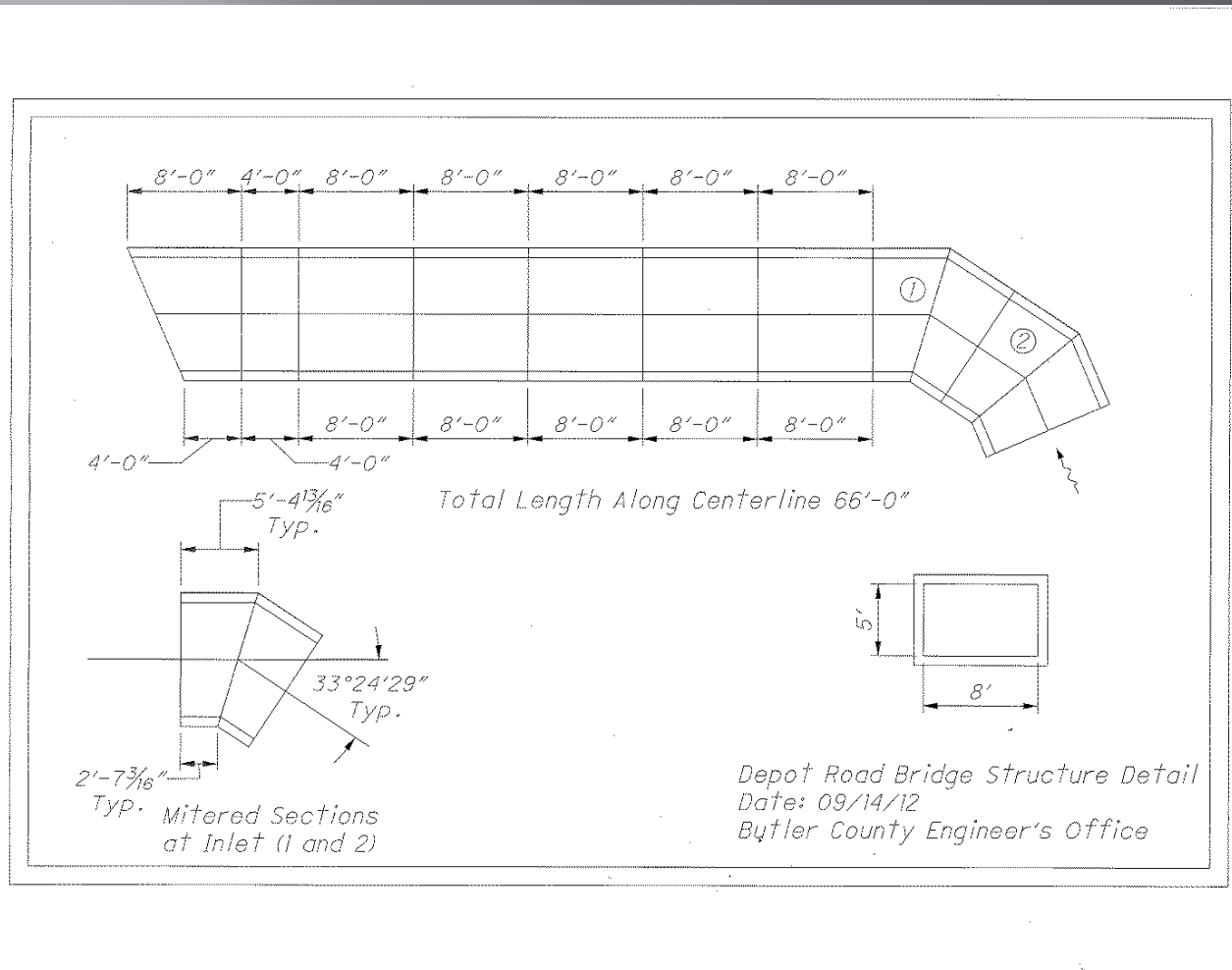
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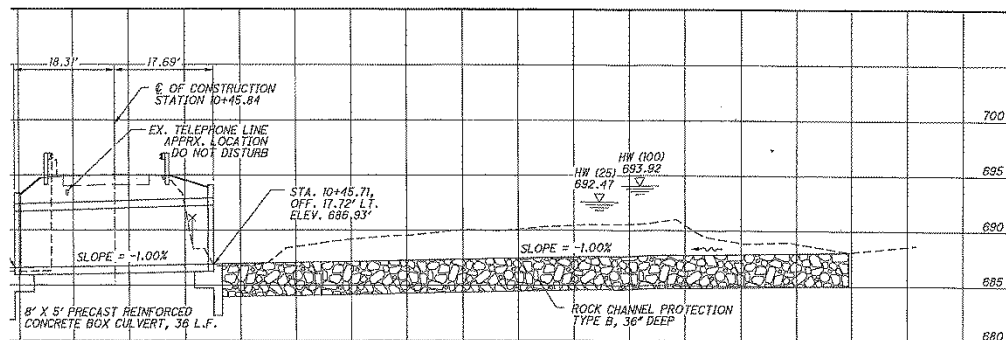
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# Depot Bridge Rehab Project





- ② STATION: 10+45.69  
OFFSETS: 17' 72" LT.  
INLET ELEVATION: 886.93'
- ③ INSTALL FULL HEIGHT HEADWALL AT OUTLET. SEE SHEET B FOR DETAILS.  
STATION: 10+45.99  
OFFSETS: 18.91' LT.  
OUTLET ELEVATION: 886.58'
- ④ REMOVE EXISTING HEADWALLS AND WINGWALLS TO 1 FT BELOW PROPOSED GRADE.
- ⑤ GRADE AREA AROUND WALL TO DRAIN.
- ⑥ CONSTRUCT 5' GRADED SHOULDERS:  
STATIONING: 10+30 TO 10+95' LT.  
10+25 TO 10+65' RT.
- ⑦ INSTALL ROCK CHANNEL PROTECTION TYPE B, 36" DEEP.
- ⑧ INSTALL TYPE 5 GUARDRAIL WITH FLARED END SECTIONS  
STA. 10+28.28 TO 10' 28" RT. & LT.  
STA. 10+72.28, OFF. 11.10' RT. & LT.
- ⑨ INSTALL 18" DIAMETER CONCRETE ENCASEMENT AROUND GUARDRAIL POST WITH REINFORCED COVER UP TO 2 FT IN DEPTH. POSTS OVER THE STRUCTURE MUST BE HAND DUG OR DRILLED.
- ⑩ REMOVE EXISTING PAVEMENT AS NECESSARY FOR REMOVAL. THE EXISTING STRUCTURE, INSTALLATION OF THE PROPOSED CONCRETE STRUCTURES, AND INSTALLATION OF GRANULAR BACKFILL.

NOTE: BACKFILL WITHIN THE LIMITS OF THE PAVEMENT  
AROUND THE STRUCTURE SHALL BE COMPLETED WITH  
LOW STRENGTH MORTAR.

## HYDRAULIC DATA

DRAINAGE AREA = 0.227 SQ. MILES  
Q (25) = 239 CFS V (25) = 12.87 FT/S  
Q (100) = 327 CFS V (100) = 13.96 FT/S  
STRUCTURE CLEARS THE 100 YEAR

### EXISTING STRUCTURE

TYPE: CONCRETE SLAB ON STONE MASONRY ABUTMENTS

SPANS: 10'-6"  
ROADWAY: 17'-10 1/2"  
LOADING: UNKNOWN  
SKEW: 89° 42' 36"  
APPROACH SLABS: NONE  
STRUCTURAL FILE NUMBER: 0931713  
DATE BUILT: 1915

### PROPOSED STRUCTURE

TYPE: 36LF OF 8'-0" SPAN BY 5'-0" RISE PRECAST REINFORCED  
CONCRETE BOX SECTIONS  
SPANS: 8'-0"  
ROADWAY: 17'-10 1/2"

0069-00.114	<div>SITE PLAN</div> <div>DEPOT ROAD BRIDGE 0.114</div> <div>SLIP LINE AND DITCH RELOCATION</div> <div>STA. 10+00 TO 14+60</div>					BUTLER COUNTY	DESIGNED DBQ	DRAWN	REVIEWED DATE	DESIGN AT BUTLER C ENGINEERS
			CHECKED	STRUCTURE FILE NUMBER						



# Depot Bridge Rehab Project

## Force Account Project Assessment Form (Estimate)

Ohio Revised Code 117.16 requires the Auditor of State to develop a force account project assessment form to be used by each public office to estimate or report the cost of a force account project. The form shall include costs for employee salaries and benefits, any other labor costs, materials, freight, fuel, hauling, overhead expense, workers' compensation premiums, and all other items of cost and expense, including a reasonable allowance for the use of all tools and equipment used on or in connection with such work and for the depreciation on the tools and equipment.

This form is to be completed as provided in Auditor of State Bulletin 2003-003.

Project Name/Number: Depot rd. / R006900 11412A

Project Description: Bridge Rehab

Proposed Start Date: August 12, 2013 Proposed End Date: September 13, 2013

### ESTIMATED LABOR (please complete the shaded fields)

Description	Base Wage	Hours Worked	Total
<u>                    </u>	<u>\$30.01 X</u>	<u>200</u>	<u>\$6,002.00</u>
<u>                    </u>	<u>\$22.94 X</u>	<u>200</u>	<u>\$4,588.00</u>
<u>                    </u>	<u>\$22.11 X</u>	<u>160</u>	<u>\$3,537.60</u>
<u>                    </u>	<u>\$21.88 X</u>	<u>160</u>	<u>\$3,500.80</u>
<u>                    </u>	<u>X</u>	<u>          </u>	<u>\$0.00</u>
<u>                    </u>	<u>X</u>	<u>          </u>	<u>\$0.00</u>
<u>                    </u>	<u>X</u>	<u>          </u>	<u>\$0.00</u>
<u>                    </u>	<u>X</u>	<u>          </u>	<u>\$0.00</u>
<u>                    </u>	<u>X</u>	<u>          </u>	<u>\$0.00</u>

Total Base Wages \$17,628.40  
30 % of base wages (Fringe benefits, BWC, etc.) \$5,288.52  
38 % of wages and fringe benefits for overhead \$8,708.43

Total Labor Estimate \$31,625.35

### ESTIMATED MATERIALS (please complete the shaded fields)

Description	Cost per Unit	Quantity	Unit Type	Total
<u>Asphalt</u>	<u>\$90.00</u>	<u>10</u>	<u>cy</u>	<u>\$900.00</u>
<u>Guardrail</u>	<u>\$12.00</u>	<u>50</u>	<u>lf</u>	<u>\$600.00</u>
<u>Type B RCP</u>	<u>\$39.45</u>	<u>150</u>	<u>cy</u>	<u>\$5,917.50</u>
<u>Masonry</u>	<u>\$115.00</u>	<u>31</u>	<u>cy</u>	<u>\$3,565.00</u>
<u>Seed / Straw</u>	<u>\$1.25</u>	<u>720</u>	<u>sy</u>	<u>\$900.00</u>
<u>Commercial Pert.</u>	<u>\$475.00</u>	<u>0.04</u>	<u>tons</u>	<u>\$19.00</u>
<u>Type 2 Waterproofing</u>	<u>\$6.00</u>	<u>89</u>	<u>sy</u>	<u>\$534.00</u>
<u>Concrete Sealer</u>	<u>\$3.00</u>	<u>39</u>	<u>sq</u>	<u>\$117.00</u>
<u>Gravel Base</u>	<u>\$2.50</u>	<u>49</u>	<u>cy</u>	<u>\$465.50</u>
<u>Sand Backfill</u>	<u>\$8.00</u>	<u>100</u>	<u>cy</u>	<u>\$800.00</u>
<u>Block Wall</u>	<u>\$9,299.00</u>	<u>1</u>	<u>ls</u>	<u>\$9,299.00</u>
<u>Seed and Straw</u>	<u>\$1.43</u>	<u>680</u>	<u>sy</u>	<u>\$986.00</u>
<u>8x5 Pre-Cast Box</u>	<u>\$464.00</u>	<u>36</u>	<u>lf</u>	<u>\$16,704.00</u>

Base Materials \$40,807.00  
15 % of base materials for overhead \$6,121.05

Total Materials Estimate \$46,928.05

### ESTIMATED EQUIPMENT (please complete the shaded fields)

Each piece of equipment used in a project must be assigned an hourly rate. For equipment owned by the public entity, this rate must reflect the original purchase price of the equipment, maintenance costs, time in service, depreciation, freight, fuel, and hauling. The public office may use any generally accepted rate that reflects all of the aforementioned considerations, or it may use the statewide rates as published by the Ohio Department of Transportation and updated on a quarterly basis; however, the office must use the same rate source for all equipment used in a project. Any equipment rented by the public entity must be listed in the form and reflect the actual rental rate.

Description	Rate per Hour	Hours	Total
<u>Crewcab (149)</u>	<u>\$21.23 X</u>	<u>200</u>	<u>\$4,246.00</u>
<u>Dump Truck (155)</u>	<u>\$65.54 X</u>	<u>40</u>	<u>\$2,621.60</u>
<u>Dump Truck (166)</u>	<u>\$66.62 X</u>	<u>40</u>	<u>\$2,664.80</u>
<u>Dump Truck (150)</u>	<u>\$38.61 X</u>	<u>          </u>	<u>\$0.00</u>
<u>Crawler Mounted Excavator (239)</u>	<u>\$39.80 X</u>	<u>56</u>	<u>\$4,468.80</u>
<u>Wheel Mounted Excavator (241)</u>	<u>\$84.01 X</u>	<u>          </u>	<u>\$0.00</u>
<u>Compact Skid Steer Loader (229)</u>	<u>\$33.31 X</u>	<u>40</u>	<u>\$1,332.40</u>
<u>Trailer Mounted Seeder (234)</u>	<u>\$14.61 X</u>	<u>8</u>	<u>\$116.88</u>
<u>On Highway Tractor (180)</u>	<u>\$63.11 X</u>	<u>2</u>	<u>\$126.22</u>
<u>Hydraulic Removable Gooseneck Trailer (181)</u>	<u>\$13.07 X</u>	<u>2</u>	<u>\$26.14</u>
<u>Non-Tilt Deck Utility Trailer (168)</u>	<u>\$5.58 X</u>	<u>          </u>	<u>\$0.00</u>
<u>Non-Tilt Deck Utility Trailer (177)</u>	<u>\$2.85 X</u>	<u>8</u>	<u>\$22.80</u>
<u>                    </u>	<u>X</u>	<u>          </u>	<u>\$0.00</u>
<u>Tri-State Crane</u>	<u>\$3,000.00 X</u>	<u>          </u>	<u>\$3,000.00</u>

Total Equipment Estimate \$18,625.64

TOTAL ESTIMATED PROJECT COST \$97,179.04  
 (labor + materials + equipment)

Prepared by: Scott L. Bressler

Title: Operations Deputy

Date: 7/30/2013

# Depot Bridge Rehab Project





# Depot Bridge Rehab Project





# Depot Bridge Rehab Project





# Depot Bridge Rehab Project



# Depot Bridge Rehab Project





# Depot Bridge Rehab Project







# Depot Bridge Rehab Project





# Depot Bridge Rehab Project

**REDI-ROCK**

## 2011 INSTALLATION MANUAL

### SETTING THE BOTTOM ROW OF WALL BLOCKS.

Redi-Rock blocks are typically delivered to the construction site using a flat bed trailer or boom truck. (Figure 9) Rubber tired backhoes, loaders, skid steers, or excavators are used to set the retaining wall blocks. (Figure 10) Redi-Rock blocks weigh up to 3,500 lbs. Make sure to use the proper sized equipment to handle the blocks. All lifting chains, rigging, or slings must be OSHA compliant and safety rated for proper working loads.



Figure 9



Figure 1C

Properly mark the location of the retaining wall. A string line or offset stakes are typically used to establish horizontal and vertical alignment. If offset stakes are used, the stakes should be placed at least 5 feet but no more than 10 feet in front of the face of the retaining wall. A stake should be provided at every elevation change and at a maximum of 50 feet apart.

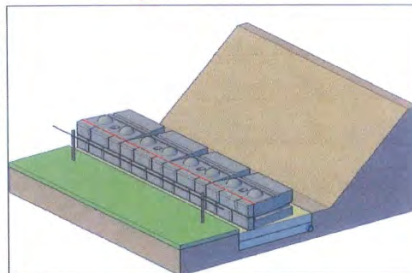


Figure 11

Place a complete row of blocks on the prepared leveling pad. Blocks shall be placed tight together. Block alignment should be established by lining up the "form line" where the face texture meets the steel form finished area at the top of the block, approximately 5 inches back from the front face. (Figure 11)

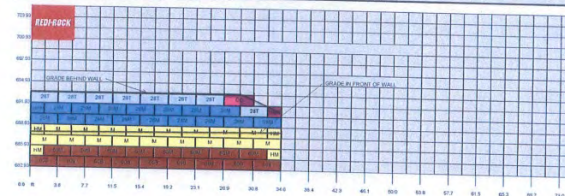
Check all blocks for level and alignment as they are placed. Small adjustments to the block location can be made with a large pry bar. If you take the time to set the bottom row properly, installation of the upper rows of blocks is much easier and more efficient.

**TIP:** Wall construction should start at a fixed point such as a building wall, 90° corner, or at the lowest elevation of the wall.

**REDI+ROCK**  
STRUCTURES OF OKI

## Wall Sketcher

NO. 3099		13999		SERIES: Returning:		Free Standing		Sketcher Notes:																																																																																																																																																																																																					
Job Name:		DEPOI BL BRIDGE		F14 Material:		F14 Material:		F14 Material:																																																																																																																																																																																																					
Contact:		Scott Beverside		F14 Quantity:		F14 Quantity:		F14 Quantity:																																																																																																																																																																																																					
Address:		1921 Berkeley Ave.		F14 Price:		F14 Price:		F14 Price:																																																																																																																																																																																																					
City, State, Zip:		Hawthorne, CA 94011		F14 Weight:		F14 Weight:		F14 Weight:																																																																																																																																																																																																					
Telephone:		(916) 927-5745		F14 Volume:		F14 Volume:		F14 Volume:																																																																																																																																																																																																					
Returning Material Blocks:				B3		Total Square Feet:		361																																																																																																																																																																																																					
Prescheduling Steel Blocks:				B3																																																																																																																																																																																																									
Stays & Caps:				B3																																																																																																																																																																																																									
Total Blocks:				B3																																																																																																																																																																																																									
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# Depot Bridge Rehab Project

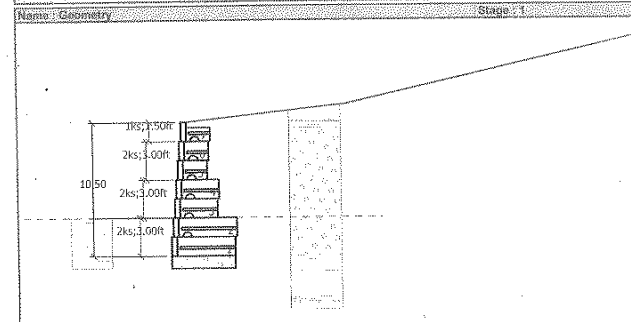
Depot Road Bridge Butler County, Ohio					
No.	Description	Shear cap F [lb/ft²]	Max. shear cap F <sub>max</sub> [lb/ft²]	Friction f (%)	Cohesion c [psf]
1	Block 28	1700.00	9000.00	75.00	0.0
2	Block 41	1700.00	9000.00	75.00	0.0
3	Block 60	1700.00	9000.00	75.00	0.0
4	Top block 24	1700.00	9000.00	75.00	0.0
5	Planter 41	1700.00	9000.00	75.00	0.0
6	Block 72	1700.00	9000.00	75.00	0.0
7	Block 84	1700.00	9000.00	75.00	0.0
8	Block 96	1700.00	9000.00	75.00	0.0

## Setbacks

No.	Setback s [in]
1	0.375
2	1.625
3	9.375
4	16.625

## Geometry

No. group	Description	Count	Setback s [in]
1	Block 60	2	1.62
2	Block 41	2	1.62
3	Block 28	2	1.62
4	Block 28	1	1.62



# Depot Bridge Rehab Project

- ▣ Redi Rock
- ▣ 8' x 5' Box – Hanson
- ▣ Mel-Rol Water proofing
- ▣ JB Puller
- ▣ Tri-State Crane





# Other BCEO FA Projects



# Other BCEO FA Projects





# Other BCEO FA Projects



# Other BCEO FA Projects





# Other BCEO FA Projects



# Other BCEO FA Projects





# Other BCEO FA Projects



South Dwyer Bridge

4/8/2015



South Dwyer Bridge

4/8/2015

# Other BCEO FA Projects





# Questions

