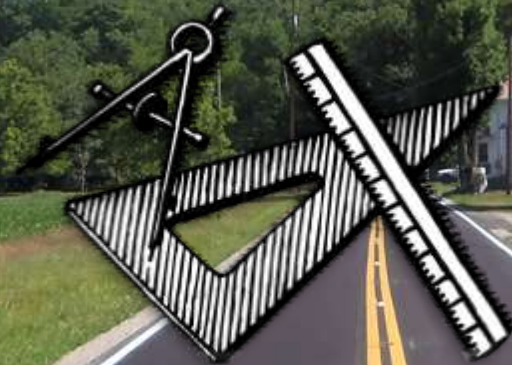


Bridge Conference 2016



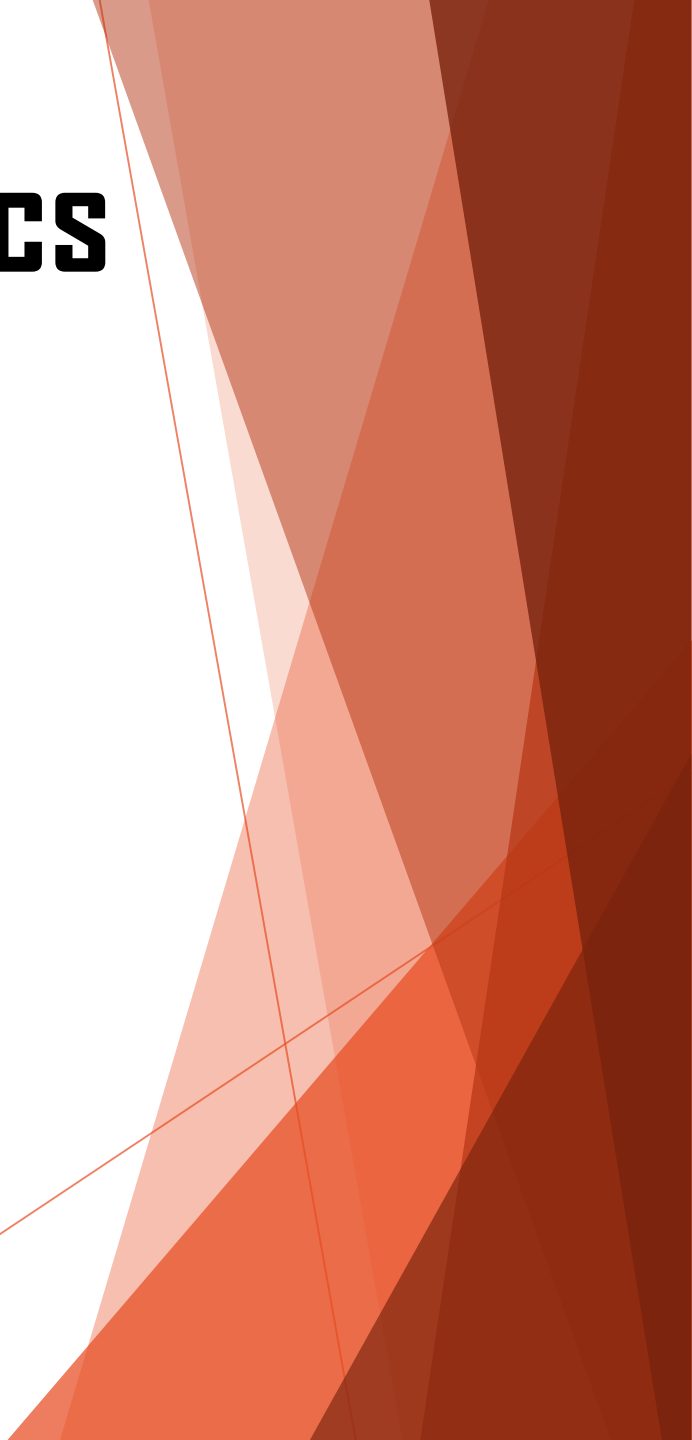
*Del George, PE/PS
Guernsey County Engineer*

06/26/2016



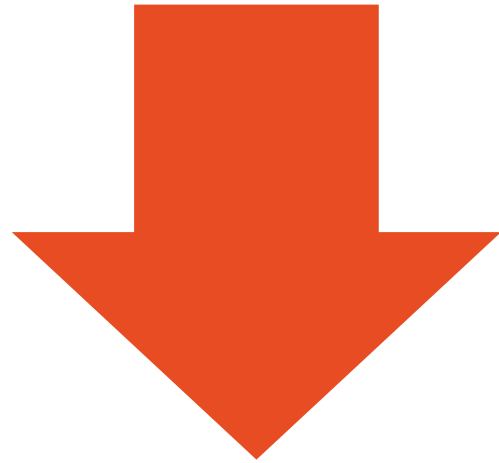
Del George, P.E./P.S.:
Guernsey County
Engineer
Deputy Engineer
Roadway Engineer
Drainage Engineer
Bridge Engineer
Chief Design Engineer
Chief Project Inspector

Guernsey County Statistics

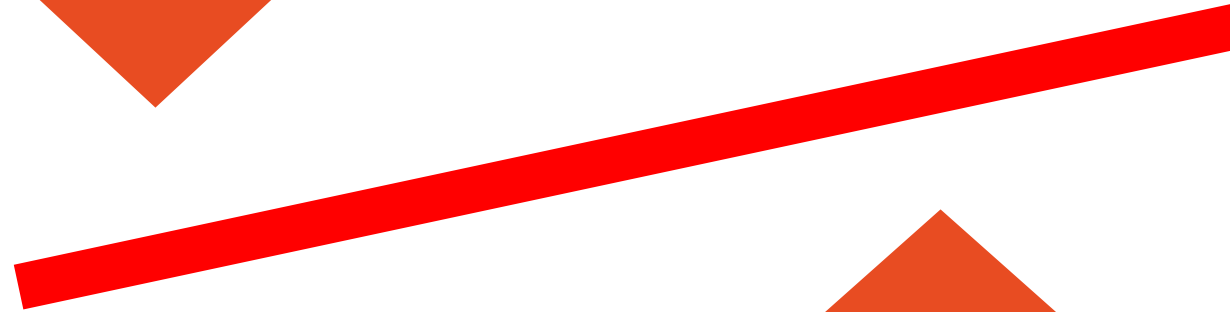


▪ Road Miles	407.2
▪ Bridges	314
▪ Townships	19
▪ Square Miles	527.68
▪ Population	40,177

Guernsey County Infrastructure



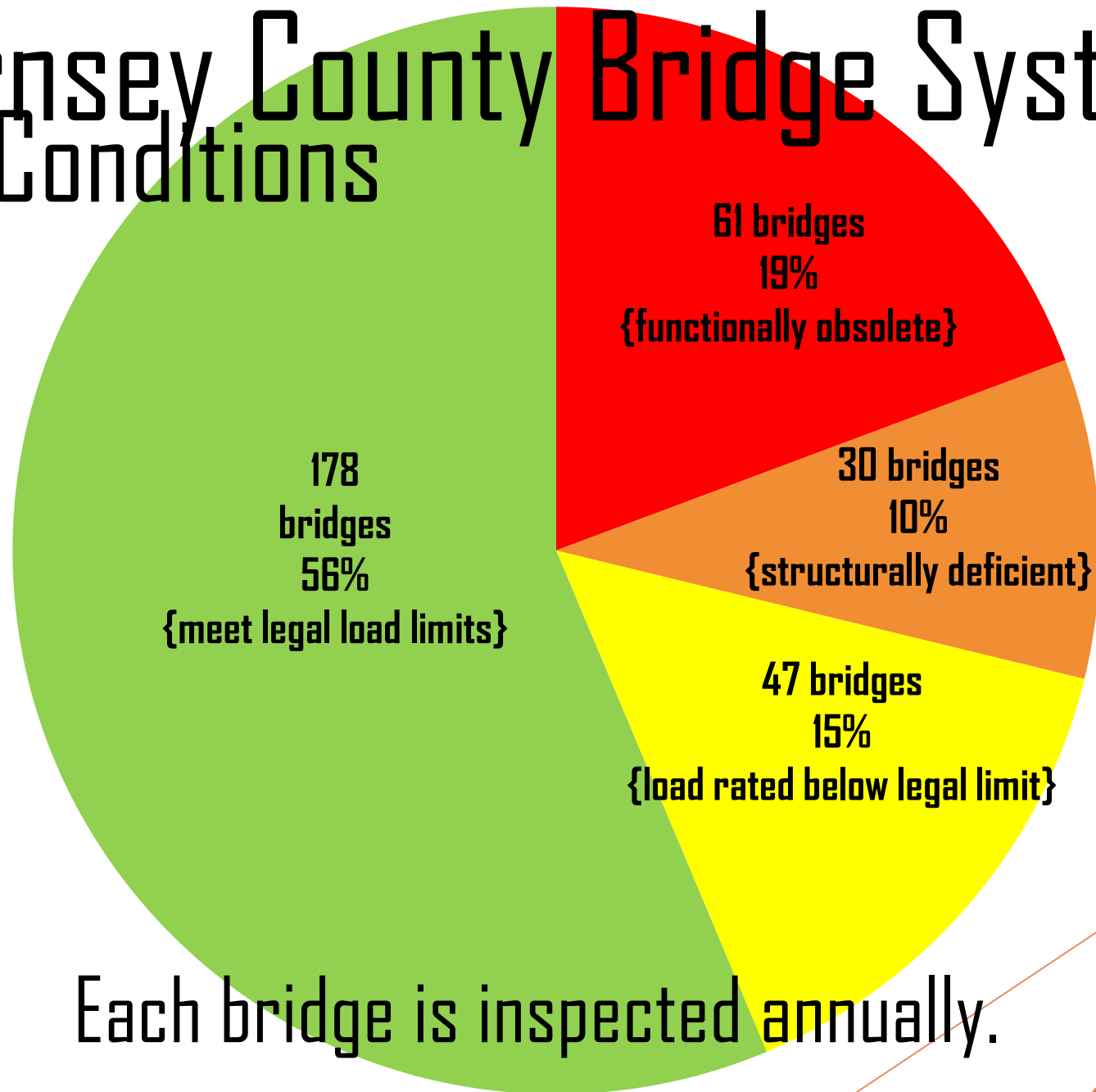
Highways & Bridges
are deteriorating
Revenue is decreasing



Material
Costs are
increasing



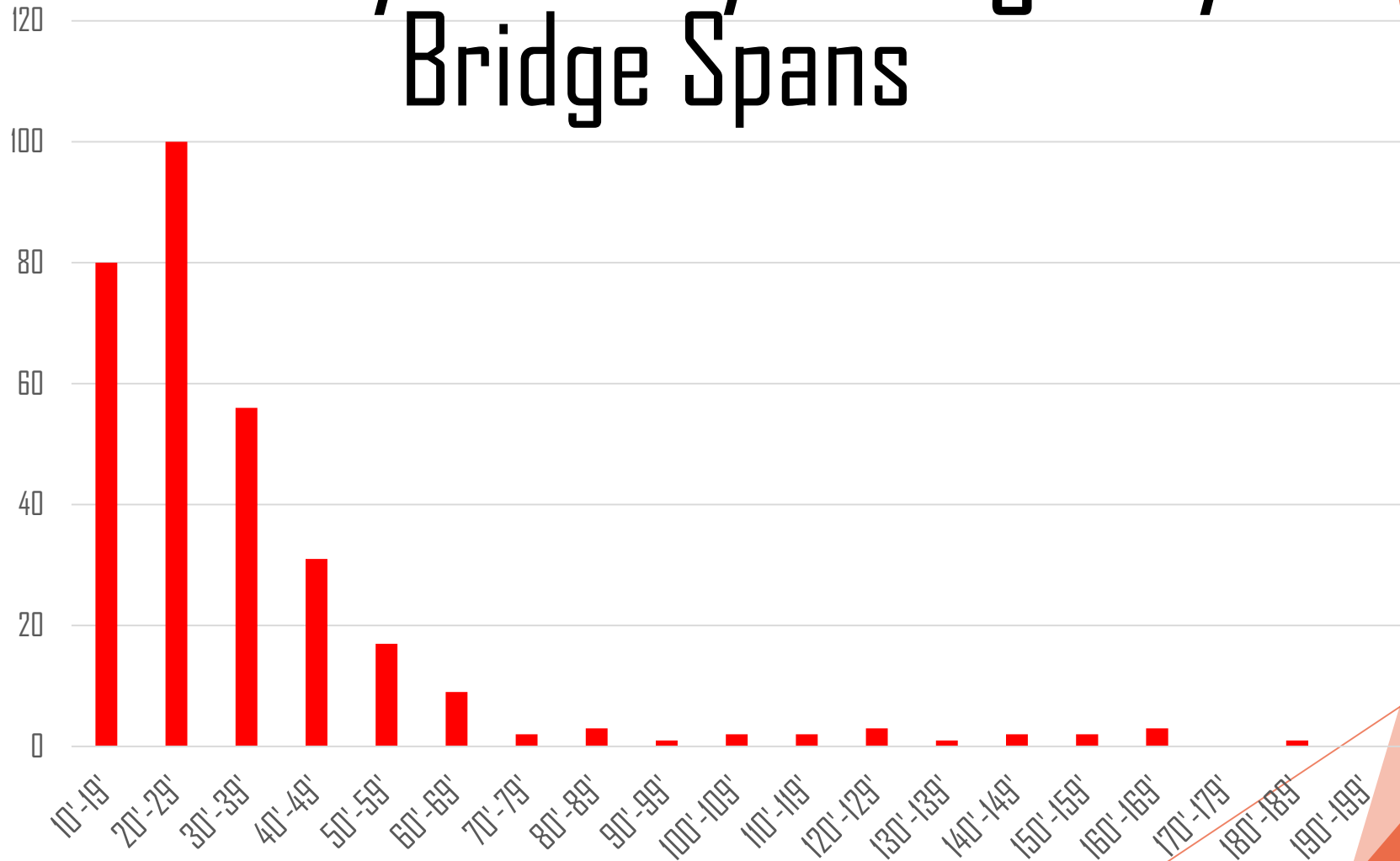
Guernsey County Bridge System: Structural Conditions



Each bridge is inspected annually.

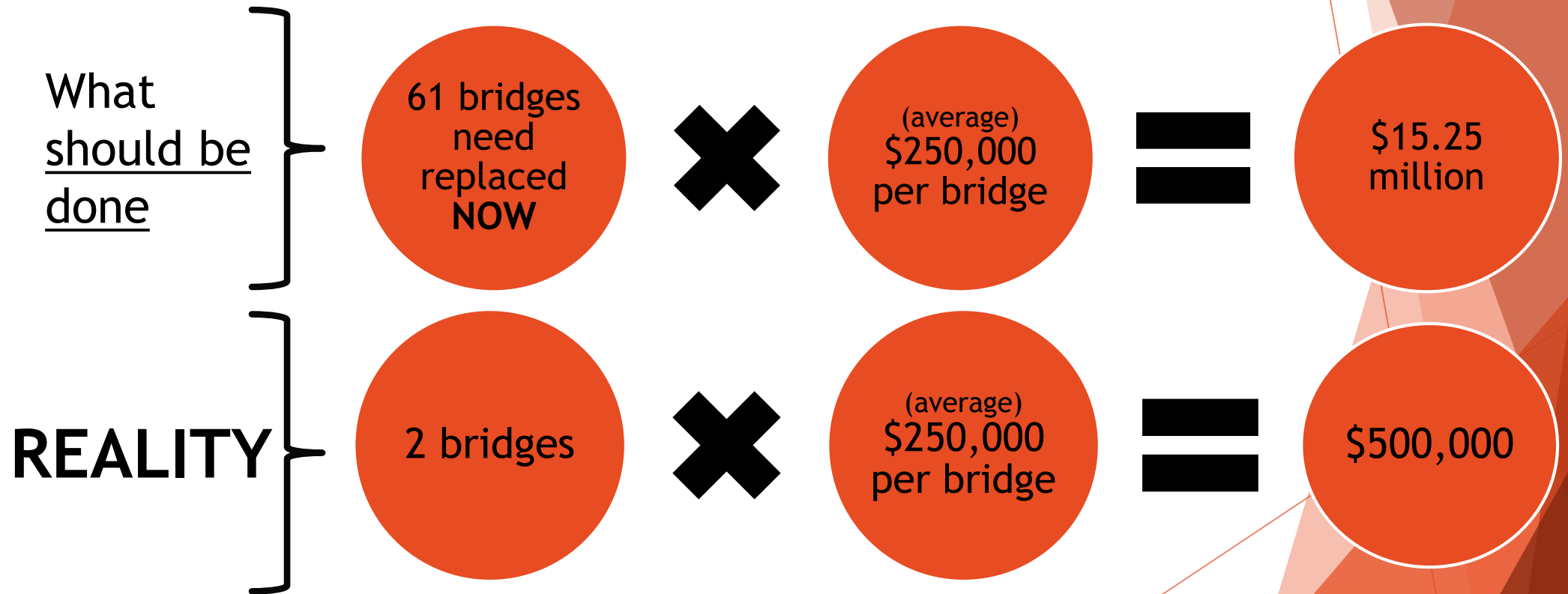
Guernsey County Bridge System

Bridge Spans



Guernsey County Bridge System:

The magnitude of the problem



Basic Project Description

Replace existing bridge deck and supports



Getting started.....



Removing the asphalt and deck



Bridge deck is removed



Removing the steel structure



Existing bridge deck removed



Ready to drive pile



H – Piles driven about 60'



Ready to pour the concrete cap



Ready to pour the concrete cap



Reinforced concrete caps complete



Backfilled concrete caps



Ready for the concrete beams



Setting the pre-stressed concrete box beam



All beams set and ready for grout



Finishing the backfill



New guardrail installation



Pile driving posts for approach



Deck is waterproofed and asphalt cap installed

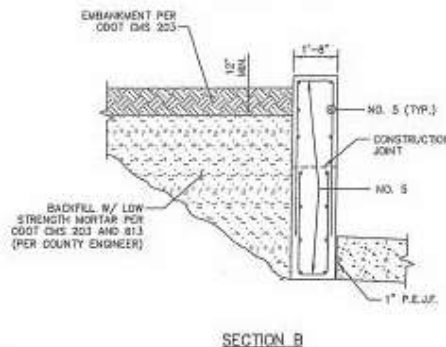
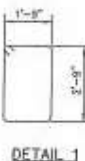
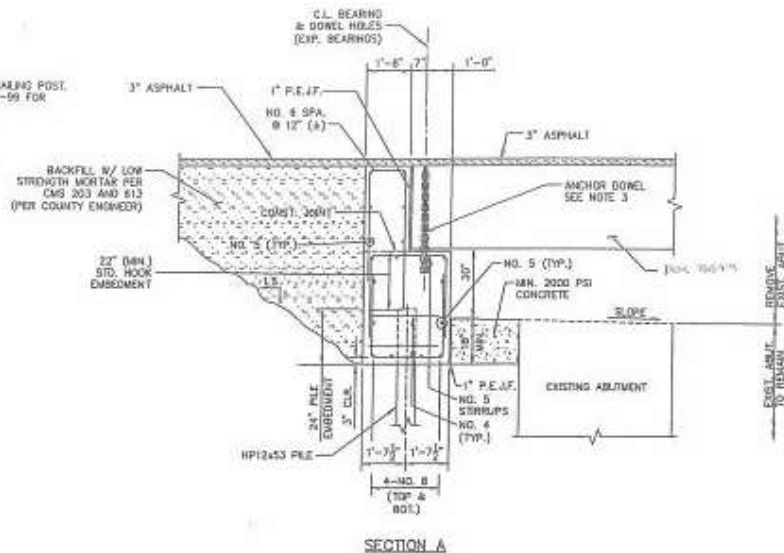


Last phase, asphalt overlay



Bridge deck replacement is complete!





1. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 2" UNLESS NOTED OTHERWISE.
2. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
3. FURNISH 1" DIAMETER A307 SMOOTH STEEL ANCHOR DOWELS. FOR ADDITIONAL DETAILS AND "ANCHOR DOWEL" NOTE, SEE STANDARD DRAWING PS02-3-07 REVISED 01-21-11.
4. BRIDGE SEAT REINFORCING: ADJUST SPACING OF REINFORCING STEEL IN THE WIDTH OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE BEARING PILES.
5. ABUTMENT CONCRETE: DO NOT PLACE THE ABUTMENT CONCRETE ABOVE THE BRIDGE SEAT CONSTRUCTION JOINT UNTIL THE PRESTRESSED CONCRETE BOX BEAMS HAVE BEEN ERECTED.
6. ADJUST WINGRAIL REINFORCING AS NECESSARY TO ACCOMMODATE THE ANCHORS FOR THE TWIN STEEL TUBE RAIL POST.
7. MINIMUM REINFORCING STEEL LAP LENGTHS ARE AS FOLLOWS:
NO. 5 BARS 31"
NO. 8 BARS 70"
8. REMOVE PORTIONS OF THE EXISTING ABUTMENT AS DIRECTED BY THE ENGINEER.
9. CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE 2010 EDITION OF THE ODOT CONSTRUCTION AND MATERIALS SPECIFICATIONS (CMS).
10. STEEL PILES SHALL BE DRIVEN TO REFUSAL AND PLACED AS PER ODOT CMS SECTION 507. REFUSAL SHALL BE CONSIDERED AS OBTAINED BY PENETRATING TEST BEDROCK FOR SEVERAL INCHES TO A MINIMUM RESISTANCE OF 20 HAMMER BLOWS OR BY CONTACTING HARD BEDROCK AND THE PILE RECEIVING AT LEAST 20 BLOWS. SELECT HAMMER SIZE TO ACHIEVE THE REQUIRED DEPTH TO BEDROCK AND REFUSAL.

ABUT.	=	ABUTMENT
BOT.	=	BOTTOM
BRG.	=	BEARING
BTWN.	=	BETWEEN
CL.	=	CLEAR
CONC.	=	CONCRETE
CONSTR.	=	CONSTRUCTION
ELEV.	=	ELEVATION
EXIST.	=	EXISTING
EXP.	=	EXPANSION
FIX.	=	FIXED
FRWD.	=	FORWARD
I.S.F.	=	IRONS PER SQUARE FOOT
MAN.	=	MANUAL
NO.	=	NUMBER
P.C.P.P.	=	PERFORATED CORRUGATED
P.E.P.	=	PLASTIC PIPE
P.F.	=	PREPARED EXPANSION
	=	JOINT FILLER
P.S.F.	=	POUNDS PER SQUARE FOOT
S.F.	=	SPACES OR SPACED
STATION.	=	STATION
TYPE.	=	TYPICAL

THIS SUBSTRUCTURE CONFORMS TO THE "LEVO BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 6TH EDITION, INCLUDING THE 2013 INTERIM SPECIFICATIONS AND THE COST BRIDGE DESIGN MANUAL, 2007.

CONCRETE CLASS C - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)
REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI
STEEL H-PILES - ASTM A572 - YIELD STRENGTH 50 KSI

DESIGN LOADING: HL-9.3
FUTURE WEARING SURFACE (FWS) OF 0.060 MSF

GUERNSEY COUNTY ENGINEER
GUERNSEY COUNTY COMMISSIONERS
9 WHEELING AVENUE, SUITE 800
CAMBRIDGE, OHIO 45725
(740) 432-8800

1981 1982, 1983/1984
 University County Engineer
 62782 BENNETT AVENUE
 CAMBRIDGE, OHIO 43725
 (740) 432-2234



SELMAR C. GEORGE, PC/PS

DRAWN	02-00-1
DATE	02-00-1
SCALE	NTS
JOB NO.	

Salt Rd CR 638 Bridge Repairs :

steel repainted, bridge deck replaced and sealed with pavement



Labor	\$15,140
Materials	\$22,053
<u>Equipment</u>	<u>\$16,460</u>
Total repair costs	\$53,653

Guernsey County Highway Dept Bridge Crew: Avery Allender, Lance Morrison, & Ed Glasgow (foreman)

YEAR	CONTRACTOR	COUNTY CREW	YEAR TOTAL	RUNNING TOTAL
1996	1	4	5	5
1997	6	4	10	15
1998	17	10	27	42
1999	7	6	13	55
2000	14	4	18	73
2001	4	7	11	84
2002	19	5	24	108
2003	4	6	10	118
2004	11	5	16	134
2005	2	2	4	138
2006	11	5	16	154
2007	5	6	11	165
2008	0	9	9	174
2009	11	8	19	193
2010	5	6	11	204
2011	4	6	10	214
2012	4	6	10	224
2013	5	5	10	234
2014	1	6	7	241
2015	2	3	5	246
TOTAL	133	113		

Bridges
Constructed
Since
1996