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DESIGN CLASSIFICATION

Class: Urban Collector  
 A.D.T.: 335  
 A.D.T.T.: <5%  
 Design Speed: 30mph

HIGHWAY STANDARDS: 280001-04  
 420401-06  
 515001-02  
 601101  
 630001-07  
 631031-06  
 701901

UTILITY COMPANIES

Telephone: SBC - Ameritech 203 Goethe Collinsville, IL 62234 (618)346-6420	Water: Caseyville Water Co. 909 South Main St. Caseyville, IL 62232 (618)344-1234
Gas & Electric: Ameren IP 2600 N. Center St. Maryville, IL 62062 (800)755-5000	Sanitary Sewers: Caseyville Township Sewer District 1 Ecology Dr. O'Fallon, IL 62269 (618)632-2414
Cable Television: Charter Communications 7645 Magna Drive Suite 100 Belleville, IL 62223 (618)277-0760	Fiber Optic: McLeod USA 102 E. Shafer St. Forsyth, IL 62535 (217)876-7194

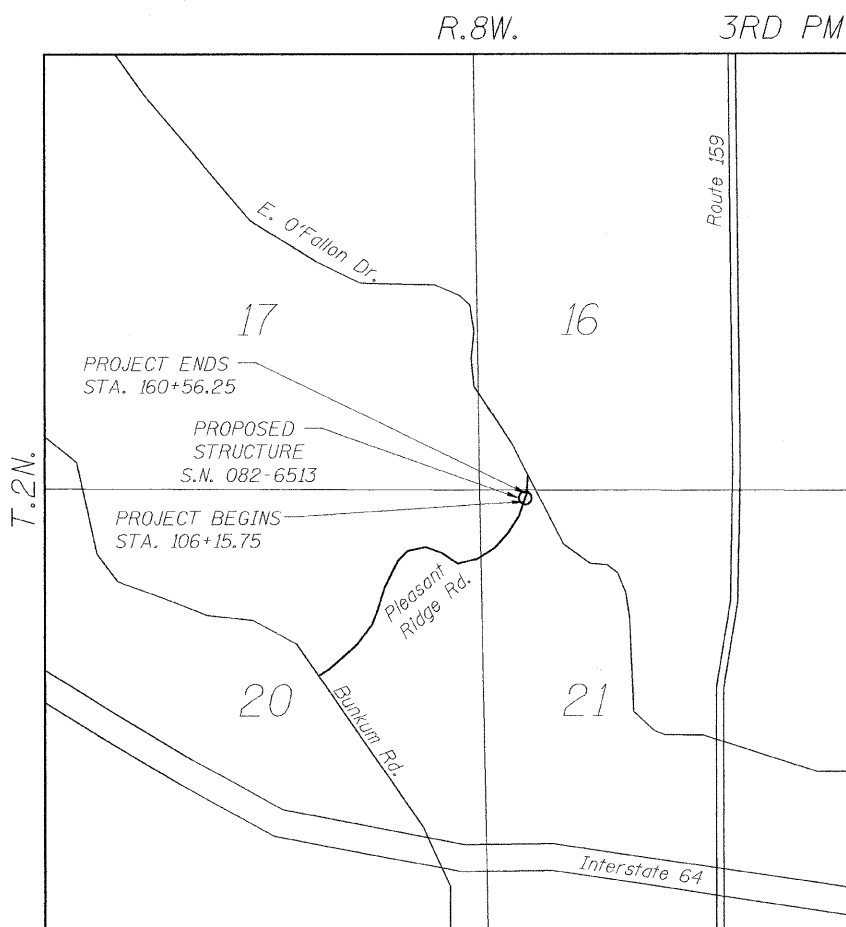
**J.U.L.I.E.**  
**JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION**  
 1-800-892-0123 or 811

# STATE OF ILLINOIS

## INNOVATIVE BRIDGE RESEARCH AND CONSTRUCTION PROGRAM

### DETAILED PLANS FOR PROPOSED BRIDGE

**F.A.U. 9149**  
**SECTION 06-00034-01-BR**  
**CITY OF FAIRVIEW HEIGHTS**  
**ST. CLAIR COUNTY**  
**PROJECT NO. IBRC-9149 (003)**  
**JOB NO. C-98-311-07**



LOCATION MAP  
 NET LENGTH OF PROJECT = 40.50 FT. / 0.008 MI.  
 SCALE: NTS

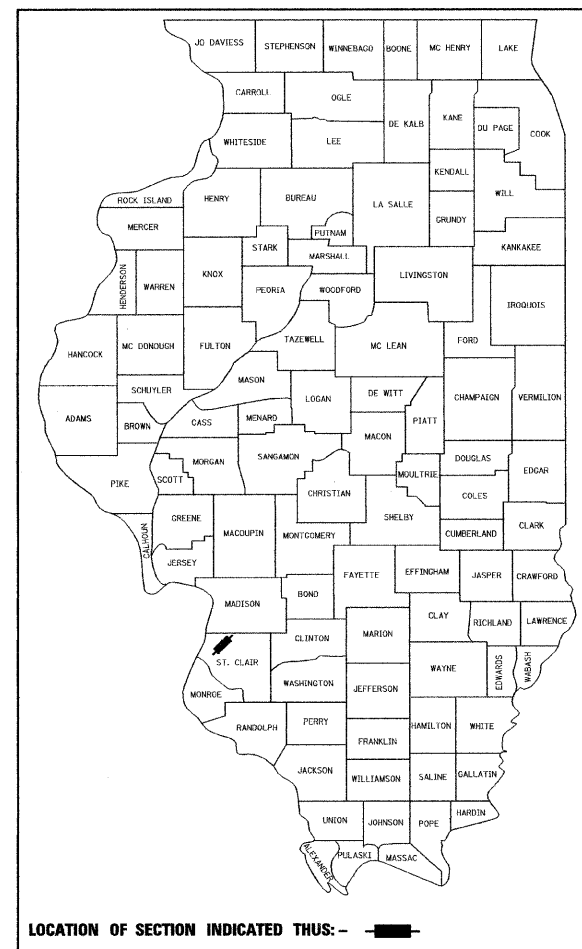
EXISTING STRUCTURE:  
 TWIN STEEL PIPE CULVERTS  
 20'-0" ROADWAY WIDTH  
 60'-0" LENGTH  
 6° SKEW  
 STRUCTURE #082-4018

PROPOSED STRUCTURE:  
 SINGLE SPAN FIBERGLASS REINFORCED  
 POLYMER BRIDGE ON CLOSED CONCRETE  
 ABUTMENTS  
 33'-10" OUT TO OUT DECK  
 40'-6" BK TO BK ABUTMENT  
 6° SKEW  
 STRUCTURE NUMBER #082-6513



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	1
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

Contract #97350



**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**

APPROVED SEPTEMBER 8 2008  
*Paul D. Mitchell*  
 CITY OF FAIRVIEW HEIGHTS, MAYOR

PASSED 9/10 2008  
*[Signature]*  
 DISTRICT 8 ENGINEER OF LOCAL ROADS AND STREETS

RELEASING FOR BID  
 BASED ON LIMITED  
 REVIEW 9/10 2008  
*[Signature]*  
 DEPUTY DIRECTOR OF HIGHWAYS, REGION 5 ENGINEER



*[Signature]* 9-04-08  
 Signature Date

**McDonough-Whitlow, P.C.**  
 Consulting Engineers & Land Surveyors  
 138 East Wood Street  
 Hillsboro, IL 62049  
 Phone: 217.532.9233  
 Fax: 217.532.6300  
 PROFESSIONAL DESIGN No. 194-002754

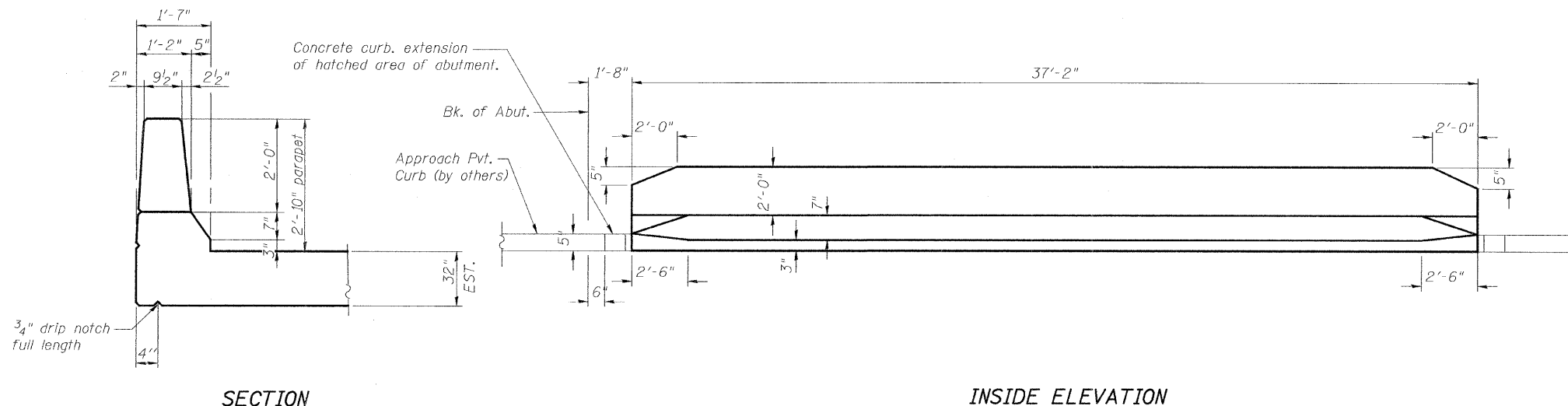
**SUMMARY OF QUANTITIES**

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	2
FULL NAME DIST. NO. 7	ILLINOIS	PUBLISHED PROJECT		

Contract #97350

Code No.	Item	Unit	Quantity
20300100	CHANNEL EXCAVATION	CU YD	147
*20700400	POROUS GRANULAR EMBANKMENT, SPECIAL	CU YD	186
20800150	TRENCH BACKFILL	CU YD	7
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	100
28000310	AGGREGATE DITCH CHECKS	EACH	4
28100207	STONE RIPRAP, CLASS A4	TON	345
28200200	FILTER FABRIC	SQ YD	450
42001300	PROTECTIVE COAT	SQ YD	41
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	275
50200400	ROCK EXCAVATION FOR STRUCTURES	CU YD	25
50300225	CONCRETE STRUCTURES	CU YD	111.4
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	10580
50800515	BAR SPLICERS	EACH	62
51500100	NAME PLATES	EACH	1
52000050	PREFORMED JOINT SEAL 4"	FOOT	64
Δ 56300200	ADJUSTING SANITARY SEWERS, OVER 8-INCH DIAMETER	FOOT	85
59100100	GEOCOMPOSITE WALL DRAIN	SQ YD	80
*60109580	PIPE UNDERDRAINS FOR STRUCTURES 4"	FOOT	100
67100100	MOBILIZATION	L SUM	1
*70103700	TRAFFIC CONTROL COMPLETE	L SUM	1
*X0322923	SEGMENTAL CONCRETE BLOCK WALL	SQ FT	948
*X0325795	BRIDGE MONITORING	L SUM	1
*Z0013798	CONSTRUCTION LAYOUT	L SUM	1
*XX007728	FURNISHING AND ERECTING FIBER-REINFORCED POLYMER STRUCTURE WITH FIBER-REINFORCED POLYMER TYPE F RAIL	EACH	1

\* Denotes pay item with special provision.  
 Δ Specialty Items



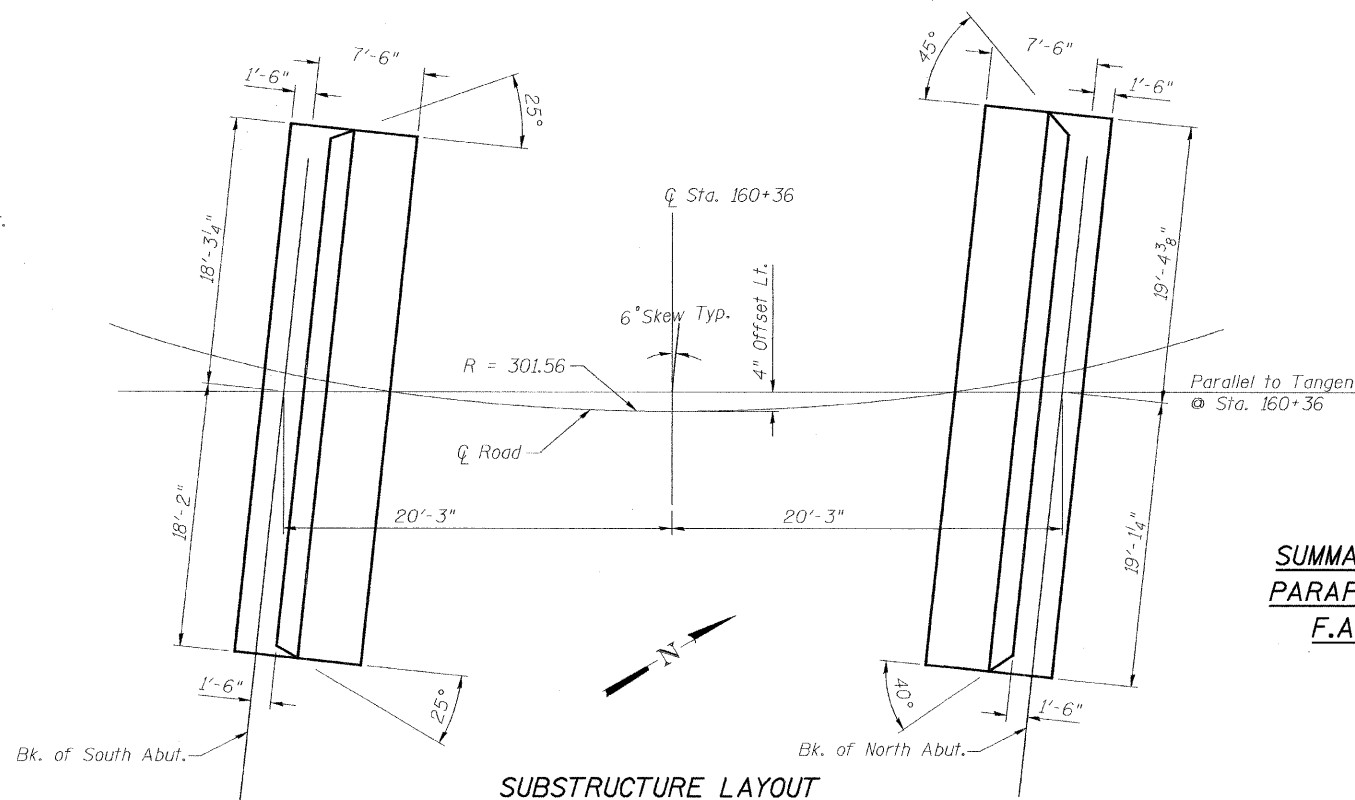
**SECTION**

**INSIDE ELEVATION**

**PARAPET TYPE F**

**GENERAL NOTES**

- This project is an omission in roadway section 05-00034-00-PV which is being constructed simultaneously under separate contract.
  - Cooperate with the contractor for the roadway section when scheduling and working on this project.
  - "By Others" shall mean constructed under section 05-00034-00-PV.
  - General traffic control is being provided under section 05--00034-00-PV. Under this contract, provide Type III barricades closing the road on each side of the bridge. Barricades shall remain in place until their removal is directed by the engineer.
- All elevations refer to U.S.G.S. mean sea level.
- Utilities are shown in accordance with the best available information and their true location is not guaranteed to be as shown on the plans. It will be the Contractors responsibility to determine the exact location of all utilities and carry on his operations accordingly.
- All exposed steel shall be galvanized after fabrication according to AASHTO M111 and AASHTO M 232.
- Striping is to be provided under separate section (05-00034-00-PV) Prior to opening the bridge to traffic.



**SUBSTRUCTURE LAYOUT**

**SUMMARY OF QUANTITIES, GENERAL NOTES,  
 PARAPET DETAILS, SUBSTRUCTURE LAYOUT  
 F.A.U. 9149 (PLEASANT RIDGE ROAD)  
 OVER LITTLE CANTEEN CREEK  
 SECTION 06-00034-01-BR  
 STATION 160+36  
 FAIRVIEW HEIGHTS  
 STRUCTURE NO. 082-6513**

DESIGNED: K.C.M.
CHECKED: T.M.M.
DRAWN: R.N.H.
CHECKED: K.C.M.

Point Description	Station	Offset	Northing	Easting	Elevation
Control Point #1 Iron Pin	163+02.96	7.01' RT	5000.00	5000.00	498.26
Control Point #3 Nail	160+76.88	3.90' RT	4776.99	4973.15	493.48
Control Point #4 Nail	158+22.46	1.12' RT	4576.29	4816.27	495.33

**CONTROL POINTS**

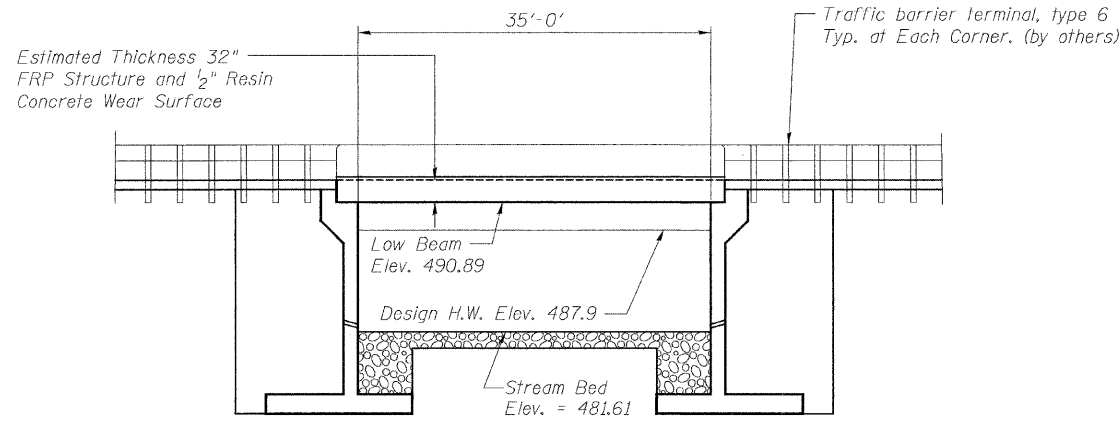
**McDonough-Whitlow, P.C.**  
 Consulting Engineers & Land Surveyors  
 138 East Wood Street  
 Hillisboro, IL 62049  
 Phone: 217.532.9233  
 Fax: 217.532.6300  
 PROFESSIONAL DESIGN No. 184-002754

Existing Structure: SN 082-4018 to be removed. Originally built in 1958 as Route FAU 9149 Section 06-00034-00-BR. Two 16.3'x9.3'x60' long multi-plate arches. No Salvage.

Benchmark: Chiseled "L" at Southwest Corner of Concrete Vault at Sta. 160+87.83, 52.66 RT Elev. = 493.19

**LEGEND**

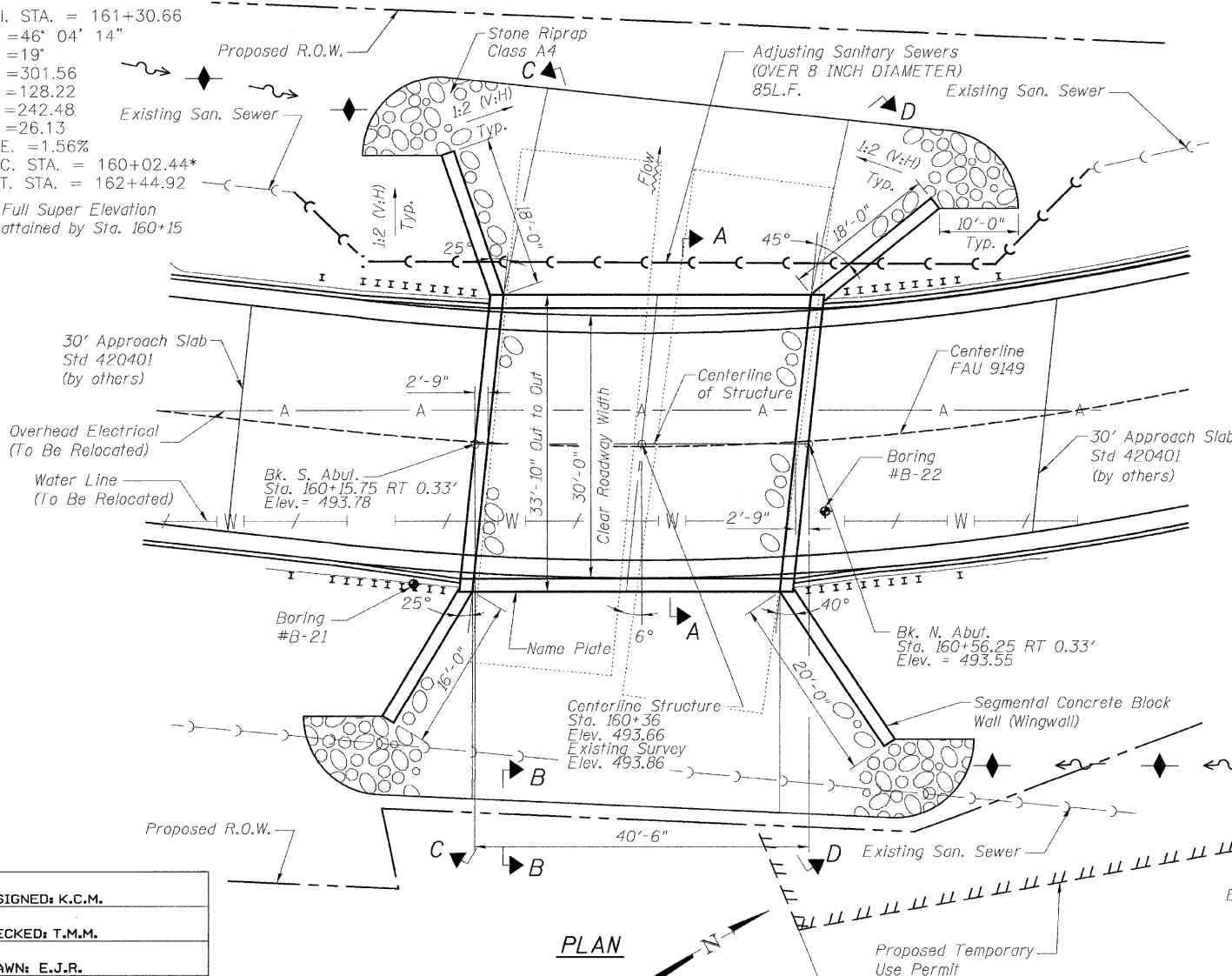
- ◆ AGGREGATE (EROSION CONTROL)  
DITCH CHECKS: HEIGHT = 2'-0", AGGREGATE B3
- Existing Sanitary Sewer
- Adjusted Sanitary Sewer



**CURVE DATA**

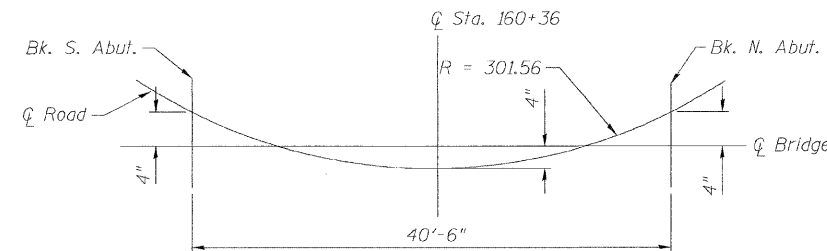
P.I. STA. = 161+30.66  
 $\Delta = 46^\circ 04' 14''$   
 $D = 19'$   
 $R = 301.56$   
 $T = 128.22$   
 $L = 242.48$   
 $E = 26.13$   
 $S.E. = 1.56\%$   
 P.C. STA. = 160+02.44\*  
 P.T. STA. = 162+44.92  
 \* Full Super Elevation attained by Sta. 160+15

**ELEVATION**

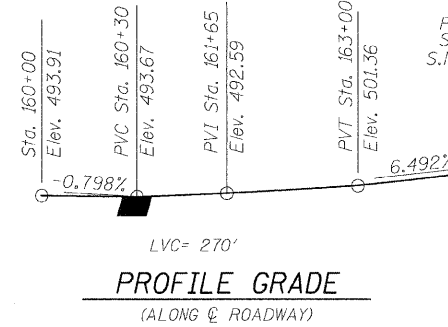


DESIGNED: K.C.M.
CHECKED: T.M.M.
DRAWN: E.J.R.
CHECKED: K.C.M.

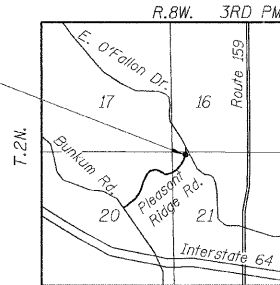
Note:  
 See Sheet 4/10 for Section A-A.  
 See Sheet 8/10 for Section C-C & D-D.



**OFFSET SKETCH**



**PROFILE GRADE**  
(ALONG Q ROADWAY)



**LOCATION MAP**

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	3
FED. ROAD DIST. NO. 7	TILLMAN	FED. AID PROJECT		

Contract #97350

**GENERAL NOTES**

- Structure Depth, Attachment Details, Expansion Joint Requirements, Railings, etc. will be coordinated with FRP Manufacturer During Shop Drawing Review Phase.
- Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the engineer.
- The width between the guardrails shall be the width between the bridge rails or parapets which may require approach shoulder widening.
- Steel Railing, Type WT shall be adapted and attached to FRP Structure in Conformance with MWRSF Report dated October 21, 2005.
- The Contractor Shall Use the same Material for PGE (Special) and Wingwall Backfill.

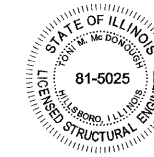
**WATERWAY INFORMATION**

Drainage Area = 2.53 Sq. Miles		Existing Low Grade Elev. - 491.71 ft @ STA. 161+50					
		Proposed Low Grade Elev. - 493.55 ft @ STA. 160+56					
Flood	Year	Discharge C.F.S.	Opening Sq. Ft.	Natural Head - Ft.	Headwater EL.		
Design	30	1800	91	220	487.9		
Base	100	2300	105	263	489.1		
				Exist.	Prop.	Exist.	Prop.
				2.3	1.7	490.2	489.6
				2.8	1.9	491.9	491.0

Roadway survey is based on 1988 datum. Hydraulic data survey and hydraulic computations (HEC-RAS) are based on FEMA benchmark using 1929 datum. Hydraulic data is converted to 1988 datum for this table: 1988 datum = 1929 datum - 0.39 ft

Design Scour Information (feet)	N. Abutment	S. Abutment
	*	*

\* Footings Socketed into Rock



LIC. EXP: 11/30/08

Signature: *[Signature]*

Date: 9-04-08

I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THIS BRIDGE DESIGN IS STRUCTURALLY ADEQUATE FOR THE DESIGN LOADING SHOWN ON THE PLANS. THE DESIGN IS AN ECONOMICAL ONE FOR THE STYLE OF STRUCTURE AND COMPLIES WITH REQUIREMENTS OF THE CURRENT AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

**LOADING HL-93**

With L/800 Deflection Limit For Design Truck Allow 50 psf for future wearing surface

**DESIGN SPECIFICATIONS**

2007 LRFD AASHTO

**DESIGN STRESSES**

**FIELD UNITS**

$f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (reinforcement)

**PRECAST UNITS**

$f'_c = 3,000$  psi (min.)

**FRP Deck (Composite Material)**

$f_t = 60,000$  psi  
 $E = 3.0 \times 10^6$  psi (Longitudinal)  
 $G = 0.5 \times 10^6$  psi

**SEISMIC DATA**

Seismic Performance Zone (SPZ) = 2  
 Bedrock Acceleration Coefficient (A) = 0.12g  
 Site Coefficient (S) = 1.0



Expires: 11/30/08

Signature: *[Signature]*

Date: 9/3/08

REVIEWED AND APPROVED FOR STRUCTURAL ADEQUACY

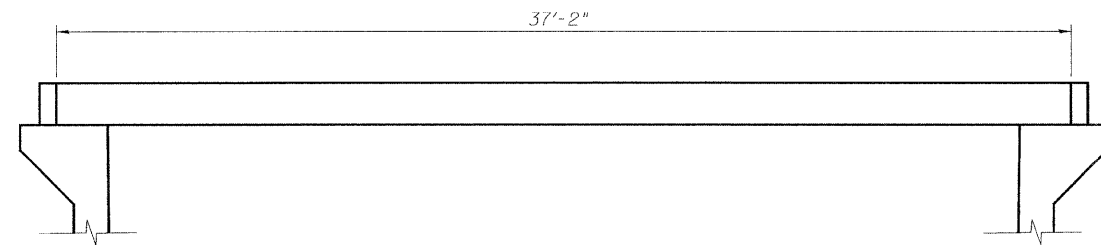
**GENERAL PLAN AND ELEVATION**  
**F.A.U. 9149 (PLEASANT RIDGE ROAD)**  
**OVER LITTLE CANTEEN CREEK**  
**SECTION 06-00034-01-BR**  
**STATION 160+36**  
**FAIRVIEW HEIGHTS**  
**STRUCTURE NO. 082-6513**



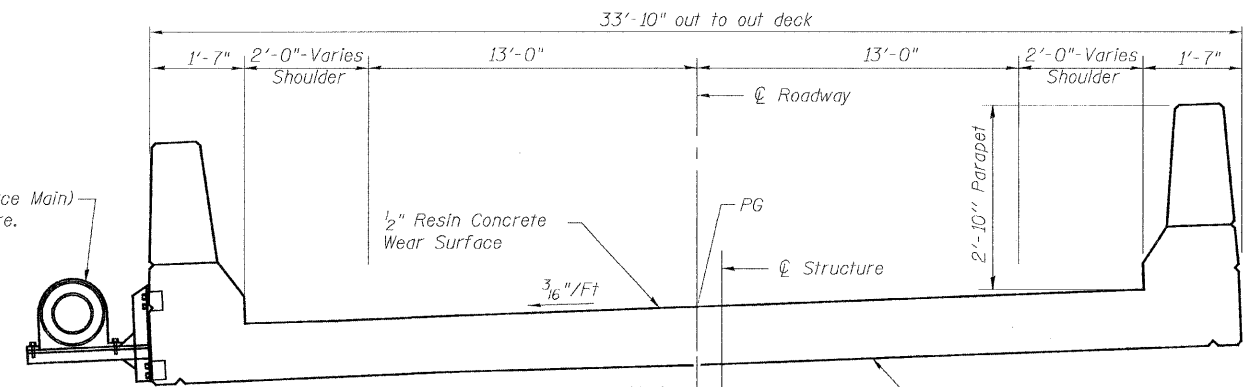
**McDonough-Whitlow, P.C.**  
 Consulting Engineers & Land Surveyors  
 138 East Wood Street  
 Hillsboro, IL 62049  
 Phone: 217.532.9233  
 Fax: 217.532.6300  
 PROFESSIONAL DESIGN NO. 184-002754

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	4
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

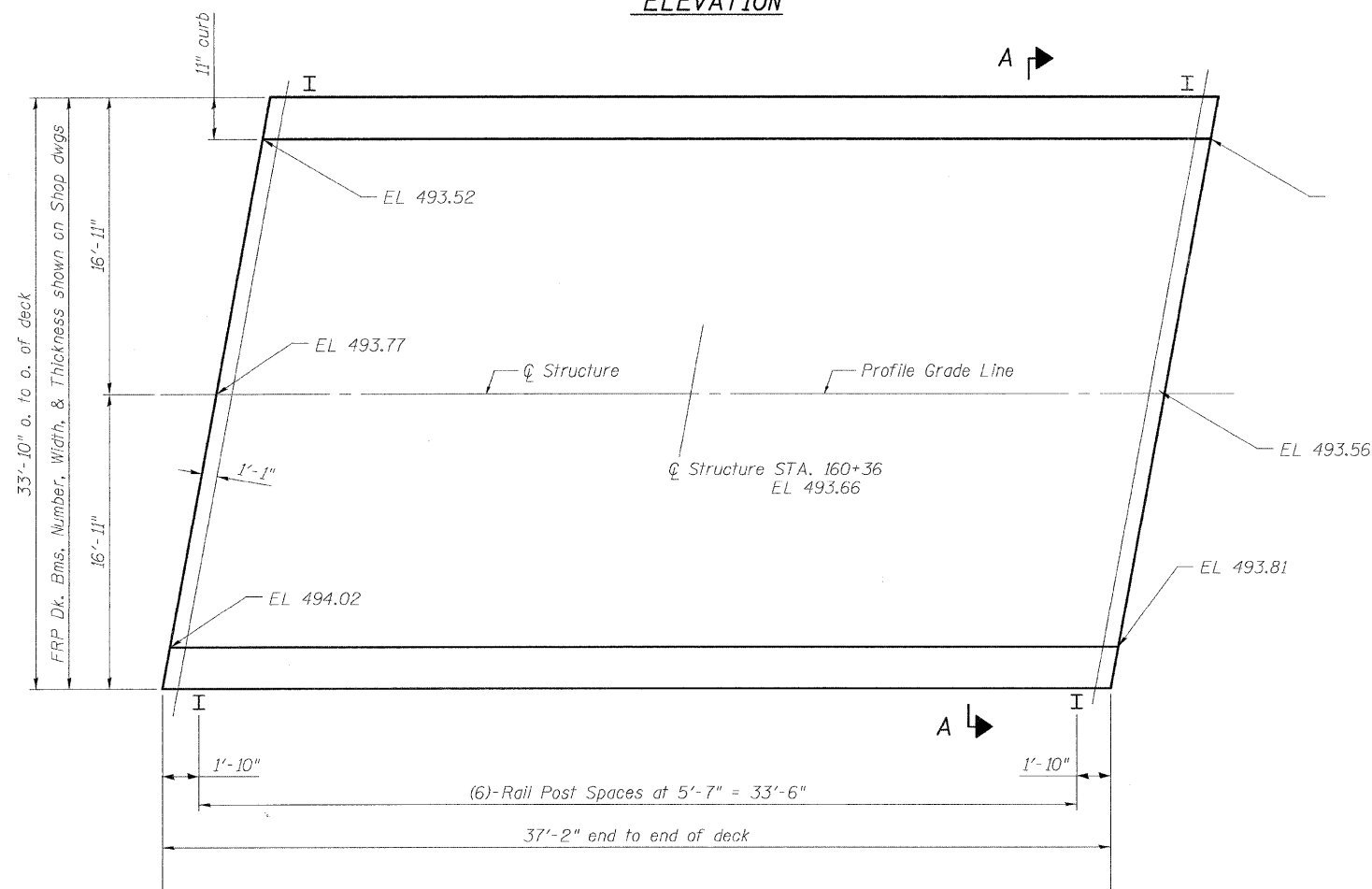
Contract #97350



**ELEVATION**

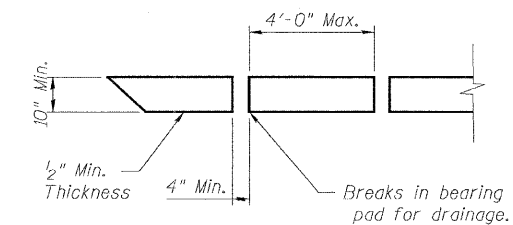


**A-A CROSS SECTION**



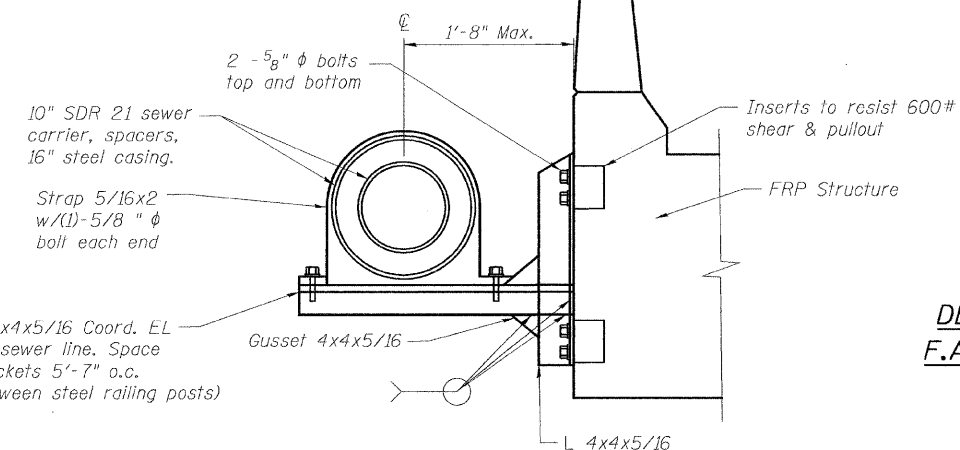
**PLAN**

**ELASTOMERIC BEARING PAD DETAIL**



Sanitary Sewer (Force Main) attached to Structure. Provide connections for 100 PLF Load

FRP Structure Estimated Thickness 32" Including Wearing Surface



Cost Incidental to Adjusting Sanitary Sewer  
Cost Incidental to FRP Structure

**DECK SUPERSTRUCTURE & DETAILS**  
**F.A.U. 9149 (PLEASANT RIDGE ROAD)**  
**OVER LITTLE CANTEEN CREEK**  
**SECTION 06-00034-01-BR**  
**STATION 160+36**  
**FAIRVIEW HEIGHTS**  
**STRUCTURE NO. 082-6513**

DESIGNED: K.C.M.
CHECKED: T.M.M.
DRAWN: R.N.H.
CHECKED: T.M.M.

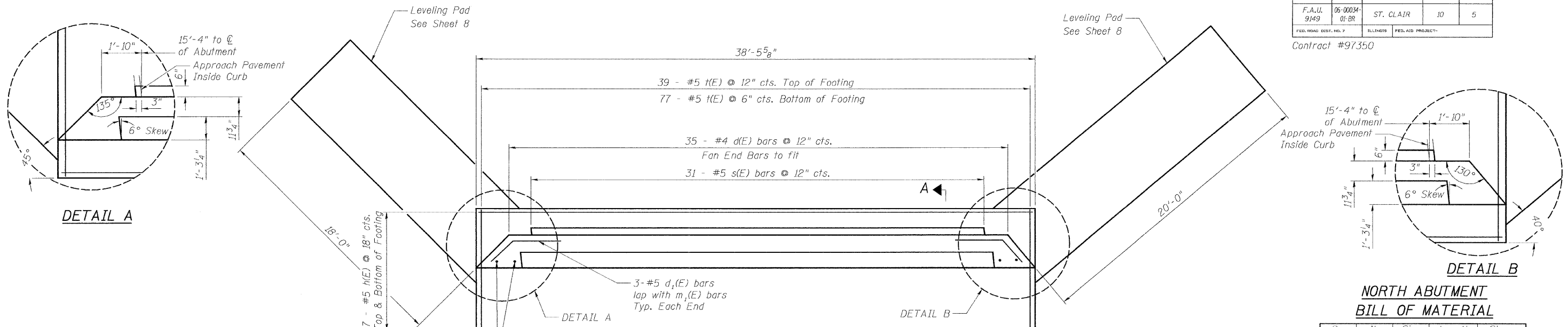
**SANITARY SEWER ATTACHMENT TO STRUCTURE**

**McDonough-Whitlow, P.C.**  
 Consulting Engineers & Land Surveyors  
 138 East Wood Street  
 Hillsboro, IL 62049  
 Phone: 217.532.9233  
 Fax: 217.532.6300  
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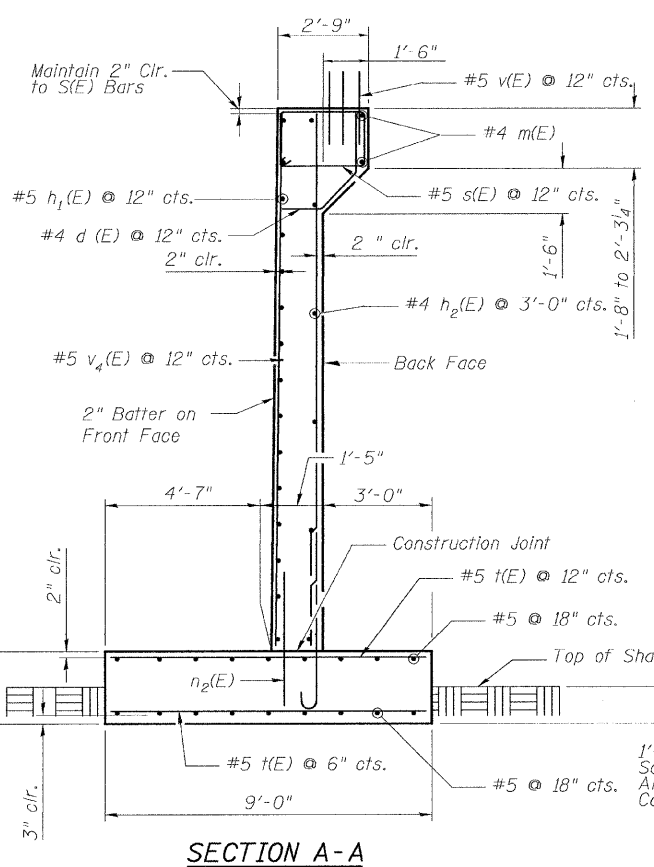
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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	5
FED. ROAD DIST. NO. 7	BILLINGS	FED. AID PROJECT-		

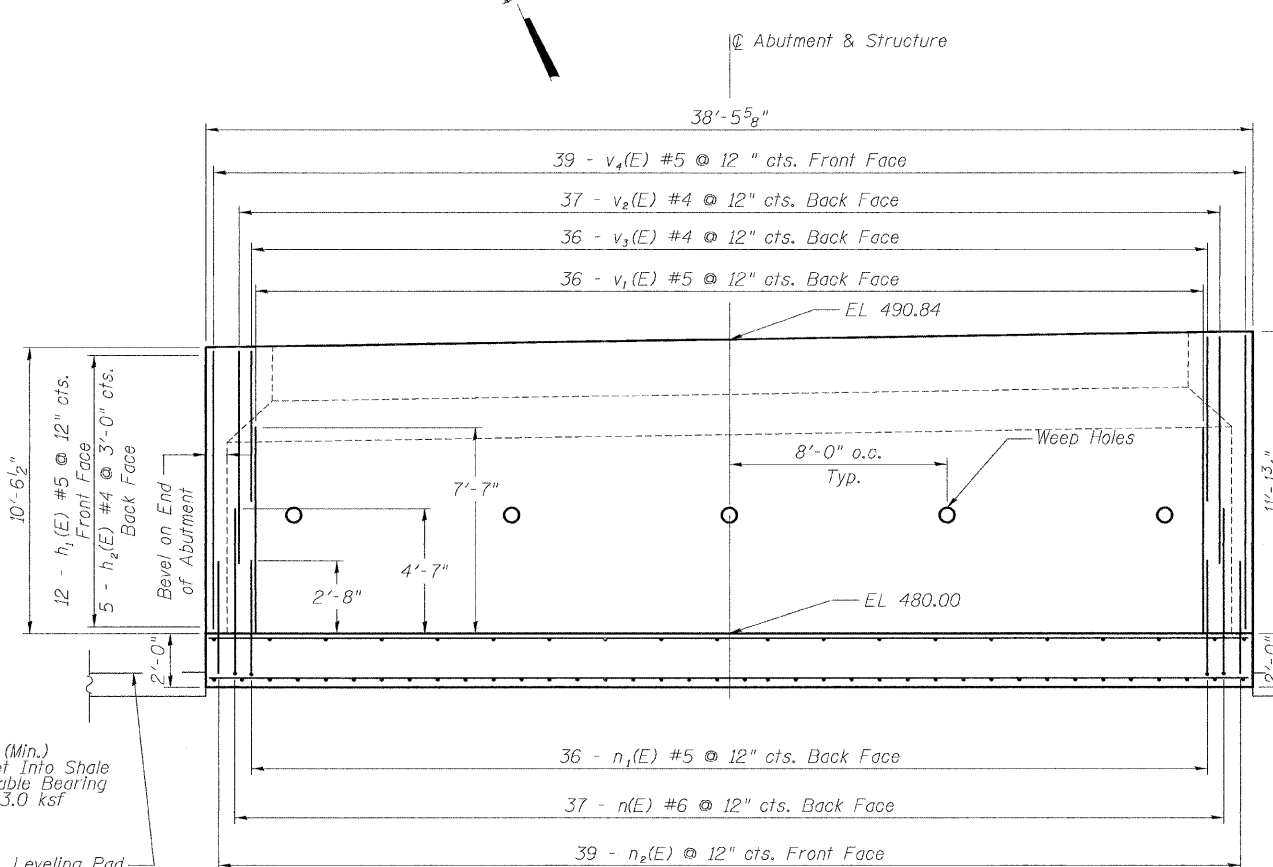
Contract #97350



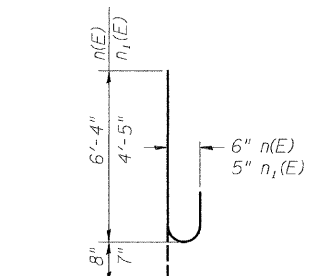
PLAN NORTH ABUTMENT



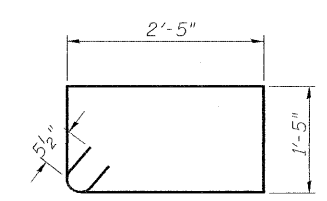
SECTION A-A



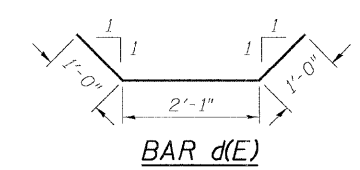
ELEVATION NORTH ABUTMENT



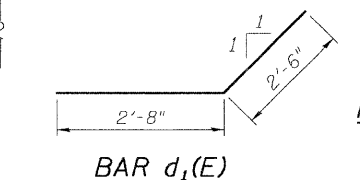
BAR n(E) and n1(E)



BAR s(E)



BAR d(E)



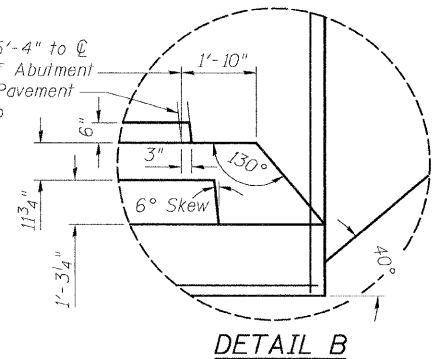
BAR d1(E)

MINIMUM BAR LAP

- #4 (E) bar = 2'-0"
- #5 (E) bar = 2'-8"

Notes: Upper bar laps increased to accommodate min 28" FRP deck thickness. Thinner deck will require adjustment of bar lengths.

Bill of material includes concrete and reinforcing for hatched area shown on sheet 7 of 11.



DETAIL B

NORTH ABUTMENT BILL OF MATERIAL

Bar	No.	Size	Length	Shape
d(E)	35	#4	4'-1"	U
d1(E)	6	#5	5'-2"	Z
h(E)	14	#5	38'-0"	—
h1(E)	12	#5	37'-6"	—
h2(E)	5	#4	35'-6"	—
m(E)	2	#4	30'-4"	—
m1(E)	6	#5	34'-0"	—
n(E)	37	#6	7'-0"	U
n1(E)	36	#5	5'-0"	U
n2(E)	39	#5	5'-0"	—
s(E)	31	#5	8'-7"	□
t(E)	116	#5	8'-8"	—
v(E)	101	#5	4'-0"	—
v1(E)	36	#5	7'-7"	—
v2(E)	37	#4	8'-10"	—
v3(E)	36	#4	5'-9"	—
v4(E)	39	#5	10'-4"	—
Concrete Structures	Cu. Yd.	54.8		
Reinforcement Bars, Epoxy Coated	Pound	5110		
Structure Excavation	Cu. Yd.	121		
Rock Excavation for Structures	Cu. Yd.	13		
Porous Granular Embankment (special)	Cu. Yd.	88		

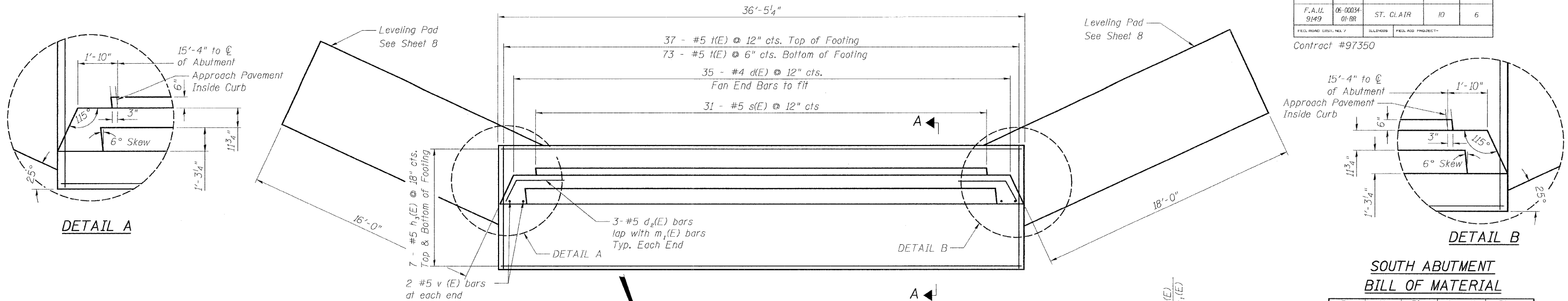
NORTH ABUTMENT DETAILS  
 F.A.U. 9149 (PLEASANT RIDGE ROAD)  
 OVER LITTLE CANTEEN CREEK  
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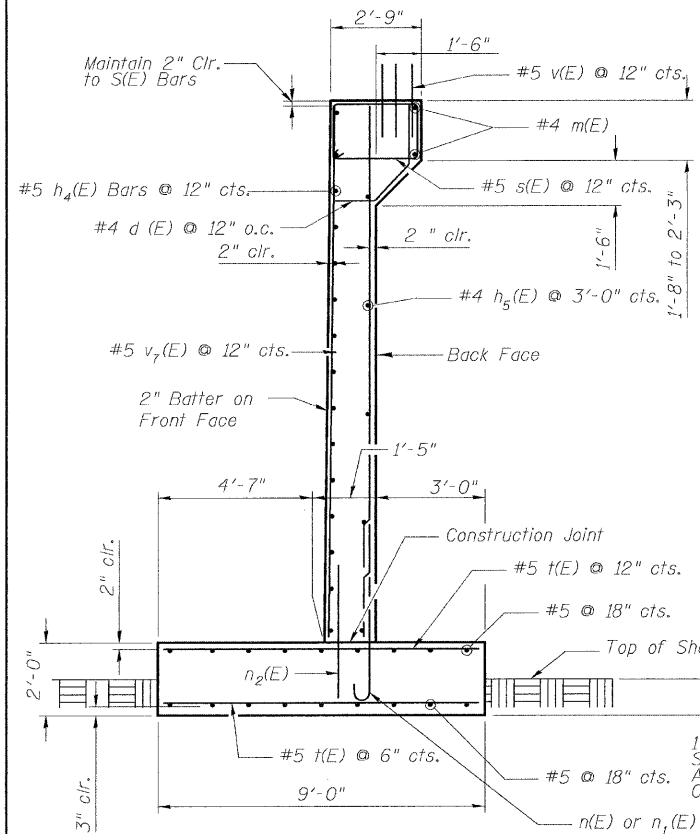
DESIGNED: K.C.M.
CHECKED: T.M.M.
DRAWN: E.J.R.
CHECKED: K.C.M.

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	6

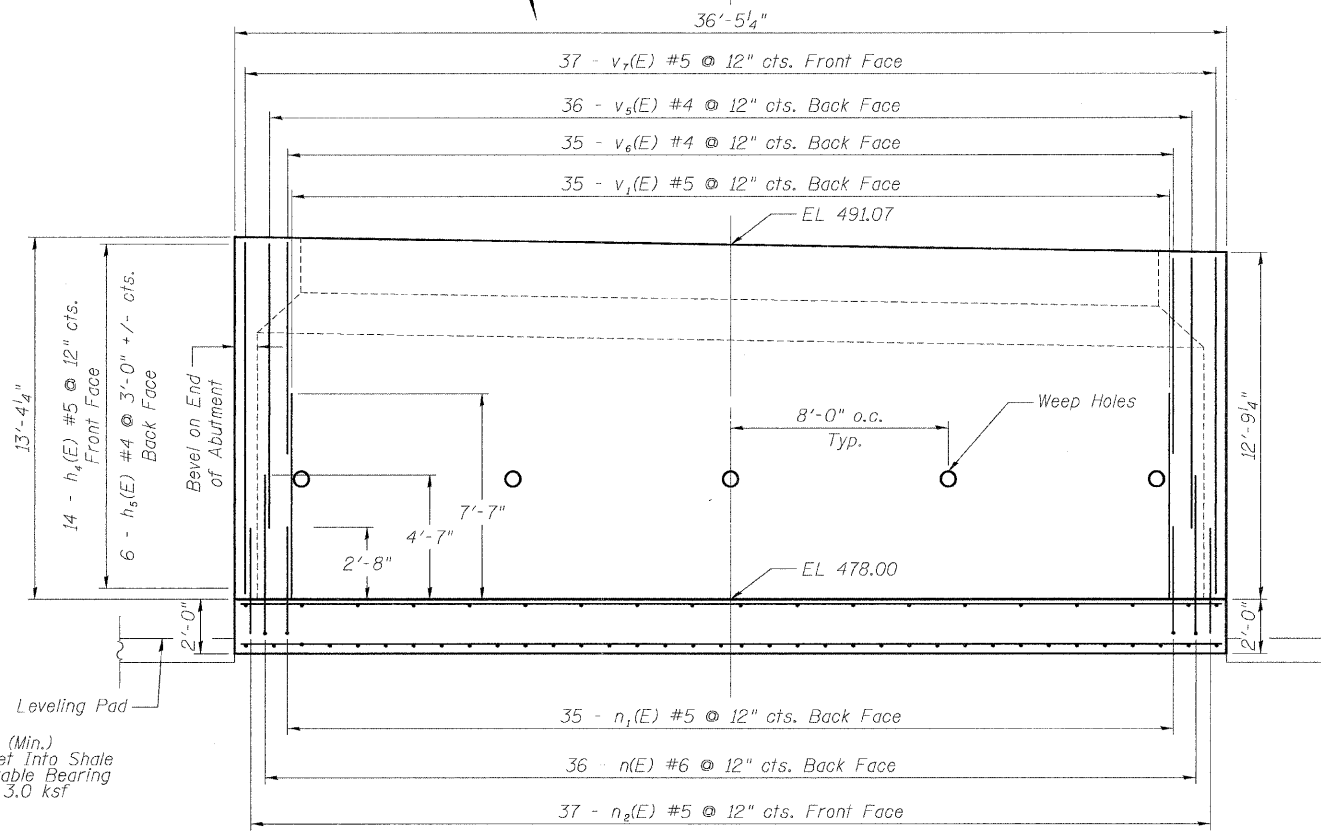
Contract #97350



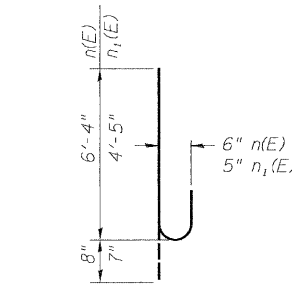
PLAN SOUTH ABUTMENT



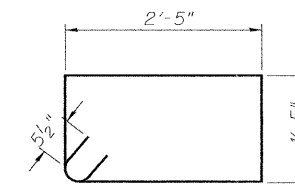
SECTION A-A



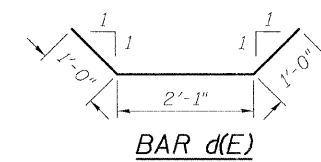
ELEVATION SOUTH ABUTMENT



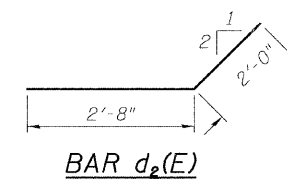
BAR n(E) and n1(E)



BAR s(E)



BAR d(E)



BAR d2(E)

MINIMUM BAR LAP

#4 (E) bar = 2'-0"  
#5 (E) bar = 2'-8"

Notes: Upper bar laps increased to accommodate min 28" FRP deck thickness. Thinner deck will require adjustment of bar lengths.

Bill of material includes concrete and reinforcing for hatched area shown on sheet 7 of 11.

SOUTH ABUTMENT  
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
d(E)	35	#4	4'-1"	
d2(E)	6	#5	4'-8"	
h3(E)	14	#5	36'-0"	
h4(E)	14	#5	35'-6"	
h5(E)	6	#5	34'-6"	
m(E)	2	#4	30'-4"	
m1(E)	6	#5	34'-0"	
n(E)	36	#6	7'-0"	
n1(E)	35	#6	5'-0"	
n2(E)	37	#6	5'-0"	
s(E)	31	#5	8'-7"	
t(E)	110	#5	8'-8"	
v(E)	101	#5	4'-0"	
v1(E)	35	#5	7'-7"	
v5(E)	36	#4	11'-1"	
v6(E)	36	#4	8'-0"	
v7(E)	37	#5	12'-7"	
Concrete Structures		Cu. Yd.	56.6	
Reinforcement Bars, Epoxy Coated		Pound	5470	
Structure Excavation		Cu. Yd.	154	
Rock Excavation for Structures		Cu. Yd.	12	
Porous Granular Embankment (special)		Cu. Yd.	98	

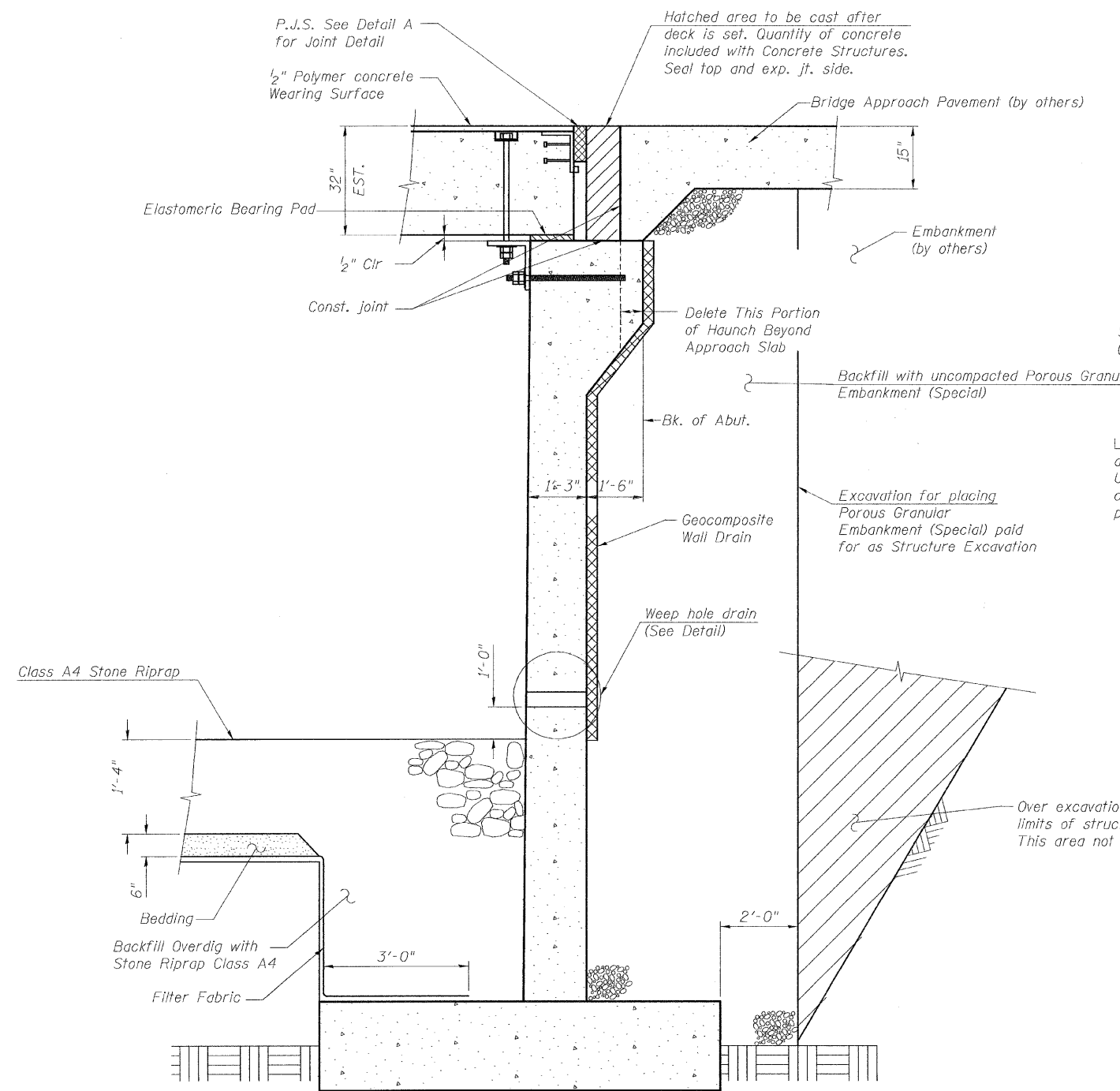
SOUTH ABUTMENT DETAILS  
F.A.U. 9149 (PLEASANT RIDGE ROAD)  
OVER LITTLE CANTEEN CREEK  
SECTION 06-00034-01-BR  
STATION 160+36  
FAIRVIEW HEIGHTS  
STRUCTURE NO. 082-6513

DESIGNED: K.C.M.
CHECKED: T.M.M.
DRAWN: E.J.R.
CHECKED: K.C.M.

**McDonough-Whitlow, P.C.**  
Consulting Engineers & Land Surveyors  
138 East Wood Street  
Hillsboro, IL 62049  
Phone: 217.532.9233  
Fax: 217.532.6300  
PROFESSIONAL DESIGN NO. 184-002754

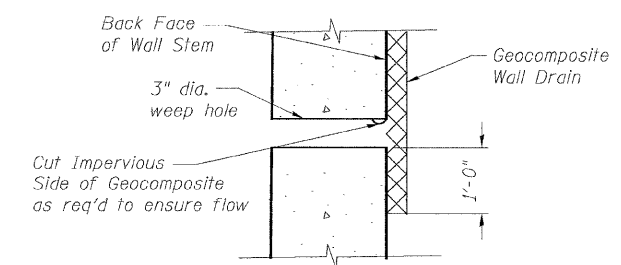
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	7
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

Contract #97350

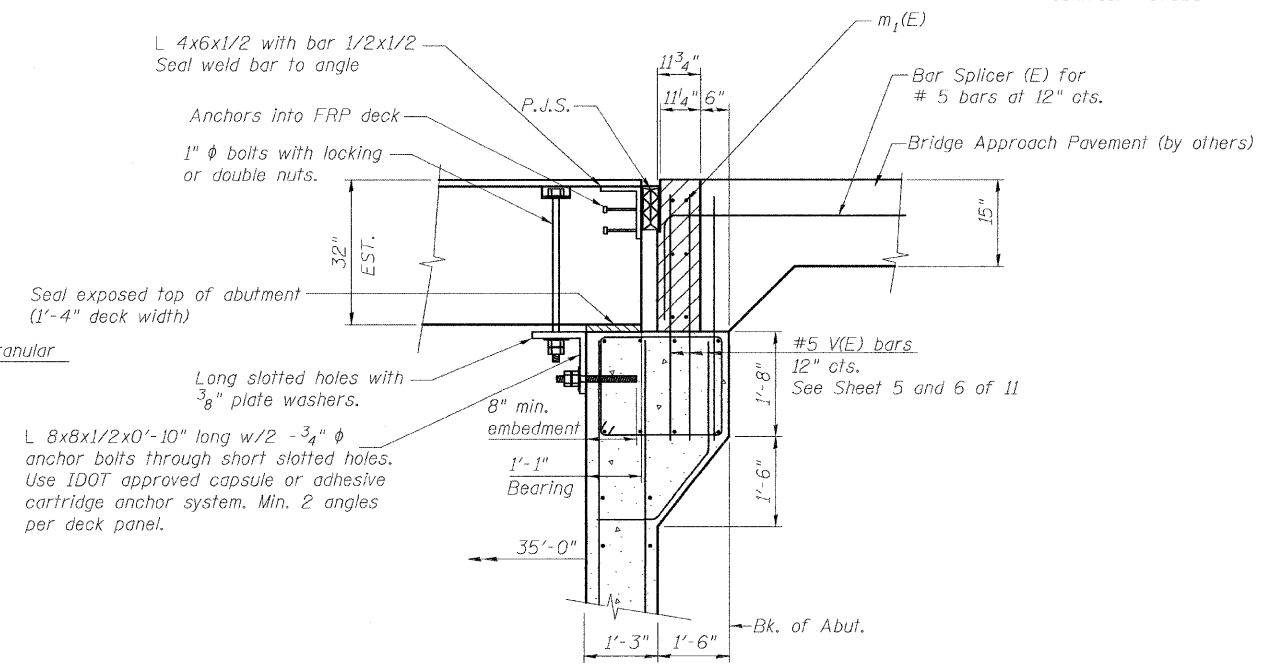


**SEC. THRU ABUTMENT**

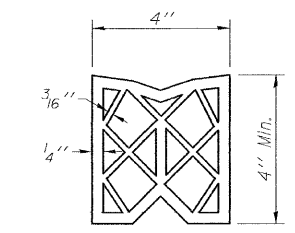
DESIGNED: K.C.M.
CHECKED: T.M.M.
DRAWN: R.N.H.
CHECKED: K.C.M.



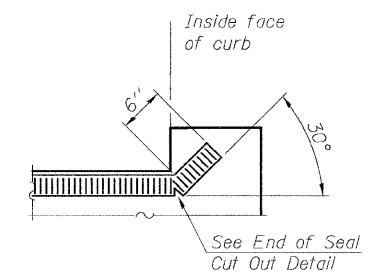
**WEEP HOLE DRAIN DETAIL**



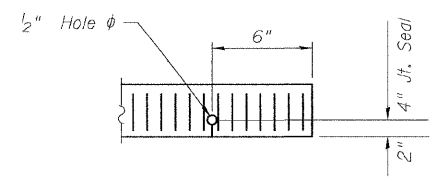
**SEC. THRU TOP OF ABUTMENT**



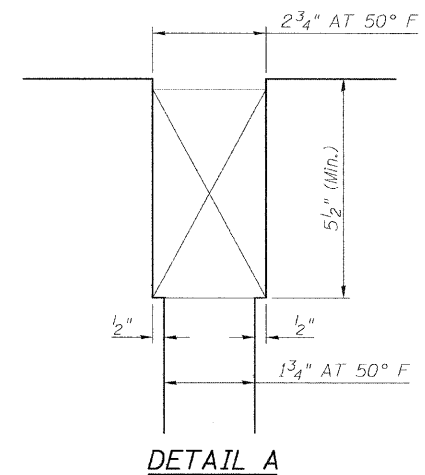
**PREFORMED JOINT SEAL 4" (PJS)**



**END OF SEAL**



**END OF SEAL CUT-OUT**



**DETAIL A**

**ABUTMENT DETAILS**  
**F.A.U. 9149 (PLEASANT RIDGE ROAD)**  
**OVER LITTLE CANTEEN CREEK**  
**SECTION 06-00034-01-BR**  
**STATION 160+36**  
**FAIRVIEW HEIGHTS**  
**STRUCTURE NO. 082-6513**

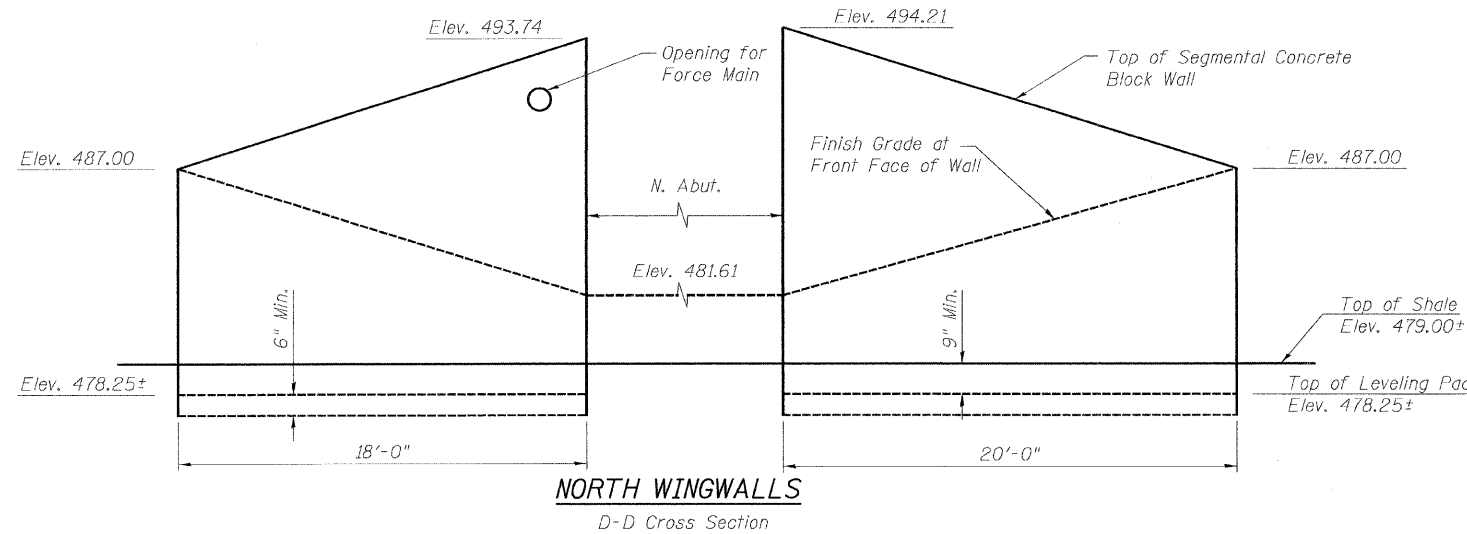
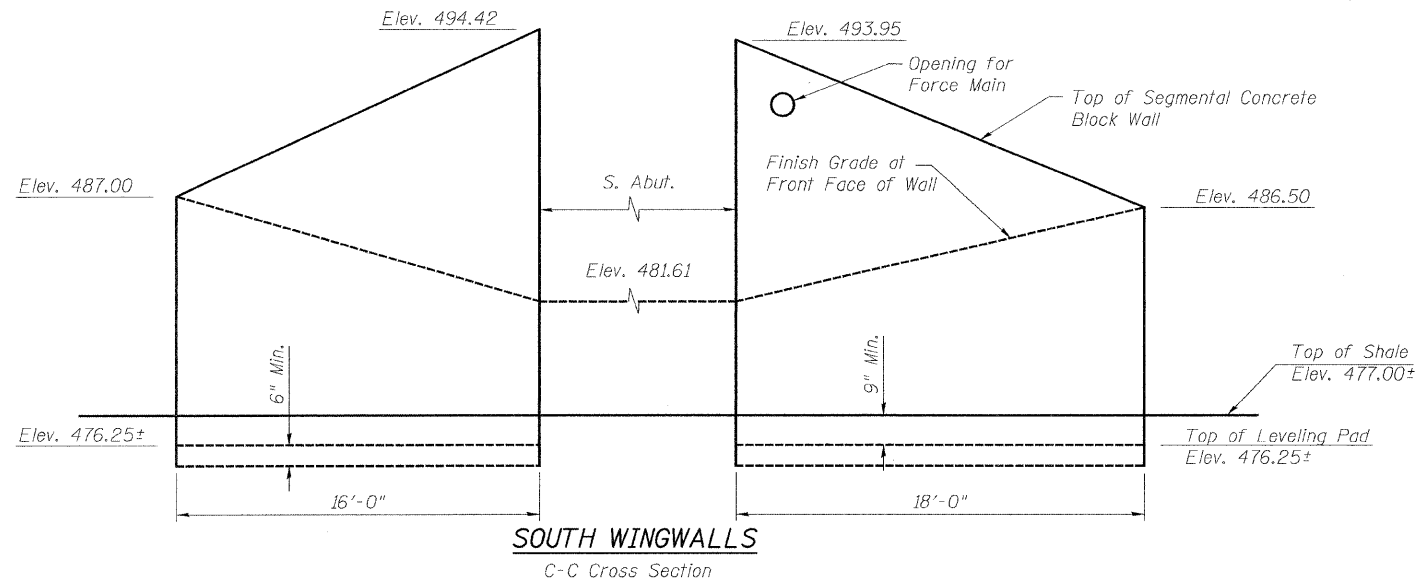
**McDonough-Whitlow, P.C.**  
 Consulting Engineers & Land Surveyors  
 138 East Wood Street  
 Hillsboro, IL 62049  
 Phone: 217.532.9233  
 Fax: 217.532.6300  
 PROFESSIONAL DESIGN No. 194-002754

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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	8
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

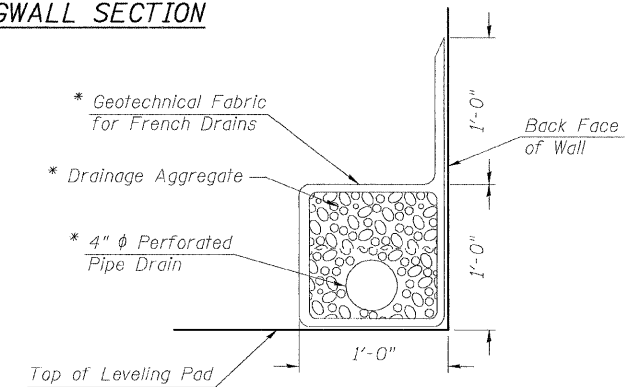
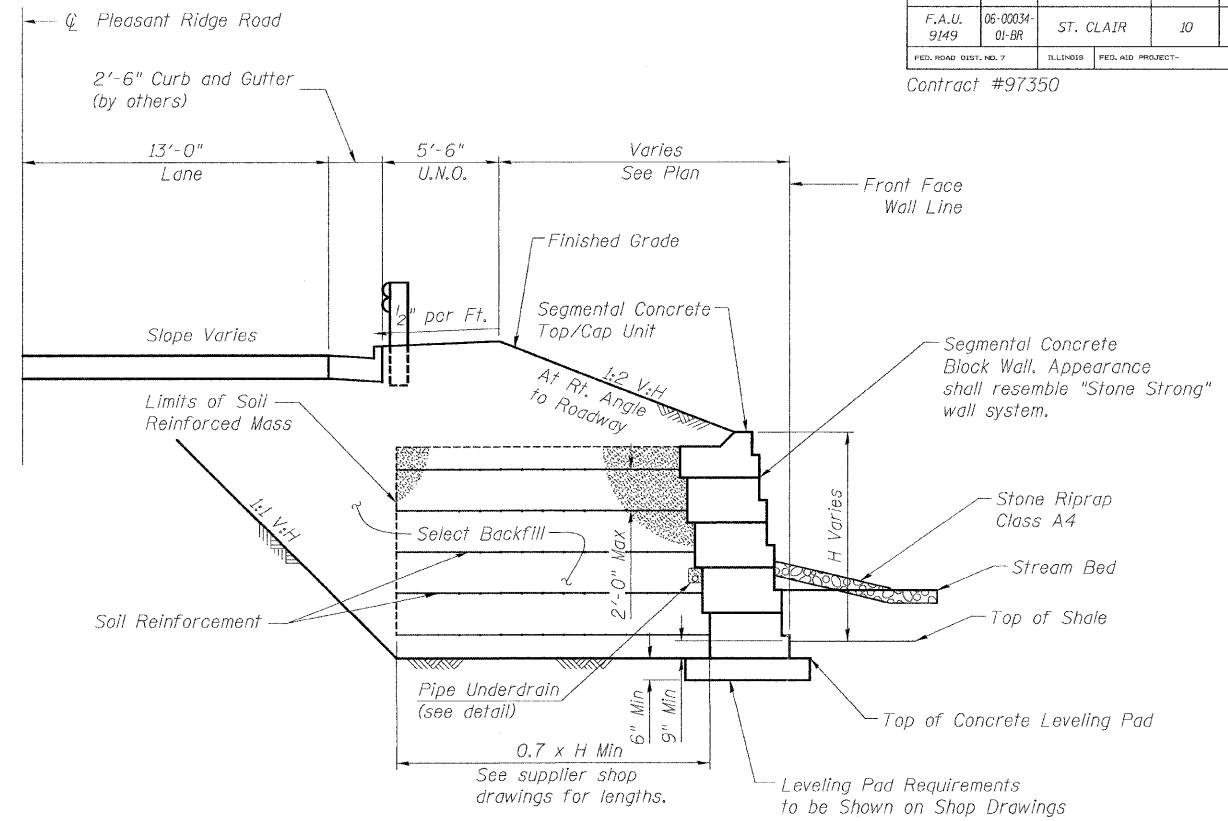
Contract #97350



**WINGWALL BILL OF MATERIAL**

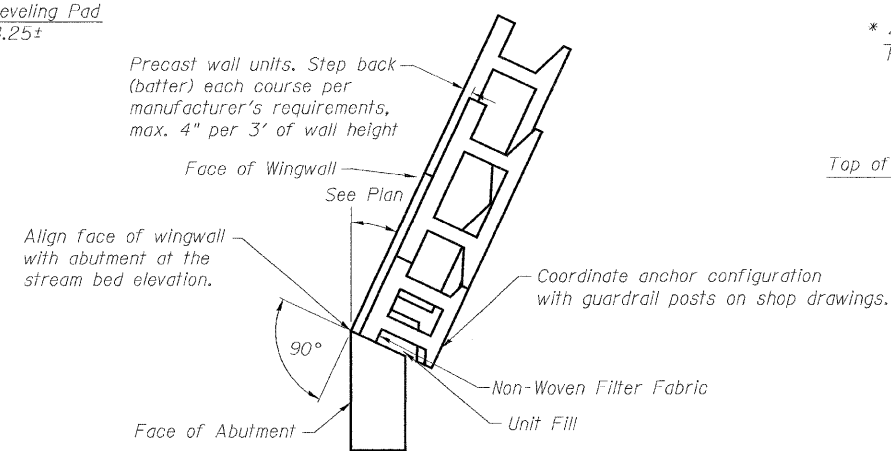
Item	Unit	Total
Segmental Concrete Block Wall (Southeast wall)	Sq. Ft.	231
Segmental Concrete Block Wall (Southwest Wall)	Sq. Ft.	252
Segmental Concrete Block Wall (Northeast Wall)	Sq. Ft.	247
Segmental Concrete Block Wall (Northwest Wall)	Sq. Ft.	218
Total Segmental Concrete Block Wall	Sq. Ft.	948
Pipe Underdrains for Structures 4"	Foot	100

DESIGNED: K.C.M.
CHECKED: T.M.M.
DRAWN: R.N.H.
CHECKED: K.C.M.



**PIPE UNDERDRAIN DETAIL**

\* Included in the cost of "Pipe Underdrains for Structures"



**DETAIL OF ABUTMENT/WINGWALL INTERFACE**

**WINGWALL DETAILS**  
**F.A.U. 9149 (PLEASANT RIDGE ROAD)**  
**OVER LITTLE CANTEN CREEK**  
**SECTION 06-00034-01-BR**  
**STATION 160+36**  
**FAIRVIEW HEIGHTS**  
**STRUCTURE NO. 082-6513**

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 PROFESSIONAL DESIGN No. 184-002754



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	9
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

Contract #97350

**NOTES**

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.

Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.

All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.

Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.

Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

- ① Minimum Capacity =  $1.25 \times f_y \times A_s$   
(Tension in kips)
- ② Minimum \*Pull-out Strength =  $1.25 \times f_{s_{allow}} \times A_s$   
(Tension in kips)

Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.

$f_{s_{allow}}$  = Allowable tensile stress in lapped reinforcement bars in ksi (Service Load)

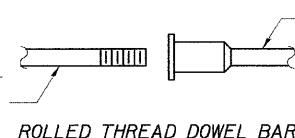
$A_s$  = Tensile stress area of lapped reinforcement bars.

\* = 28 day concrete

BAR SPLICER ASSEMBLIES			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	5.9
#5	2'-0"	23.0	9.2
#6	2'-7"	33.1	13.3
#7	3'-5"	45.1	18.0
#8	4'-6"	58.9	23.6
#9	5'-9"	75.0	30.0
#10	7'-3"	95.0	38.0
#11	9'-0"	117.4	46.8

Bar splicer assemblies shall be according to Section 508 of the Standard Specifications, except as noted. The furnishing and installation of bar splicer assemblies will be measured and paid for at the contract unit price each for "BAR SPLICERS."

The diameter of this part is the same as the diameter of the bar spliced.



ROLLED THREAD DOWEL BAR



\*\* ONE PIECE

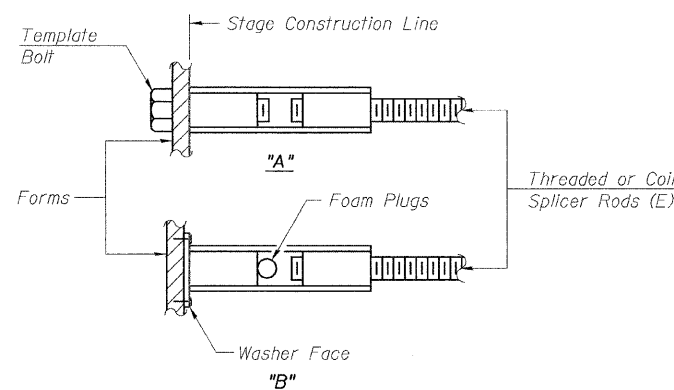
Wire Connector



WELDED SECTIONS

**BAR SPLICER ASSEMBLY ALTERNATIVES**

\*\* Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.

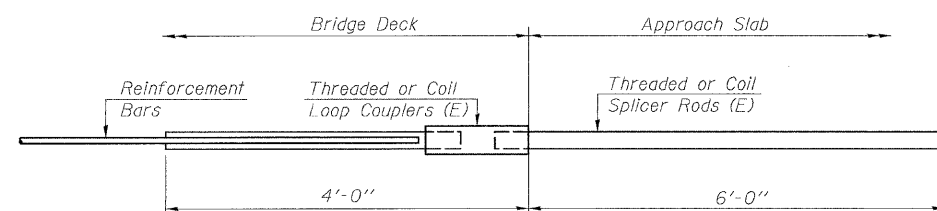


**INSTALLATION AND SETTING METHODS**

"A" : Set bar splicer assembly by means of a template bolt.

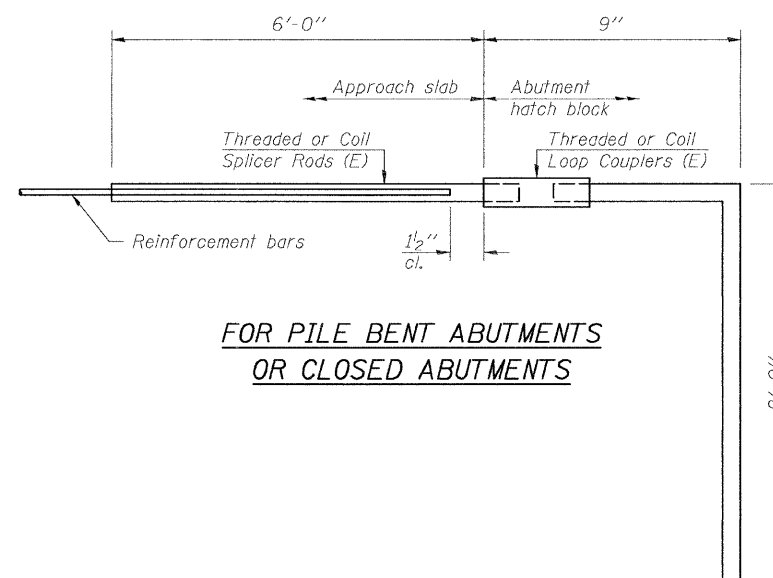
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.

(E) : Indicates epoxy coating.



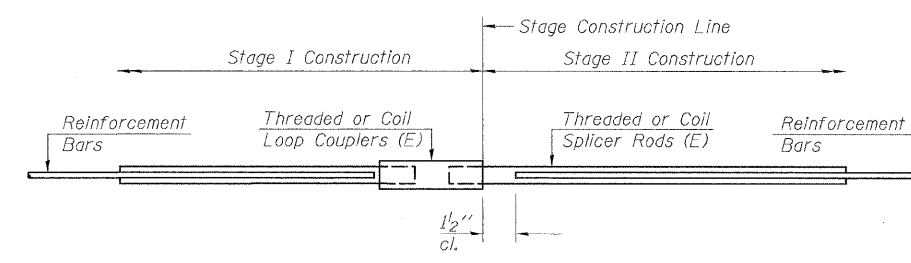
**FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required =



**FOR PILE BENT ABUTMENTS OR CLOSED ABUTMENTS**

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required = 62



**STANDARD**

Bar Size	No. Assemblies Required	Location

**BAR SPLICER ASSEMBLY DETAILS**  
**F.A.U. 9149 (PLEASANT RIDGE ROAD)**  
**OVER LITTLE CANTEN CREEK**  
**SECTION 06-00034-01-BR**  
**STATION 160+36**  
**FAIRVIEW HEIGHTS**  
**STRUCTURE NO. 082-6513**

DESIGNED: K.C.M.
CHECKED: T.M.M.
DRAWN: E.J.R.
CHECKED: K.C.M.

BSD-1

**McDonough-Whitlow, P.C.**  
 Consulting Engineers & Land Surveyors  
 138 East Wood Street  
 Hillsboro, IL 62049  
 Phone: 217.532.9233  
 Fax: 217.532.6300  
 PROFESSIONAL DESIGN No. 184-002754

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9149	06-00034-01-BR	ST. CLAIR	10	10
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

Contract #97350

**SCI Engineering, Inc.**  
500 Plaza Boulevard  
O'Fallon, Illinois 62459

**SOIL BORING LOG** Page 1 of 1  
Date 02/01/07

ROUTE Pleasant Ridge Road DESCRIPTION Structure Boring LOGGED BY SMS (SCI)

SECTION Fairview Heights, SEC. 20, TWP. 2N, R1NG. 6W

COUNTY St. Clair DRILLING METHOD CME 550 w/ CFA HAMMER TYPE Automatic

STRUCT. NO. 160+40  
Station 160+11.61  
BORING NO. B-21  
Station 160+11.61  
Offset 18 ft R  
Ground Surface Elev. 492.1 ft (ft) (8") (bf) (%)

Surface Water Elev. \_\_\_\_\_ ft  
Stream Bed Elev. \_\_\_\_\_ ft  
Groundwater Elev.:  
First Encounter 481.6 ft  
Upon Completion \_\_\_\_\_ ft  
After 24 Hrs. 482.1 ft

DEPTH (ft)	DESCRIPTION	UCS (psi)	Penetration (lb/in)	Penetration (lb/in)	Penetration (lb/in)
0	FILL: Crushed rock and Brown, low plastic silty clay (A-6)				
2	FILL: Brown, low plastic silty clay (A-6)				
3	FILL: Brown, high plastic clay (A-7)				
4	FILL: Brown, high plastic clay (A-7)	1.0	23		
4	FILL: Brown, shaley clay (A-7)				
2	FILL: Brown, shaley clay (A-7)	2.0	15		
4	FILL: Brown, shaley clay (A-7)				
3	SILTY CLAY: Brown, low plastic (A-6)	3.3	10		
3	SILTY CLAY: Brown, low plastic (A-6)				
1	SILTY CLAY: Brown, low plastic (A-6)	0.3	28		
2	SILTY CLAY: Brown, low plastic (A-6)				
7	CLAYEY SILT: Brown, low plastic (A-4)	1.6	18		
17	CLAYEY SILT: Brown, low plastic (A-4)				
26	CLAYEY SHALE: Gray and brown (continues)	5.0	16		
50.3	Becomes gray				
60.3	Boring terminated at 21.3 ft.				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Surge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

**SCI Engineering, Inc.**  
500 Plaza Boulevard  
O'Fallon, Illinois 62459

**SOIL BORING LOG** Page 1 of 1  
Date 02/01/07

ROUTE Pleasant Ridge Road DESCRIPTION Structure Boring LOGGED BY SMS (SCI)

SECTION Fairview Heights, SEC. 20, TWP. 2N, R1NG. 6W

COUNTY St. Clair DRILLING METHOD CME 550 w/ CFA HAMMER TYPE Automatic

STRUCT. NO. 160+40  
Station 160+55.88  
BORING NO. B-22  
Station 160+55.88  
Offset 10 ft R  
Ground Surface Elev. 493.3 ft (ft) (8") (bf) (%)

Surface Water Elev. \_\_\_\_\_ ft  
Stream Bed Elev. \_\_\_\_\_ ft  
Groundwater Elev.:  
First Encounter Not observed ft  
Upon Completion Not observed ft  
After 24 Hrs. Not observed ft

DEPTH (ft)	DESCRIPTION	UCS (psi)	Penetration (lb/in)	Penetration (lb/in)	Penetration (lb/in)
7	FILL: Brown, low plastic clayey silt (A-4)				
5	FILL: Brown, low plastic clayey silt (A-4)	0.7	20		
3	FILL: Brown, low plastic clayey silt (A-4)				
5	FILL: Brown, low plastic clayey silt (A-4)	3.0	16		
4	FILL: Brown, low plastic clayey silt (A-4)				
5	FILL: Brown, low plastic clayey silt (A-4)	2.8	17		
3	FILL: Brown, low plastic clayey silt (A-4)				
4	SILTY CLAY: Brown, medium plastic (A-7)	1.5	20		
4	SILTY CLAY: Brown, medium plastic (A-7)				
4	SILTY CLAY: Brown, medium plastic (A-7)	5.15			
4	WEATHERED CLAYEY SHALE: Brown	4.5	18		
8	WEATHERED CLAYEY SHALE: Brown				
21	WEATHERED CLAYEY SHALE: Brown	4.5	18		
25	CLAYEY SHALE: Brown	5.0	11		
50.3	Becomes gray				
60.3	Boring terminated at 16.7 ft.				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Surge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

SOIL BORING LOGS  
F.A.U. 9149 (PLEASANT RIDGE ROAD)  
OVER LITTLE CANTEEN CREEK  
SECTION 06-00034-01-BR  
STATION 160+36  
FAIRVIEW HEIGHTS  
STRUCTURE NO. 082-6513

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