

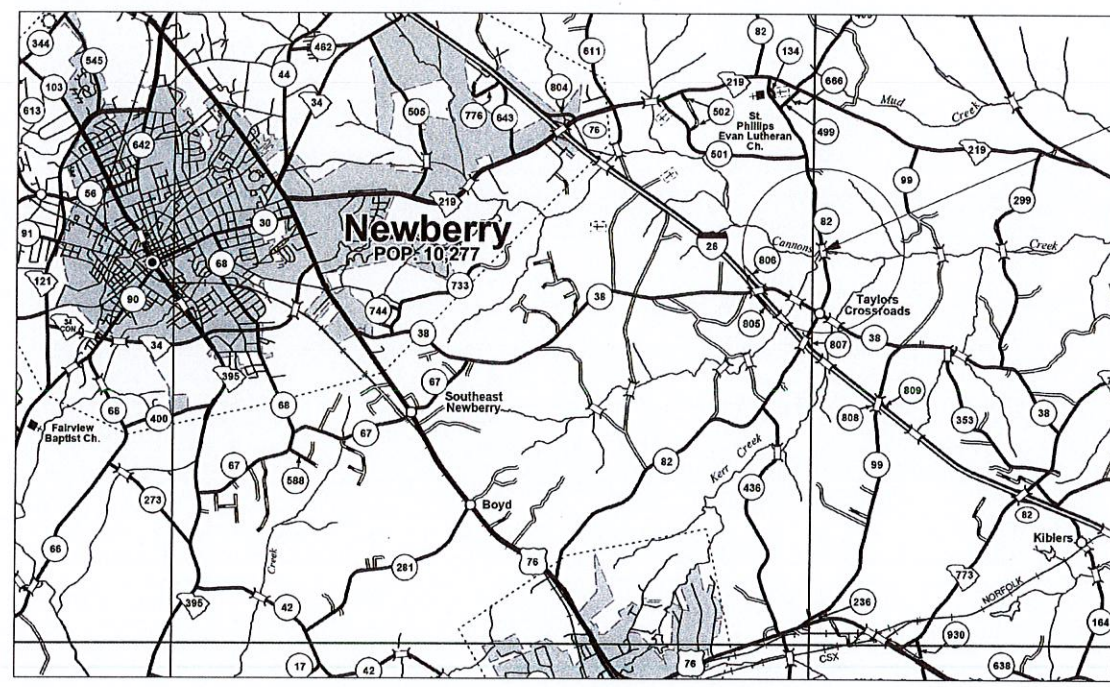
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PROPOSED PLANS
FOR
NEWBERRY COUNTY
OLD JOLLYSTREET ROAD
BRIDGE REPLACEMENT OVER CANNONS CREEK

NPDES PERMIT INFORMATION	
NPDES Disturbed	
Area = <u>0.344</u> Acre(s)	
Approximate Location of Roadway is	
Begin	
Latitude	<u>34° 16' 31.49"</u>
Longitude	<u>-81° 28' 33.35"</u>
End	
Latitude	<u>34° 16' 28.30"</u>
Longitude	<u>-81° 28' 32.57"</u>



PROJECT LOCATION

LAYOUT

	MAINLINE	TOTAL	
NET LENGTH OF ROADWAY	-	-	MILES
NET LENGTH OF BRIDGES	0.017	0.017	MILES
NET LENGTH OF PROJECT	0.017	0.017	MILES
LENGTH OF EXCEPTIONS	-	-	MILES
GROSS LENGTH OF PROJECT	0.017	0.017	MILES

EQUALITIES IN STATIONING

NOTE: EXCEPT AS MAY OTHERWISE BE SPECIFIED ON THE PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIALS AND WORKMANSHIP ON THIS PROJECT SHALL CONFORM TO THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2007 EDITION) AND THE STANDARD DRAWINGS FOR ROAD CONSTRUCTION IN EFFECT AT THE TIME OF LETTING.

3 DAYS BEFORE DIGGING IN
SOUTH CAROLINA
CALL 811
SOUTH CAROLINA 811 (SC811)
WWW.SC811.COM
ALL UTILITIES MAY NOT BE A MEMBER OF SC811

RAILROAD INVOLVEMENT?
YES NO

Design Reference for these plans is the:
2001
AASHTO "A Policy on Geometric Design of Highways and Streets"

CONSULTING ENGINEERING FIRM

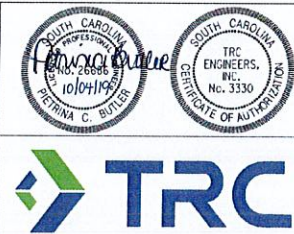
50 INTERNATIONAL DRIVE
SUITE 150
GREENVILLE, SC 29615

ENGINEER OF RECORD

FOR CONSTRUCTION: *Victoria Butler* 10/6/2019
DATE

SUMMARY OF ESTIMATED QUANTITIES

ITEM	MOBILIZATION	REMOVAL & DISPOSAL OF EXISTING PILES	CONCRETE FOR STRUCTURES CLASS 4000	REINFORCING STEEL FOR STRUCTURES	CONCRETE BRIDGE BARRIER PARAPET	ELASTOMERIC BEARINGS	WATER-PROOFING (BRIDGE DECK)	ASPHALT WEARING SURFACE TYPE D	3'-0" X 1'-9" CORED SLABS	PILE DRIVING SET-UP	STEEL H BEARING PILING (HP 12X53)	REINFORCED PILE TIPS (HP 12X53)	PRESTRESSED CONCRETE PILING (18" SQ)	PRESTRESSED PILE POINTS (W8X58)	PILE BUILD-UP PREP (18" SQ)	THRIE BEAM G.R. BRIDGE CONNECTOR	GUARDRAIL	CONCRETE TRANSITION CURB	END TREATMENT TYPE T	SILT FENCE	FLOATING TURBIDITY CURTAIN
	LUMP	LUMP	CY	LBS	LF	EA	SY	TON	LF	EA	LF	EA	LF	LF	EA	EA	LF	LF	EA	LF	LF
END BENT 1			13.2	2,063						7	259	7				2	168	13	2	632	
30' PRESTRESSED CONCRETE CORED SLAB				764	60	18	79	7	268.9					175	42.5	5					
INTERIOR BENT 2			9.5	1,505						5											
60' PRESTRESSED CONCRETE CORED SLAB				1,526	120	18	159	14	538.9												
END BENT 3			13.2	2,063						7	281	7				2	168	13	2	639	
TOTAL	1	1	35.9	7,921	180	36	238	21	807.8	19.0	540	14	175	42.5	5	4	332	26	4	1325	190



REV.			
REV.			
REV.			
REVIEWED	PCB		
QUAN.			
DR.	TLP	AEM	09/19
DES.	PCB	AEM	09/19
BY	CHK.	DATE	

**NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK**

**SUMMARY OF
ESTIMATED QUANTITIES**

SCALE: NTS ROUTE: OLD JOLLYSTREET ROAD COUNTY: NEWBERRY

MATERIAL & WORKMANSHIP

Provide all material and workmanship in accordance with the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction, unless otherwise specified on the Plans or in the Special Provisions.

COORDINATION OF PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS

Generally, in case of discrepancy, this General Notes sheet governs over the Standard Specifications but the remainder of the plans govern over notes on this sheet and Special Provisions govern over all. See Subsection 105.4 of the Standard Specifications.

WATER ELEVATIONS

The water elevations shown in the plans are for information only and the actual water elevation during construction may vary depending on weather conditions and seasonal fluctuations.

REINFORCING STEEL

All reinforcing steel shall be in accordance with ASTM A615 Grade 60 or ASTM A706 Grade 60 on this project.

Fabricate reinforcing bars in accordance with the current C.R.S.I. Manual of Standard Practice except for ties and stirrups. Provide all ties and stirrups with 135° hooks that have extensions no less than the larger of ten bar diameters or six inches. This 135° hook requirement does not apply to stirrups extending from prestressed concrete beams.

Do not use lap splices in column and shaft reinforcing steel.

PRESTRESSED CONCRETE BEAMS

Beam lengths given are based on horizontal span only. Increase lengths to correct for concrete shrinkage, concrete shortening when the strands are cut, and for beams being on a grade.

CONCRETE

Class 4000 f'c = 4,000 p.s.i. (substructure)
 Class 5000 f'c = 5,000 p.s.i. (30' prestressed concrete beams)
 Class 7000 f'c = 7,000 p.s.i. (60' prestressed concrete beams)

When holes are cast in beams to accommodate falsework, fill the holes with a non-shrink structural grout suitable for overhead repairs after falsework is removed.

Chamfer all exposed edges ¼" unless otherwise noted.

The minimum acceptable concrete cover for reinforcing steel is ½" less than the plan dimensions when required by reinforcing bar fabrication tolerances.

SHOP PLANS AND WORKING DRAWINGS FOR STRUCTURES:

Shop plans and working drawings for structures shall be in accordance with Section 725 of the Standard Specifications. Send shop plans to:

Petrina Butler
 TRC Engineers
 50 International Drive, Suite 150
 Greenville, SC 29615

ELASTOMERIC BEARINGS

Shop plans for elastomeric bearings shall be submitted for shop drawing review.

DRIVEN PILE FOUNDATIONS

All steel piles shall be HP12x53 steel bearing piles and shall meet AASHTO M270, Grade 50 requirements.

All pile installation shall be in accordance with Section 711 of the Standard Specifications.

Where piles occur in fill, place fill before driving piles.

Where prestressed concrete piles are to be driven through fill, install piles in pre-bored holes extending to the original ground. For square prestressed concrete piles, bore holes having a minimum diameter of 1.25 times the nominal pile size. Include all cost of pre-boring fills for pile installation in the unit price bid for the piles.

EXCAVATION FOR END BENTS

Include all cost of excavation necessary to construct end bents and to remove material under superstructure to an elevation twelve inches below tops of end bent caps, in the unit price bid for class of concrete specified in the Plans.

If a concrete footing is used for the end bent, the excavation below that included for the cap and berm in the above paragraph is paid for at the unit price bid for excavation. Include excavation above this in the unit price bid for class of concrete specified in the Plans.

ORIENTATION IN RELATION TO STATIONING

Left and right sides, where referred to in these plans, are in relation to direction of stationing.

SILT FENCE

Silt fence is to be placed in accordance with SCDOT Standard Drawing 815-605-00 and is to be in place before construction is begun according to DHEC Regulations.

SEDIMENT CONTROL

Newberry County will implement the best management practices during and after construction as required by the State of South Carolina Department of Health and Environmental Control (SC DHEC) General Permit for Storm Water Discharges Associated with Construction Activity (Permit SCR100000). Newberry County will use, as a reference for BMP design and implementation, the most recent version of SC DHEC's Best Management Practices Manual.

APPROACH ROAD WORK AND RIPRAP

Approach road work and riprap installation to be completed by Newberry County forces. The contractor shall coordinate with Newberry County forces for backfilling of end bents and placement of riprap prior to setting concrete beams.

RIPRAP PROTECTION

Provide a two foot thick layer of riprap at End Bent 1 and End Bent 3 as shown in the Plan and Profile Drawing. The average stone size for riprap shall be 12 inch. Uniformly grade the rock as follows:

Stone Size:	Percentage of Gradation Smaller than:
24 inch	100%
15 inch	85%
12 inch	50%
6 inch	15%

FIELD WELDING

Any authorized structural field welding that is required on this project shall be in accordance with subsection 709.4.3.5 of the Standard Specifications.

REMOVAL OF FALSEWORK AND FORMS

Removal of falsework and forms shall be in accordance with subsection 702.4.5 of the Standard Specifications.

SPECIFICATIONS

AASHTO 2012 LRFD Bridge Design Specifications, 6th. Edition, with Interim Revisions through 2013.

ANSI/AASHTO/AWS D1.5 Bridge Welding Code (Latest Edition) with additions and revisions as stated in the Standard Specifications.

DESIGN DATA

Load and Resistance Factor Design (LRFD) Method

Live Load: AASHTO HL-93 Loading

An extra dead load of 0.015 KSF is incorporated into the design of this structure as an allowance for a future wearing surface.




FINAL FINISH OF EXPOSED CONCRETE SURFACES

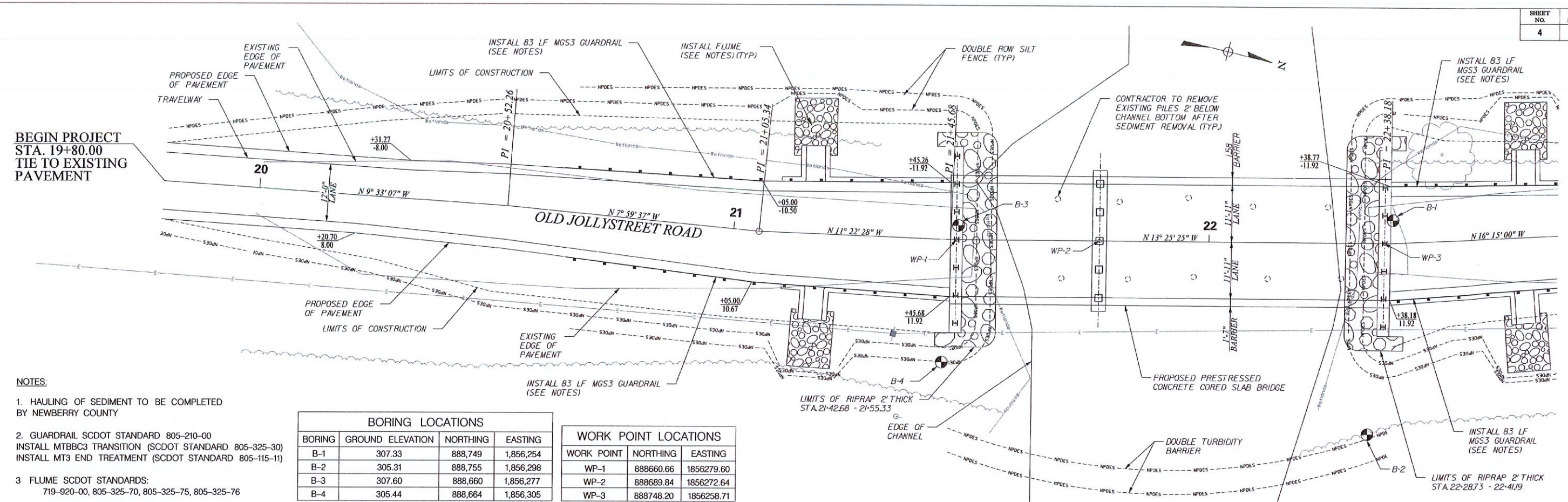
Apply the final surface finish on the bridge(s) only to the following checked and designated bridge areas:

- A) Entire surface of all barrier rails, parapet walls, approach slab curbs, concrete utility supports, and wing walls; outside vertical edge of bridge deck slabs and sidewalks.
- B) Outside face of exterior prestressed girders.
- C) Entire surface of designated substructure units, except top of bent caps and piers.
 - All Units
 - Designated Units:
- D) No final surface finish required.

TRAFFIC CONTROL

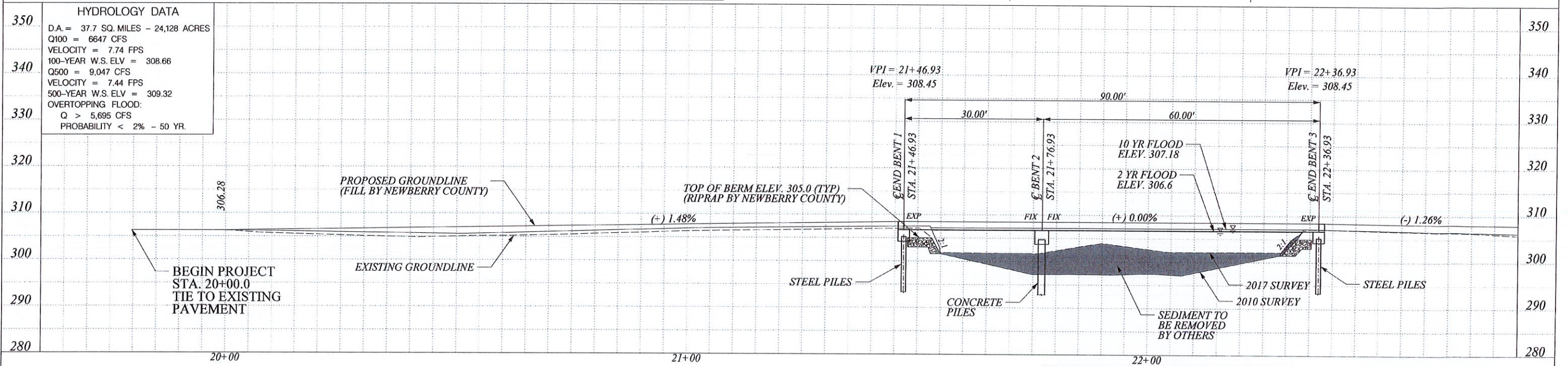
The Contractor shall coordinate with Newberry County forces for traffic control. Newberry County forces shall provide all signage related to the closure of Old Jollystreet Road during bridge replacement.

 		NEWBERRY COUNTY OLD JOLLYSTREET ROAD OVER CANNONS CREEK	
		GENERAL NOTES	
REV.		REVIEWED	PCB
QUAN.		DR.	TLP AEM 09/19
DES.	PCB AEM 09/19	BY	CHK. DATE
SCALE: NTS	ROUTE	COUNTY	
	OLD JOLLYSTREET ROAD	NEWBERRY	



- NOTES:**
- HAULING OF SEDIMENT TO BE COMPLETED BY NEWBERRY COUNTY
 - GUARDRAIL SCDOT STANDARD 805-210-00
INSTALL MTBCC3 TRANSITION (SCDOT STANDARD 805-325-30)
INSTALL MT3 END TREATMENT (SCDOT STANDARD 805-115-11)
 - FLUME SCDOT STANDARDS:
719-920-00, 805-325-70, 805-325-75, 805-325-76

BORING LOCATIONS				WORK POINT LOCATIONS		
BORING	GROUND ELEVATION	NORTHING	EASTING	WORK POINT	NORTHING	EASTING
B-1	307.33	888,749	1,856,254	WP-1	888660.66	1856279.60
B-2	305.31	888,755	1,856,298	WP-2	888689.84	1856272.64
B-3	307.60	888,660	1,856,277	WP-3	888748.20	1856258.71
B-4	305.44	888,664	1,856,305			



NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK

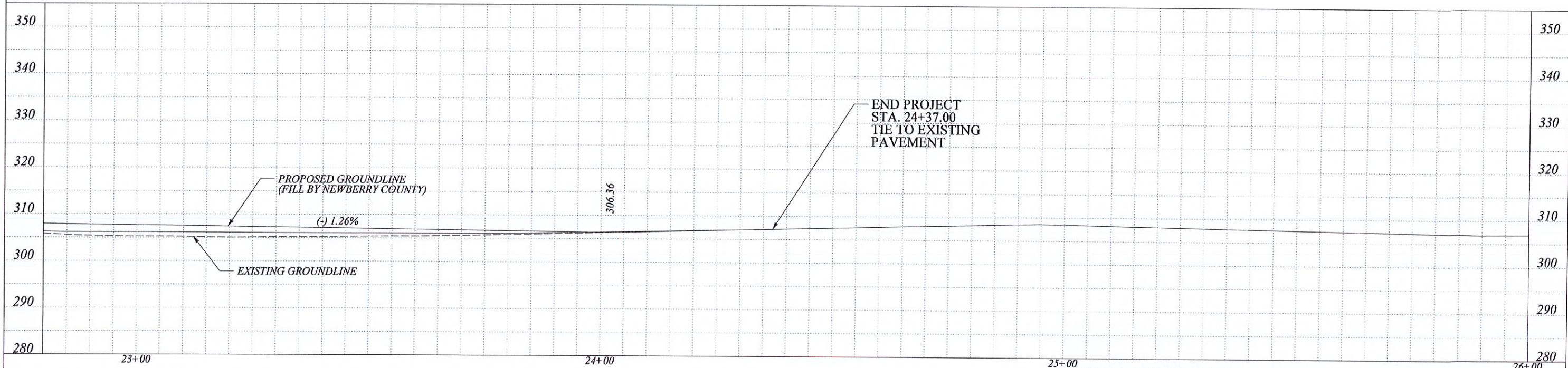
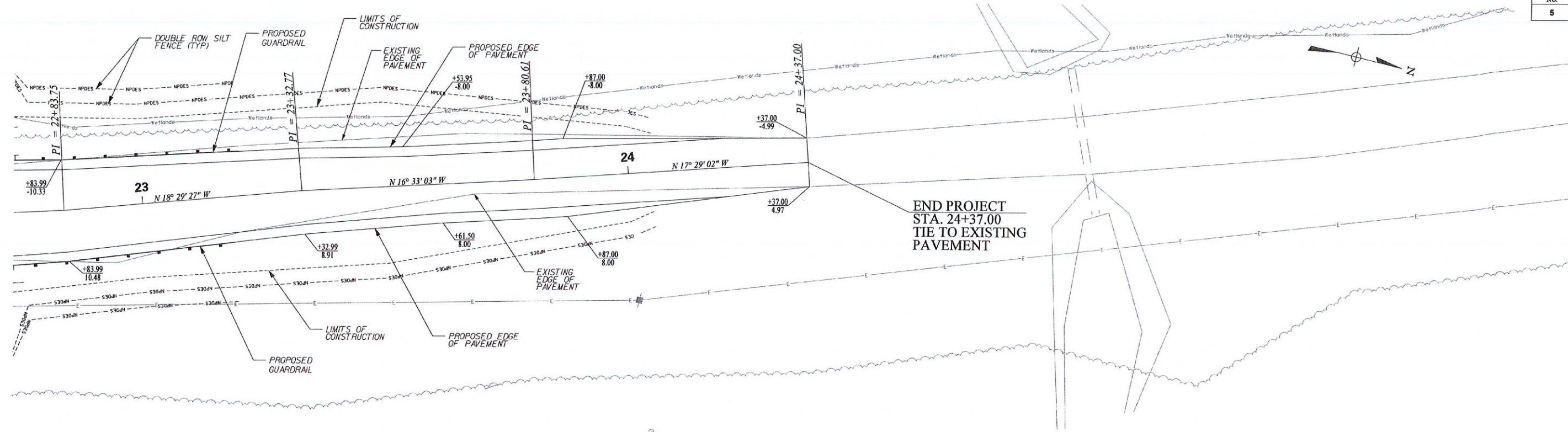
PLAN AND PROFILE

SCALE: 10:1

ROUTE: OLD JOLLYSTREET ROAD

COUNTY: NEWBERRY

REV.				
REV.				
REV.				
REVIEWED	PCB			
QUAN.				
DR.	TLP	AEM	09/19	
DES.	PCB	AEM	09/19	
BY	CHK.	DATE		



TRC

REV.			
REV.			
REV.			
REVIEWED	PCB		
QUAN.			
DR.	TLP	AEM	09/19
DES.	PCB	AEM	09/19
BY	CHE.	DATE	

NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK

PLAN AND PROFILE

SCALE: 10:1	ROUTE OLD JOLLYSTREET ROAD	COUNTY NEWBERRY
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DEAD LOAD DEFLECTION AND CAMBER	
CAMBER AT ERECTION (SLAB ALONE IN PLACE)	3/8" ↑
DEFLECTION DUE TO BARRIER PARAPET AND ASPHALT WEARING SURFACE	1/16" ↓
FINAL CAMBER	5/16" ↑

BILL OF MATERIAL ONE 30' CORED SLAB UNIT						
MARK	TOTAL REQ'D	DIMENSION				LENGTH
		"a"	"b"	"c"	"d"	
A1301	4	15'-7"	-	-	-	15'-7"
GB1601	31	①	-	-	-	5'-3"
J1301	16	1'-9"	1'-4"	-	-	4'-5"
J1302	72	2'-8"	1'-4"	-	-	5'-4"
J1303	4	1'-5 1/2"	2'-8"	-	-	6'-10"
J1601	8	2'-7"	0'-6"	-	-	3'-7"

QUANTITIES			
ITEM	UNIT	INTERIOR	EXTERIOR
REINFORCING STEEL	LB	393	563
CONCRETE, CLASS 7000	CY	4.4	4.4
1/2" DIA. L.R. STRANDS	LF	329	329




① GB1601 BARS REQUIRED FOR EXTERIOR UNITS ONLY. FOR DIMENSIONS OF GB1601 BAR, SEE SHEET 14, "REINFORCING BENDING DETAILS"

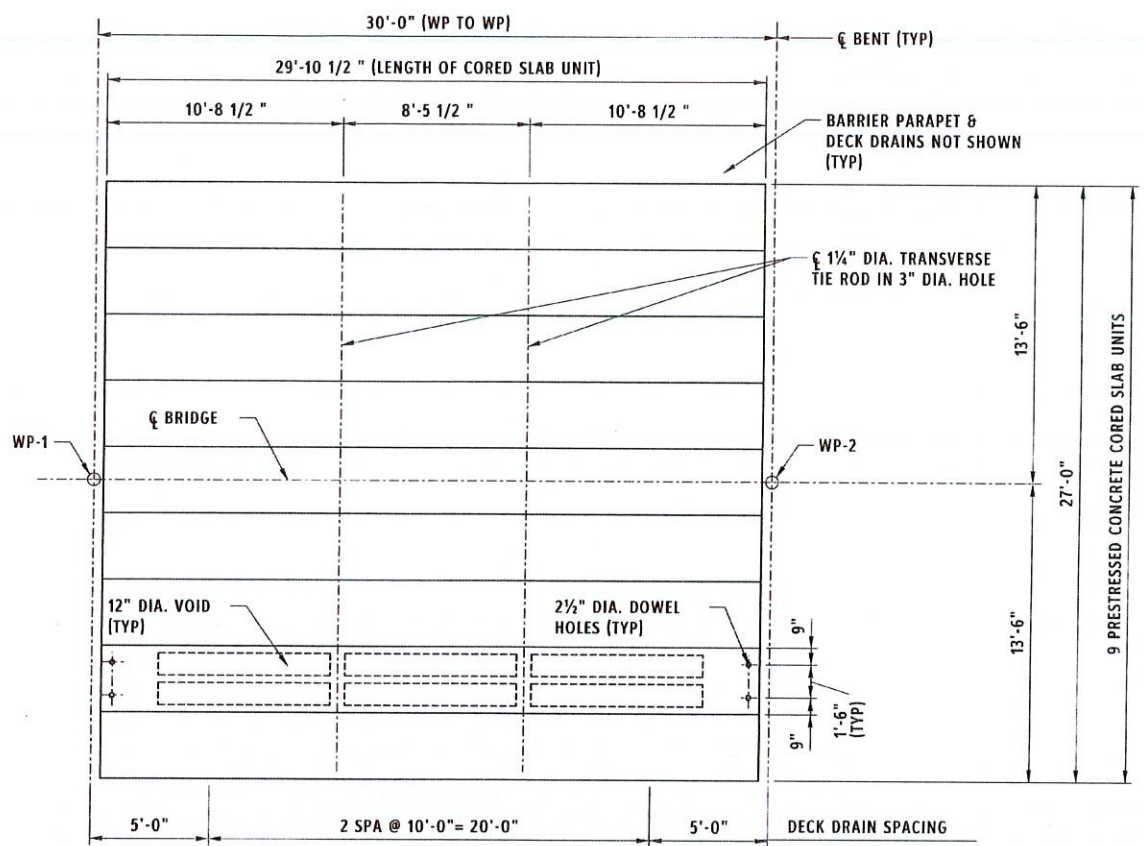
BILL OF MATERIAL ONE 30' BARRIER PARAPET						
MARK	TOTAL REQ'D	DIMENSION				LENGTH
		"a"	"b"	"c"	"d"	
A1601	7	29'-6"	-	-	-	29'-6"
H1601	31	2'-4"	2'-4"	7'-3/8"	-	5'-2"

QUANTITIES		
ITEM	UNIT	TOTAL
REINFORCING STEEL	LB	382
LENGTH OF BARRIER PARAPET	LF	30.0

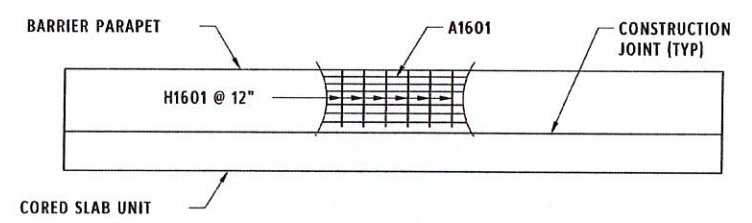
ESTIMATED QUANTITIES - ONE 30' SPAN		
ITEM	UNIT	TOTAL
3'-0" x 1'-9" CORED SLAB	LF	268.9
ELASTOMERIC BEARING	EA	18
REINFORCING STEEL FOR STRUCTURES (BRIDGE)	LB	764
CONCRETE BRIDGE BARRIER PARAPET	LF	60.0

NOTES:
 SHIFT J1302 STIRRUPS AS NECESSARY TO CLEAR TRANSVERSE TIE RODS.
 J1303 AND J1601 BARS NOT SHOWN FOR CLARITY.
 FOR ADDITIONAL NOTES AND DETAILS, SEE SHEETS 8 & 9.
 WP - WORK POINT

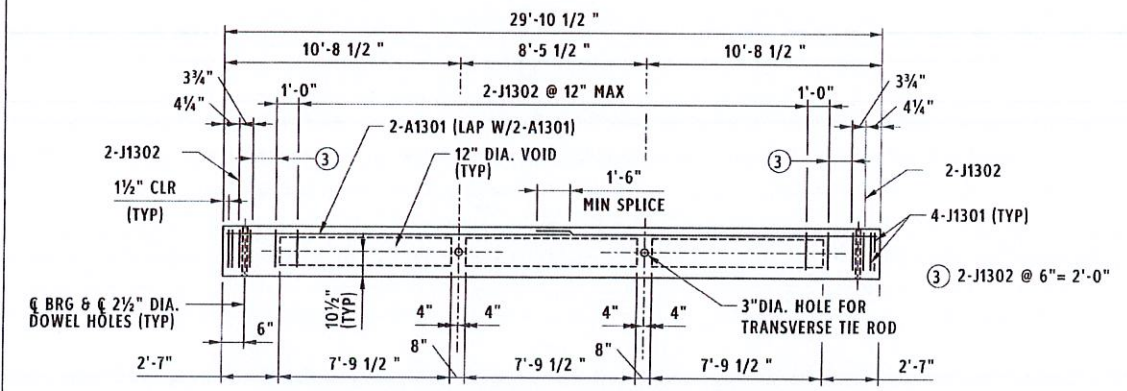
 		REV. _____ REV. _____ REV. _____ REVIEWED PCB QUAN. _____ DR. TLP AEM 09/19 DES. PCB AEM 09/19 BY _____ CHK. _____ DATE _____	NEWBERRY COUNTY OLD JOLLYSTREET ROAD OVER CANNONS CREEK 30'-0" PRESTRESSED CONCRETE CORED SLAB SPAN 3'-0" x 1'-9"
		SCALE: VARIES ROUTE: OLD JOLLYSTREET ROAD COUNTY: NEWBERRY	



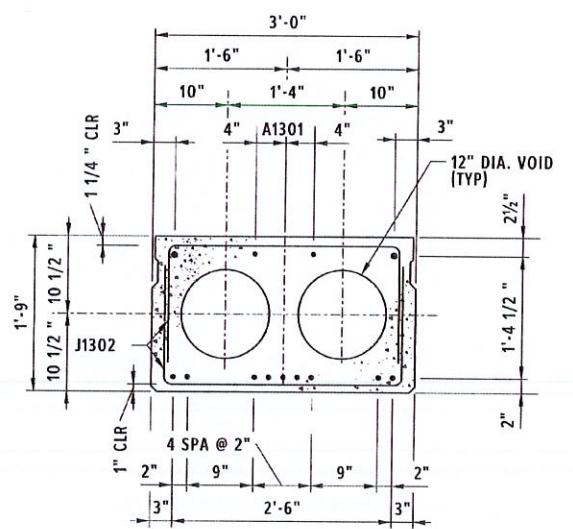
PLAN - 30' SPAN
SCALE: 1/4" = 1'-0"



ELEVATION - 30' SPAN
SCALE: 1/4" = 1'-0"
(NOTE: GB1601 BARS IN SLAB NOT SHOWN FOR CLARITY)



TYPICAL ELEVATION - 30' CORED SLAB UNIT
SCALE: 1/4" = 1'-0"



INTERIOR SLAB SECTION
11 1/2" DIA. L.R. STRAND LAYOUT
SCALE: 1" = 1'-0"

f'c = 5.0 ksi
f'ci = 4.0 ksi

② FOR EXTERIOR SLAB SECTION DETAILS SEE SHEETS 8 & 9.

DEAD LOAD DEFLECTION AND CAMBER	
CAMBER AT ERECTION (SLAB ALONE IN PLACE)	2 3/8" ↓
DEFLECTION DUE TO BARRIER PARAPET AND ASPHALT WEARING SURFACE	9/16" ↓
FINAL CAMBER	1 13/16" ↓

BILL OF MATERIAL ONE 60' CORED SLAB UNIT						
MARK	TOTAL REQ'D	DIMENSION				LENGTH
		"a"	"b"	"c"	"d"	
A1601	4	30'-9"	-	-	-	30'-9"
GB1601	61	①	-	-	-	5'-3"
J1301	72	1'-9"	1'-4"	-	-	4'-5"
J1302	106	2'-8"	1'-4"	-	-	5'-4"
J1303	4	1'-5 1/2"	2'-8"	-	-	6'-10"
J1601	8	2'-7"	0'-6"	-	-	3'-7"

QUANTITIES			
ITEM	UNIT	INTERIOR	EXTERIOR
REINFORCING STEEL	LB	766	1100
CONCRETE, CLASS 7000	CY	8.6	8.6
1/2" DIA. L.R. STRANDS	LF	1677	1677

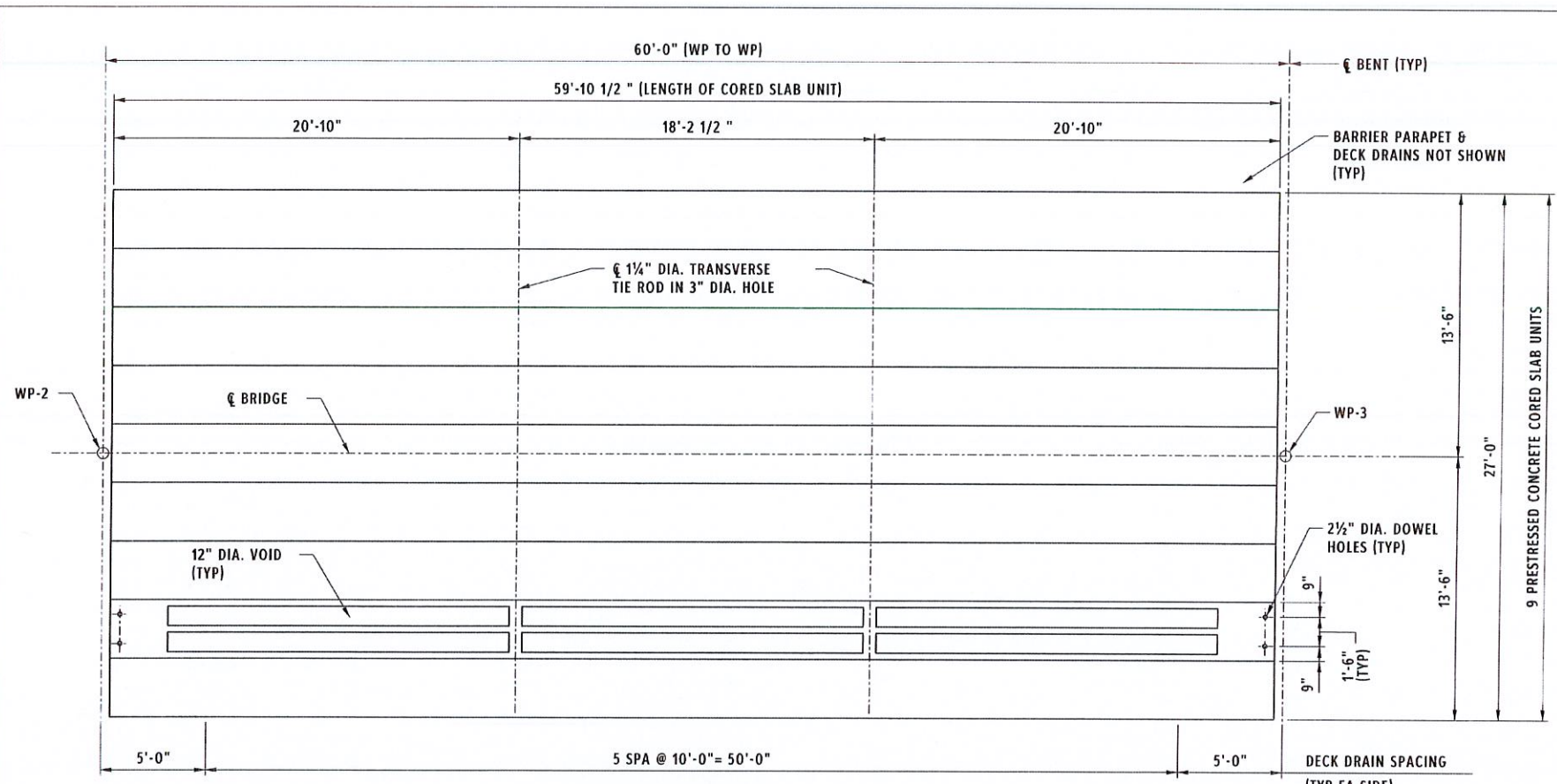
① GB1601 BARS REQUIRED FOR EXTERIOR UNITS ONLY. FOR DIMENSIONS OF GB1601 BAR, SEE SHEET 14, "REINFORCING BENDING DETAILS"

BILL OF MATERIAL ONE 60' BARRIER PARAPET						
MARK	TOTAL REQ'D	DIMENSION				LENGTH
		"a"	"b"	"c"	"d"	
A1602	7	59'-6"	-	-	-	59'-6"
H1601	61	2'-4"	2'-4"	7 3/8"	-	5'-2"

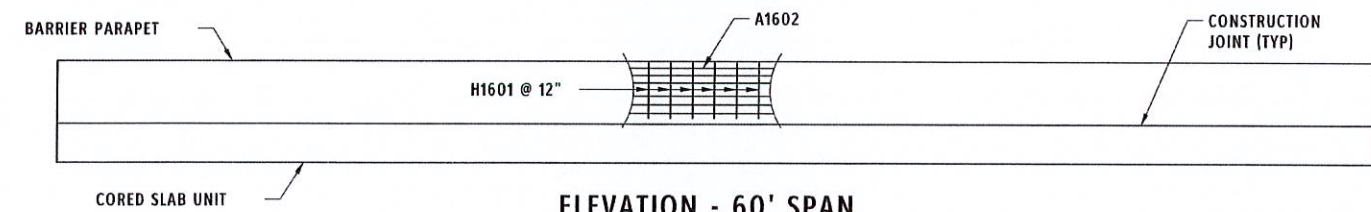
QUANTITIES		
ITEM	UNIT	TOTAL
REINFORCING STEEL	LB	763
LENGTH OF BARRIER PARAPET	LF	60.0

ESTIMATED QUANTITIES - ONE 60' SPAN		
ITEM	UNIT	TOTAL
3'-0" x 1'-9" CORED SLAB	LF	538.9
ELASTOMERIC BEARING	EA	18
REINFORCING STEEL FOR STRUCTURES (BRIDGE)	LB	1526
CONCRETE BRIDGE BARRIER PARAPET	LF	120.0

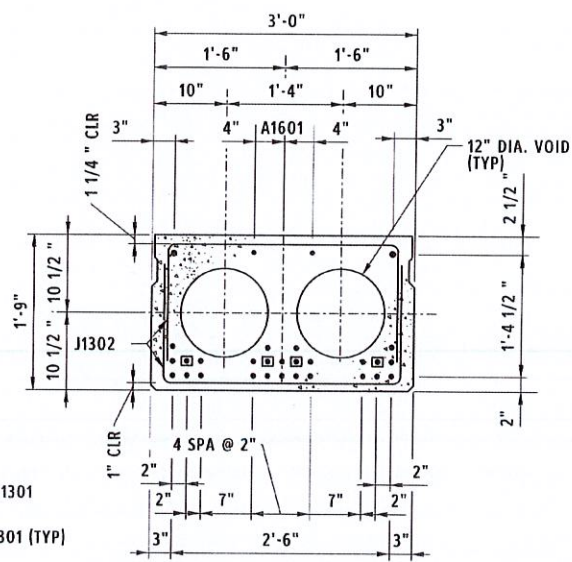
NOTES:
 SHIFT J1302 STIRRUPS AS NECESSARY TO CLEAR TRANSVERSE TIE RODS.
 J1303 AND J1601 BARS NOT SHOWN FOR CLARITY.
 FOR ADDITIONAL NOTES AND DETAILS, SEE SHEETS 8 & 9.
 WP - WORK POINT



PLAN - 60' SPAN
SCALE: 1/4" = 1'-0"

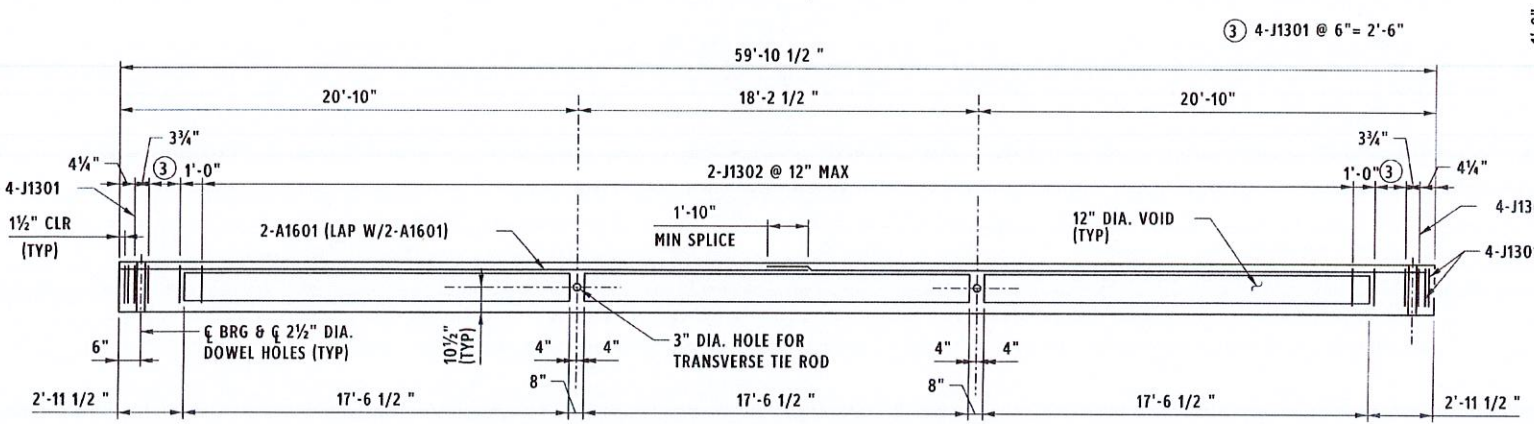


ELEVATION - 60' SPAN
SCALE: 1/4" = 1'-0"
(NOTE: GB1601 BARS IN SLAB NOT SHOWN FOR CLARITY)



INTERIOR SLAB SECTION
28 - 1/2" DIA. L.R. STRAND LAYOUT
SCALE: 1" = 1'-0"

f'c = 7.0 ksi
 f'ci = 4.8 ksi
 DEBOND 6 FEET
 ② FOR EXTERIOR SLAB SECTION DETAILS SEE SHEETS 8 & 9.



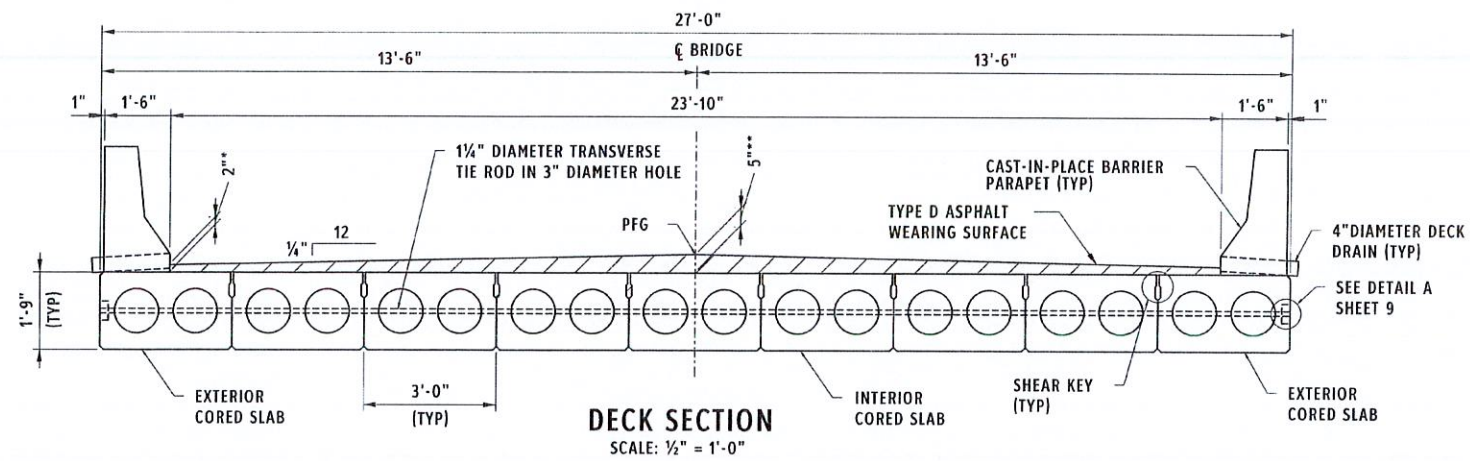
TYPICAL ELEVATION - 60' CORED SLAB UNIT
SCALE: 1/4" = 1'-0"

Professional Engineer Seal for TRC Engineers, Inc. No. 3330, State of North Carolina. License expires 12/31/2020.

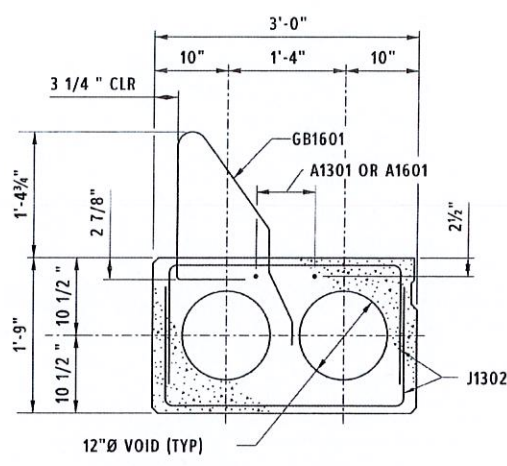
REV.	
REV.	
REV.	
REVIEWED	PCB
QUAN.	
DR.	TLP AEM 09/19
DES.	PCB AEM 09/19
BY	CHK. DATE

NEWBERRY COUNTY
 OLD JOLLYSTREET ROAD OVER
 CANNONS CREEK
**60'-0" PRESTRESSED
 CONCRETE CORED SLAB SPAN**
 3'-0" x 1'-9"

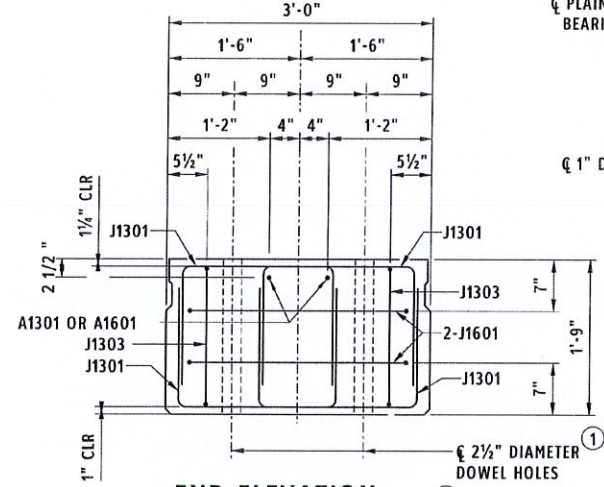
SCALE: VARIES	ROUTE OLD JOLLYSTREET ROAD	COUNTY NEWBERRY
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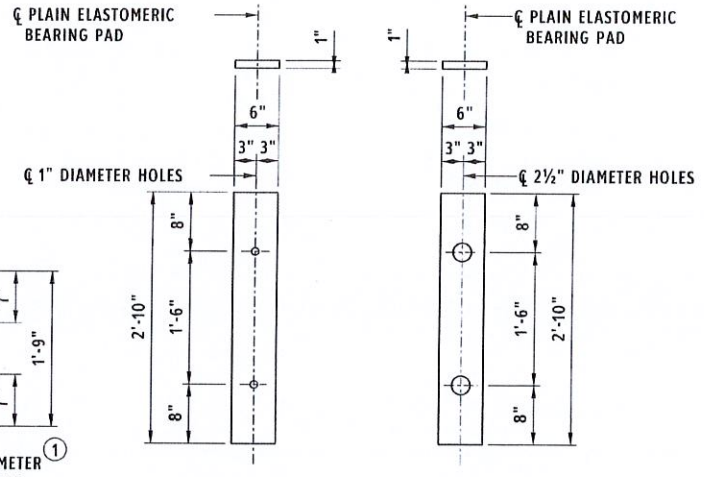
DECK SECTION
SCALE: 1/2" = 1'-0"



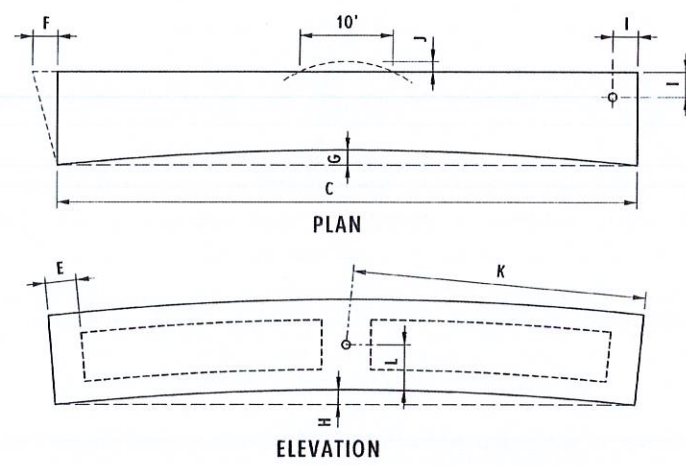
EXTERIOR SLAB SECTION
SCALE: 1" = 1'-0"



END ELEVATION
SCALE: 1" = 1'-0"
INTERIOR SLAB SECTION SHOWN
(EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)



ELASTOMERIC BEARING DETAILS
SCALE: 1" = 1'-0"
(60 DUROMETER)



TOLERANCES

A	DEPTH	+ 3/8" to - 1/8"
B	WIDTH	+/- 1/4"
C	LENGTH (LENGTH OF ADJACENT CORED SLAB UNITS MUST BE WITHIN +/- 1/4")	+/- 1/8" PER 10'
D	POSITION OF VOIDS: VERTICAL	+/- 3/8"
E	POSITION OF VOIDS: HORIZONTAL	+/- 3/8"
F	POSITION OF VOID ENDS: LONGITUDINAL	+/- 1"
G	SQUARE ENDS: DEVIATION FROM SQUARE (HORIZONTAL OR VERTICAL) OR DESIGNATED SKEW	+/- 1/4"
H	HORIZONTAL ALIGNMENT: DEVIATION FROM A STRAIGHT LINE PARALLEL TO THE CENTER LINE OF MEMBER	+/- 3/8"
I	CAMBER: DIFFERENTIAL BETWEEN ADJACENT UNITS	1/4" IN 10', 3/4" MAX
J	CAMBER: DIFFERENTIAL BETWEEN HIGH AND LOW MEMBERS OF THE SAME SPAN	3/4" MAX
K	POSITION OF DOWEL HOLES: DEVIATION FROM PLAN POSITION	+/- 1/4"
L	WIDTH: DIFFERENTIAL OF ADJACENT SPANS IN THE SAME STRUCTURE	+/- 3/4"
M	BEARING AREA: DEVIATION FROM PLAN SURFACE	+/- 1/16"
N	LOCAL SMOOTHNESS	1/4" IN 10'
O	HORIZONTAL POSITION OF HOLES FOR TRANSVERSE TIE RODS	+/- 1/2"
P	VERTICAL POSITION OF HOLES FOR TRANSVERSE TIE RODS	+/- 3/8"
Q	POSITION OF STRANDS	+/- 1/4"

NOTES:
See Section 704 of the Standard Specifications and the Special Provisions for additional requirements and information regarding prestressed concrete cored slab units. Submit shop drawings in accordance with the Standard Specifications.

Include all costs associated with furnishing, fabricating, and placing concrete, prestressing strands, and reinforcing steel cast into the cored slab units in the unit price bid for 3'-0" x 1'-9" Cored Slab.

Use prestressing strands that conform to the latest AASHTO M 203 for grade 270 (low relaxation).

Use reinforcing steel that conforms to ASTM A 706 Grade 60.

The tensioning load in all 1/2" Dia. low relaxation strands is 31.0 kips. Do not release the strands until the compressive strength of the concrete has reached the value shown for f'ci.

When casting the cored slabs, use a positive hold-down system to prevent the voids from rising or moving sideways. Use a non-corrosive hold-down system that is designed to remain in place until the concrete attains the specified release strength. At least three weeks prior to casting the cored slab units, submit to the engineer, detailed drawings of the proposed hold-down system. Include structural details, locations, and spacing for the proposed hold-down system in the submittal.

Always maintain cored slab units in an upright position. Use lifting devices located within 2'-6" of the ends to lift or handle the cored slab units. Provide a 1" deep recess at the lifting devices. Grout the recesses prior to waterproofing the top surface of the cored slab units. Do not permit the cored slab units to be placed or stored on interior supports causing negative moments.

Tie rod assemblies include a 1/4" Dia. rod, two heavy hex nuts, two lockwashers, and two 5" x 5" x 5/8" plate washers. Thread 8" on each end of the tie rods. Provide tie rods meeting the requirements of ASTM A 563, Grade A. Galvanize tie rods and all hardware in accordance with ASTM A 123, ASTM A 153, or ASTM F 2329 as applicable. Tie rods are to be installed for test fit during fit up of span in casting yard. Include all costs associated with furnishing and installing tie rod assemblies in the unit price bid for 3'-0" x 1'-9" Cored Slab.

Place cored slab units so that the maximum transverse joint width at any location along the bent does not exceed 1-7/8".

Grout all shear keys, dowel holes, and recesses for transverse tie rods after tightening the transverse tie rods. At expansion ends of slab units, fill the dowel holes with cold applied elastic filler to 1/2" above the top of dowels and fill the remaining portion with grout. After the grout has cured for a minimum of three days, and has attained the required strength, place the barrier parapet.

Provide deck drains made of 4" nominal diameter fiberglass pipe meeting the requirements of ASTM D 2996. Include all costs associated with furnishing and installing deck drains in the unit price bid for Concrete Bridge Barrier Parapet.

Apply a bridge deck waterproofing system, that complies with the requirements of Section 814 of the Standard Specifications, to the top surface of the cored slab units prior to placing the asphalt wearing surface.

Include all costs associated with furnishing and installing joint, shear key, recess, and dowel hole filler materials including grout, backer rod, and cold applied elastic filler in the unit price bid for 3'-0" x 1'-9" Cored Slab.

For locations of fixed and expansion bearings, see "Bridge Plan & Profile".

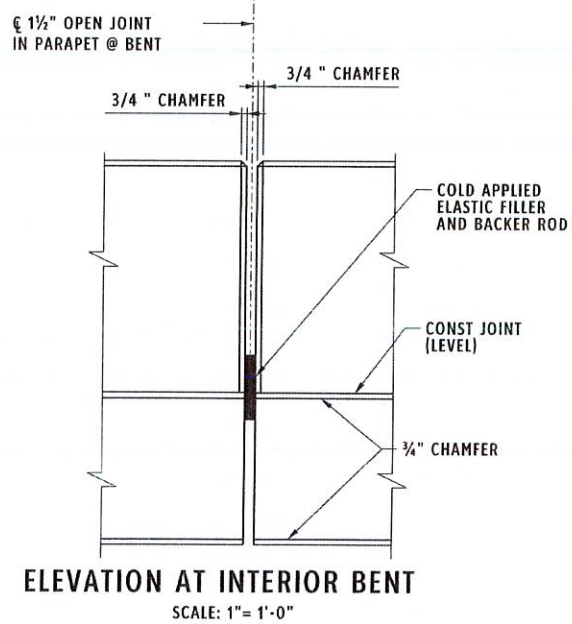
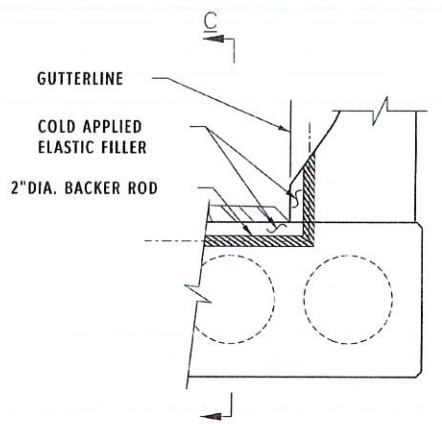
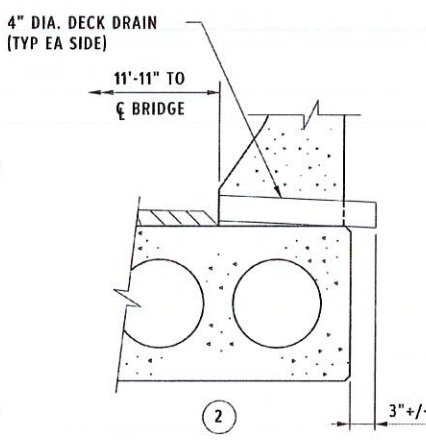
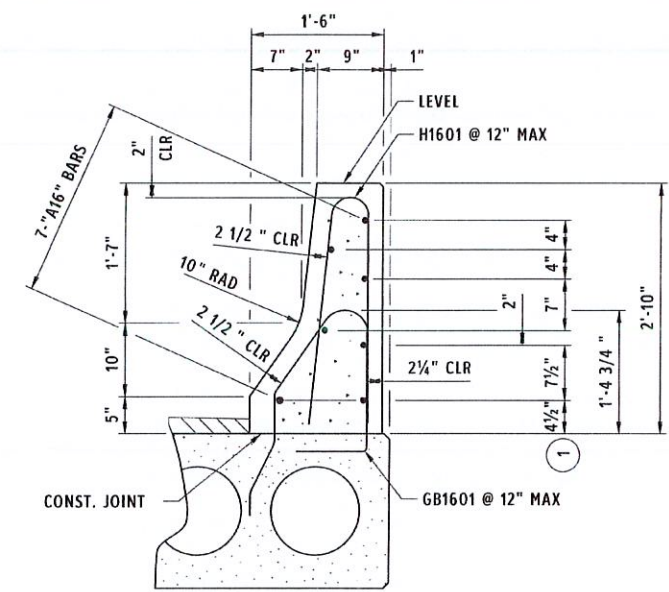
For locations of deck drains, see Sheets 6 & 7.

- 1 REMOVE ALL PIPES PRIOR TO GROUTING.
- 2 FOR PRESTRESSED STRAND LAYOUT, SEE SECTIONS ON SHEETS 6 & 7.

* PROVIDE 2" OF ASPHALT WEARING SURFACE ALONG GUTTER LINES THROUGHOUT LENGTH OF BRIDGE.

** PROVIDE 5" OF ASPHALT WEARING SURFACE ALONG CENTERLINE THROUGHOUT LENGTH OF BRIDGE.

				REV. _____ QUAN. _____ DR. TLP AEM 09/19 DES. PCB AEM 09/19 BY CHK. DATE	REVIEWED PCB SCALE: VARIES ROUTE: OLD JOLLYSTREET ROAD COUNTY: NEWBERRY
<p align="center">NEWBERRY COUNTY OLD JOLLYSTREET ROAD OVER CANNONS CREEK</p> <p align="center">PRESTRESSED CONCRETE CORED SLAB DETAILS SHEET 1 OF 2</p>					



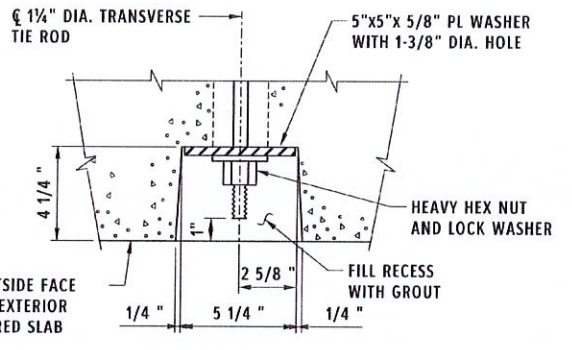
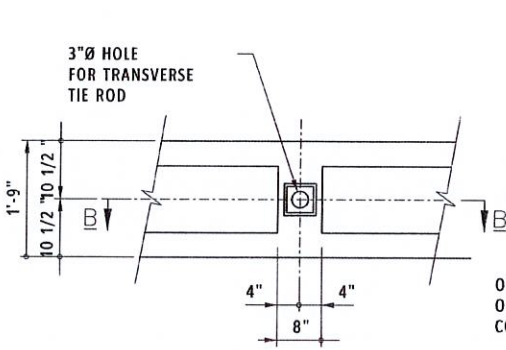
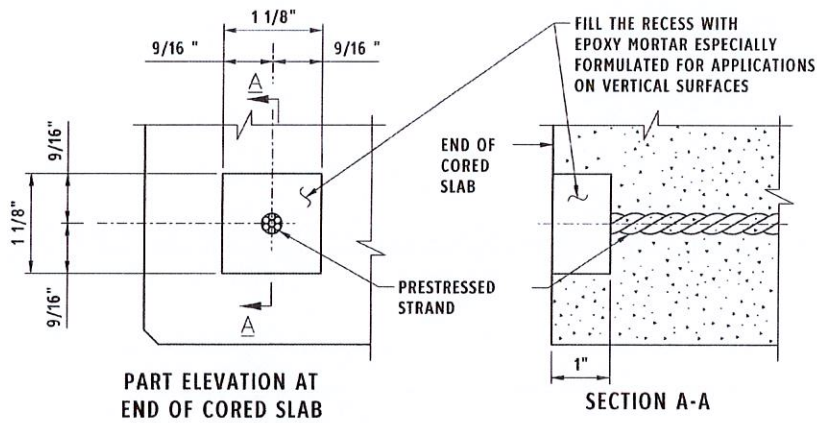
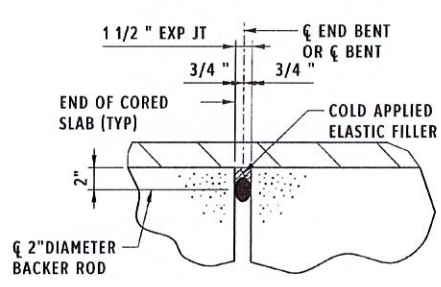
Notes:
For additional notes and details see Sheet 8.
① Adjust bottom "A16" bars to clear deck drains.
② Place end of deck drains flush with face of barrier parapet on traffic side. Raise the traffic end of the drain 1/2" by placing the drain on a bed of grout and sloping to provide positive drainage. Place asphalt to provide positive drainage.
At no additional expense to the County, it is permissible to provide coupling for deck drains that facilitates slip forming of the barrier parapet.

SECTION THRU BARRIER PARAPET
(DECK DRAINS NOT SHOWN)
SCALE: 1" = 1'-0"

DRAIN DETAIL
SCALE: 1" = 1'-0"

INTERIOR BENT JOINT DETAIL
SCALE: 1" = 1'-0"

ELEVATION AT INTERIOR BENT
SCALE: 1" = 1'-0"

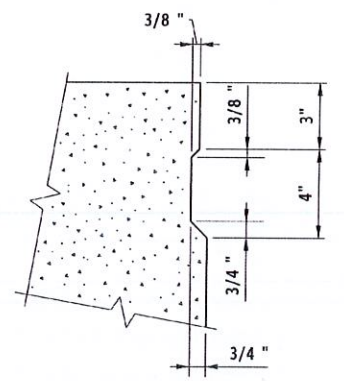
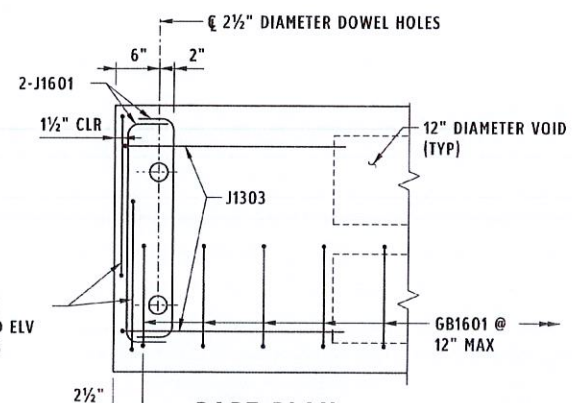
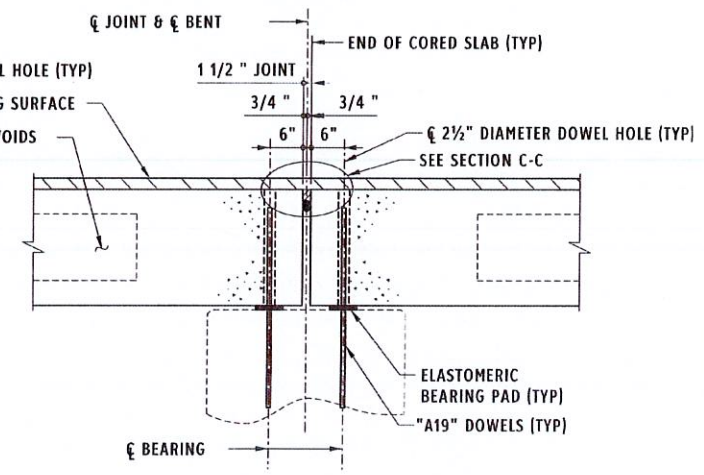
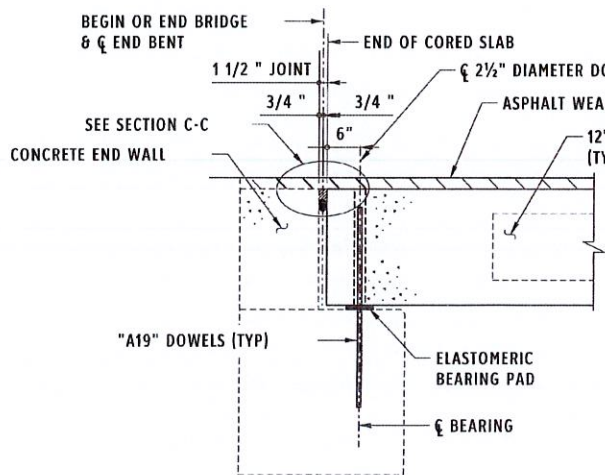


SECTION C-C
SCALE: 1 1/2" = 1'-0"

GROUTED RECESS AT END OF PRETENSIONED STRAND
SCALE: 1" = 1'-0"

ELEVATION VIEW
SCALE: 3/4" = 1'-0"

SECTION B-B
SCALE: 3" = 1'-0"



SECTION AT END BENT
SCALE: 3/4" = 1'-0"

SECTION AT INTERIOR BENT
SCALE: 3/4" = 1'-0"

PART PLAN EXTERIOR SLAB
SCALE: 1" = 1'-0"

SHEAR KEY DETAIL
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.
SCALE: 3" = 1'-0"

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REVIEWED	PCB
QUAN.	
DR.	TLP AEM 09/19
DES.	PCB AEM 09/19
BY	CHK. DATE

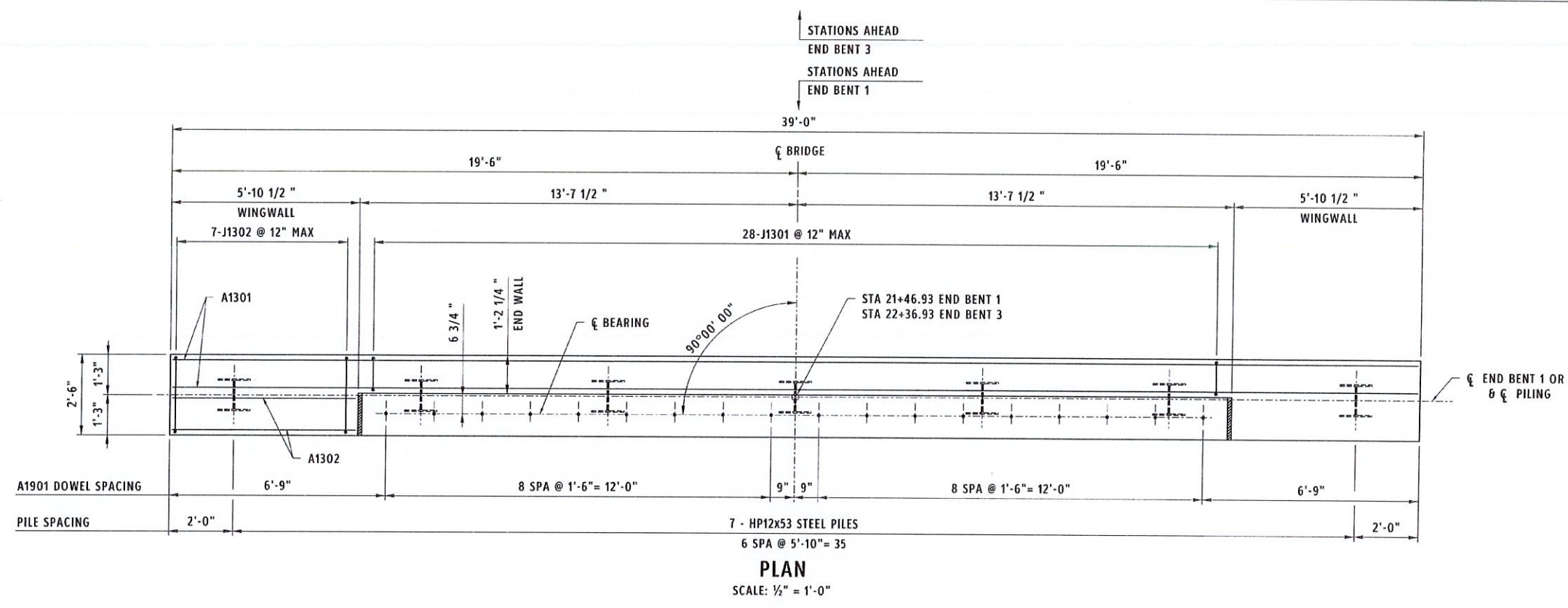
NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER CANNONS CREEK

PRESTRESSED CONCRETE CORED SLAB DETAILS
SHEET 2 OF 2

SCALE: VARIES	ROUTE: OLD JOLLYSTREET ROAD	COUNTY: NEWBERRY
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Notes:

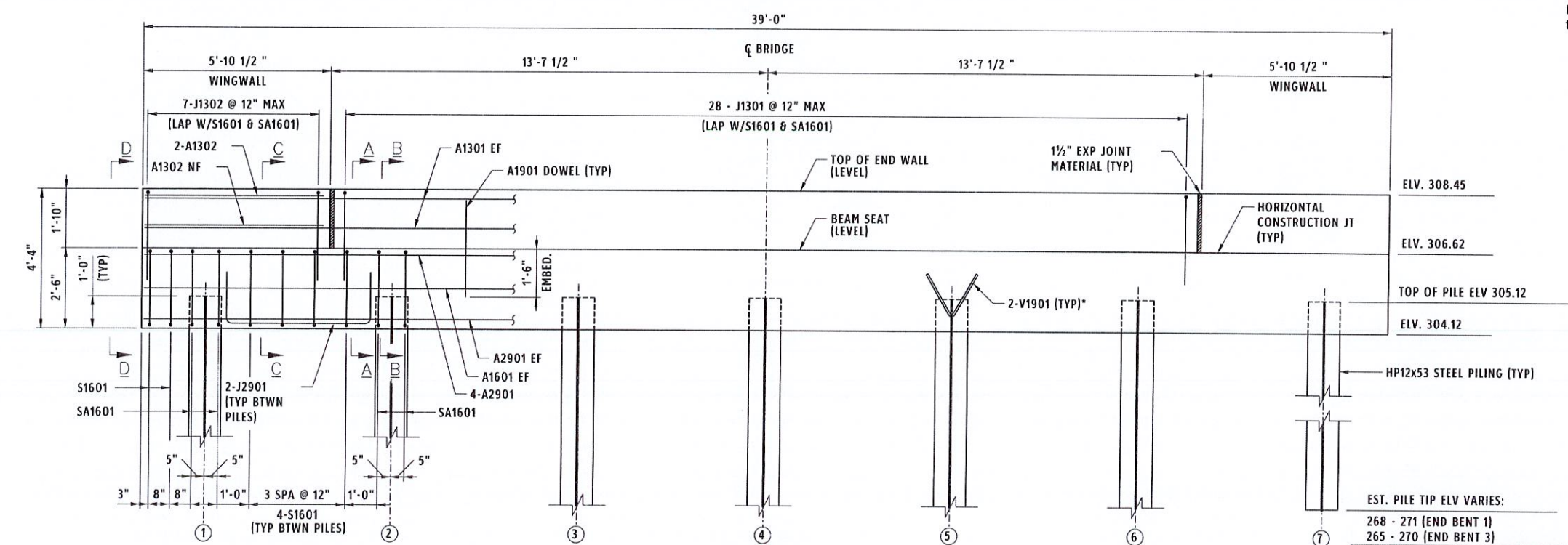
- End Bent 1 and End Bent 3 are identical.
- For Sections A-A, B-B, C-C and D-D, see Sheet 11.
- The maximum factored axial pile load is 60 tons.
- The geotechnical resistance factor is 0.5.
- The required ultimate axial compressive pile capacity is 120 tons.
- Piles should be driven to the upper surface of partially weathered rock with driving criteria established by Wave Equation Analysis.
- The HP12x53 piling shall be fitted with reinforced pile tips. The reinforced pile tips shall be equipped to penetrate partially weathered rock using teeth and installed on the piles according to the manufacturers recommendations and standard specifications.
- Cast end wall and wingwall above the construction joint after all cored slab units have been placed and 1/4" transverse tie rod post-tensioned.



DRIVABILITY ANALYSIS PARAMETERS	
Skin Quake (in.)	0.10
Toe Quake (in.)	0.10
Skin Damping (s/ft)	0.05
Toe Damping (s/ft)	0.15
% End Bearing	80%
% Skin Friction	20%
Skin Friction Distribution	Uniform over Embedment length

Method used for controlling installation of piles and verifying their capacity: Wave Equation Analysis of Piles (WEAP)

BTWN - BETWEEN
EF - EACH FACE
NF - NEAR FACE



* FOR PILE ANCHORAGE DETAIL, SEE SHEET 11

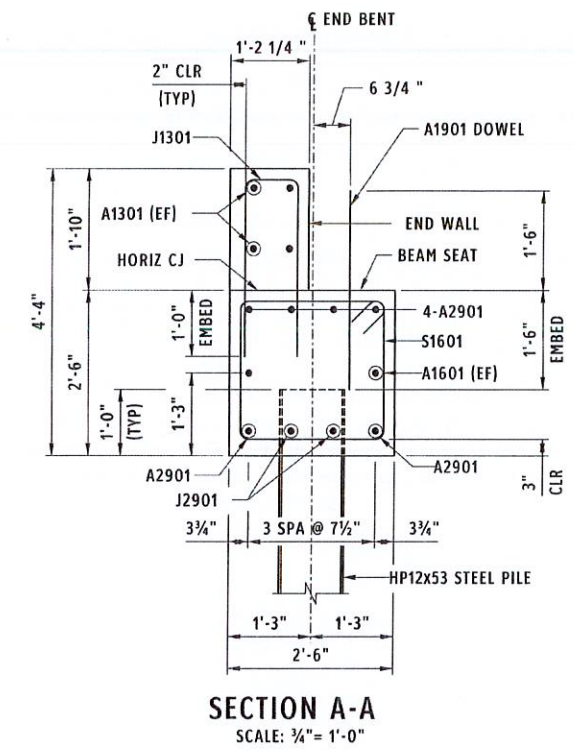
TRC ENGINEERS, INC. No. 3330

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DR.	TLP AEM 09/19
DES.	PCB AEM 09/19
BY	CHK. DATE

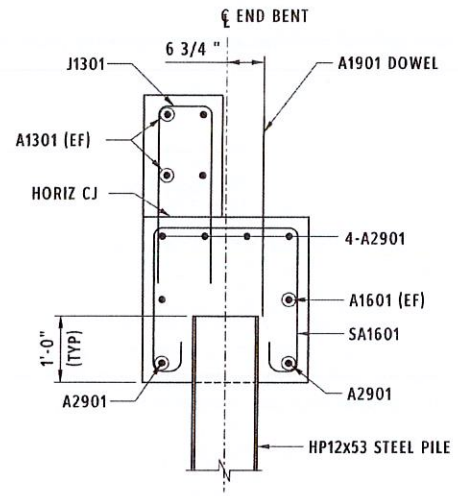
**NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK**

**END BENT
PLAN AND ELEVATION**

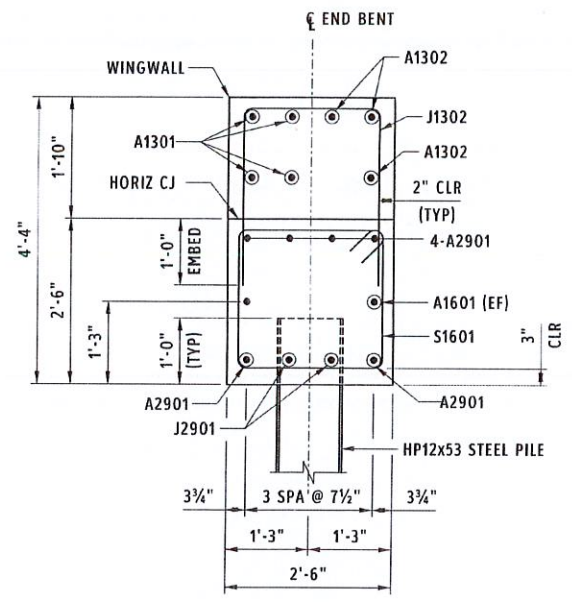
SCALE: 1/2" = 1' ROUTE OLD JOLLYSTREET ROAD COUNTY NEWBERRY



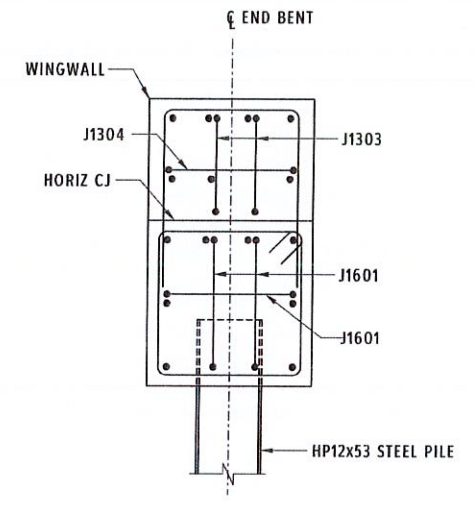
SECTION A-A
SCALE: 3/4" = 1'-0"



SECTION B-B
SCALE: 3/4" = 1'-0"



SECTION C-C
SCALE: 3/4" = 1'-0"



VIEW D-D
SCALE: 3/4" = 1'-0"

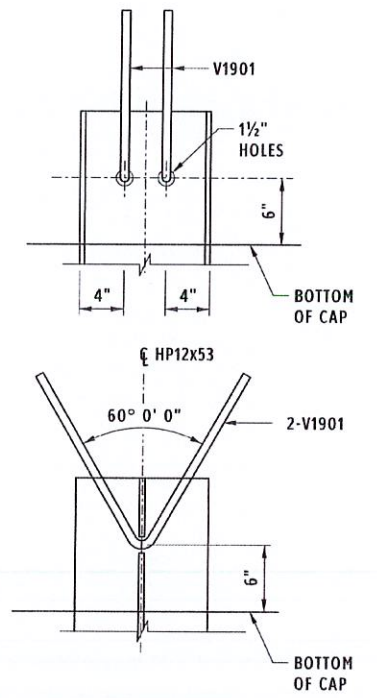
REINFORCING STEEL SCHEDULE*					
MARK	TOTAL REQ'D	"a"	"b"	"c"	LENGTH
A1301	4	38'-8"			38'-8"
A1302	6	5'-7"			5'-7"
A1601	2	38'-8"			38'-8"
A1901	18	3'-0"			3'-0"
A2901	6	38'-8"			38'-8"
J1301	28	0'-10"	2'-8"		6'-2"
J1302	14	2'-2"	2'-8"		7'-6"
J1303	4	1'-6"	0'-4 1/2"		2'-3"
J1304	2	2'-1"	0'-4 1/2"		2'-10"
J1601	6	2'-0"	0'-6"		3'-0"
J2901	12	4'-6"	1'-7"		7'-8"
S1601	28	2'-2"	2'-1"	0'-8"	9'-10"
SA1601	14	2'-2"	2'-1"	0'-7"	7'-6"
V1901	14	1'-6"			3'-0"

FOR REINFORCING BENDING DETAILS, SEE SHEET 14.

ESTIMATED QUANTITIES*		
ITEM	UNITS	QUANTITY
Concrete, Class 4000	CY	13.2
Reinf Steel (Grade 60)	LB	2,063
HP12 x 53 Steel Piling (Grade 50): END BENT 1 / END BENT 3	LF	259 / 281
Reinforced Pile Tips	EA	7

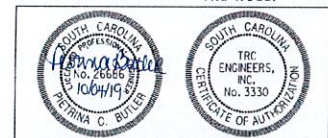
* REINFORCING STEEL SCHEDULE AND QUANTITIES ARE FOR ONE END BENT.

CJ - CONSTRUCTION JOINT
CLR - CLEAR
EF - EACH FACE
HORIZ - HORIZONTAL



PILE ANCHORAGE DETAIL
SCALE: 1 1/2" = 1'-0"

HOLES SHALL BE DRILLED OR PUNCHED.
REINFORCING BARS SHALL BE TIED OR
WEDGED TIGHTLY AGAINST THE TOP OF
THE HOLE.

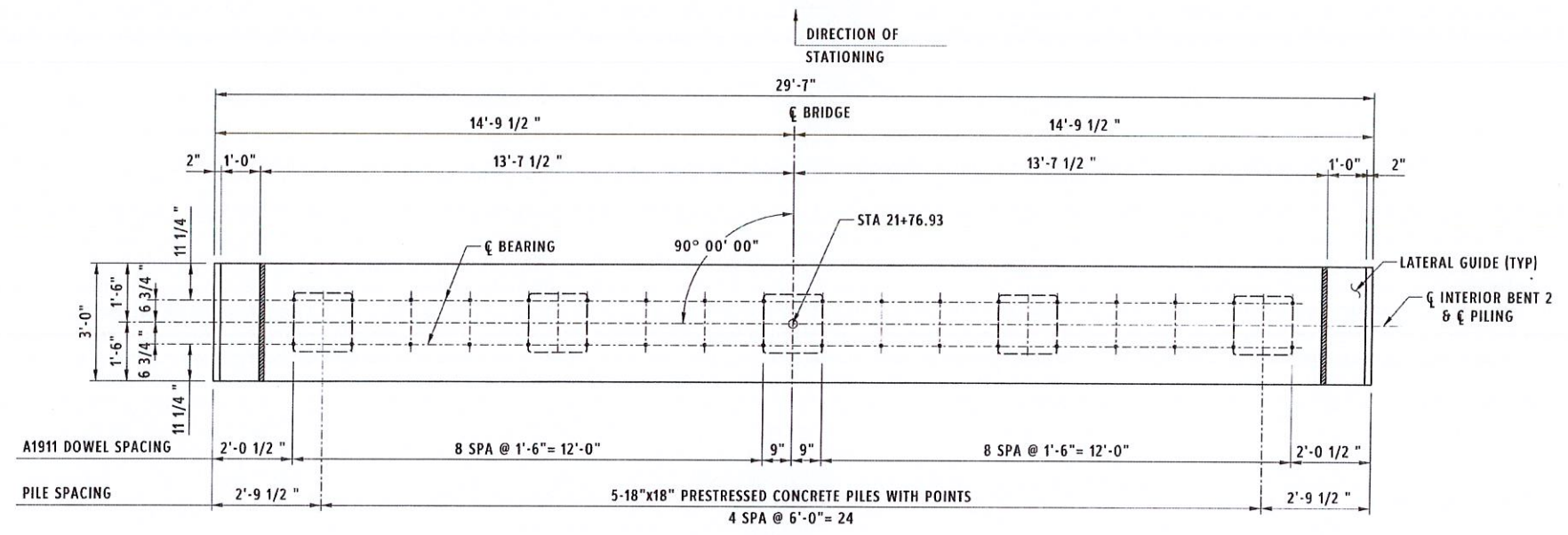


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QUAN.			
DR.	TLP	AEM	09/19
DES.	PCB	AEM	09/19
BY	CHK.	DATE	

NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK

END BENT
SECTIONS AND REINFORCING

SCALE: VARIES	ROUTE OLD JOLLYSTREET ROAD	COUNTY NEWBERRY
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PLAN
SCALE: 1/2" = 1'-0"

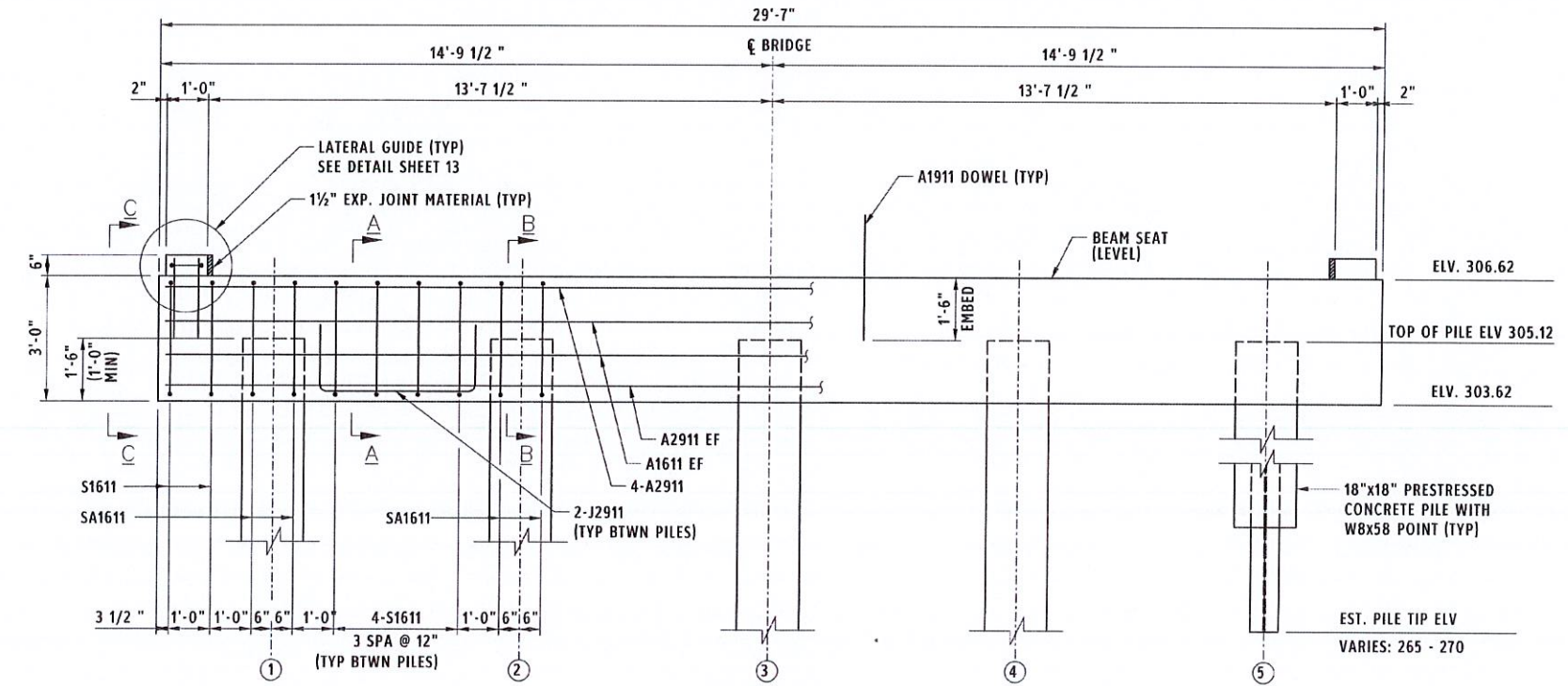
Notes:

- For Sections A-A, B-B and C-C, see Sheet 13.
- The maximum factored axial pile load is 124 tons.
- The geotechnical resistance factor is 0.5.
- The required ultimate axial compressive pile capacity is 248 tons.
- Piles should be driven to the upper surface of partially weathered rock with driving criteria established by Wave Equation Analysis.

DRIVABILITY ANALYSIS PARAMETERS	
Skin Quake (in.)	0.15
Toe Quake (in.)	0.10
Skin Damping (s/ft)	0.20
Toe Damping (s/ft)	0.15
% End Bearing	80%
% Skin Friction	20%
Skin Friction Distribution	Uniform over Embedment length

Method used for controlling installation of piles and verifying their capacity: Wave Equation Analysis of Piles (WEAP)

BTWN - BETWEEN
EF - EACH FACE



ELEVATION
SCALE: 1/2" = 1'-0"

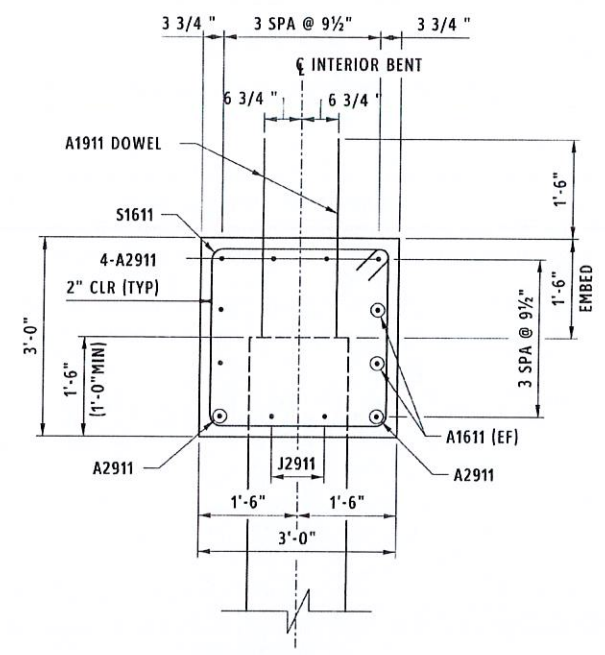


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DR.	TLP	AEM	09/19
DES.	PCB	AEM	09/19
BY	CHK.	DATE	

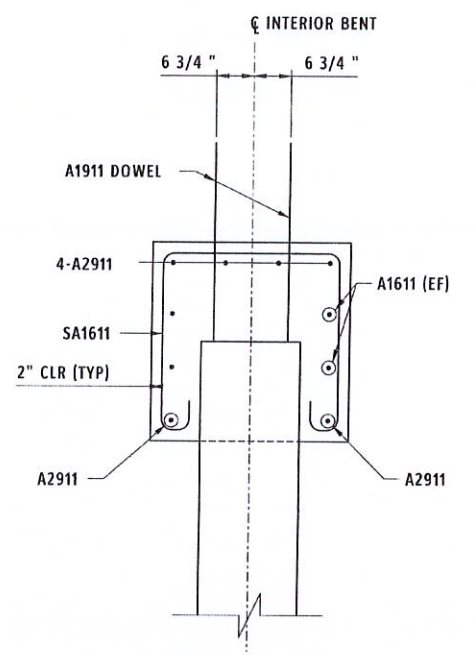
NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK

INTERIOR BENT
PLAN AND ELEVATION

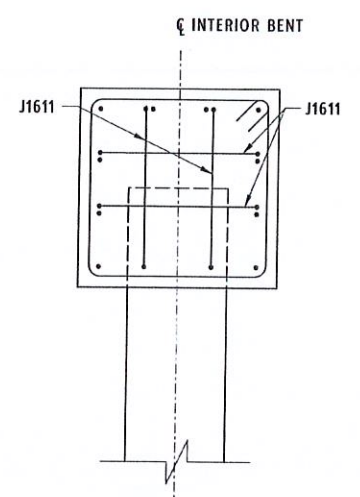
SCALE: VARIES	ROUTE: OLD JOLLYSTREET ROAD	COUNTY: NEWBERRY
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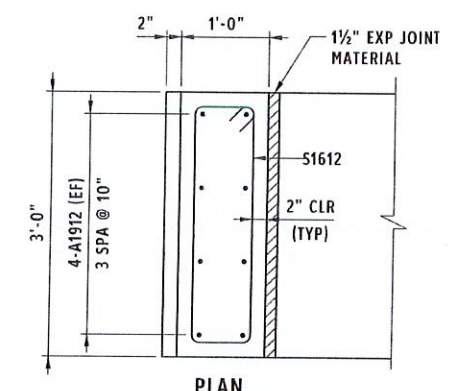
SECTION A-A
SCALE: 3/4" = 1'-0"



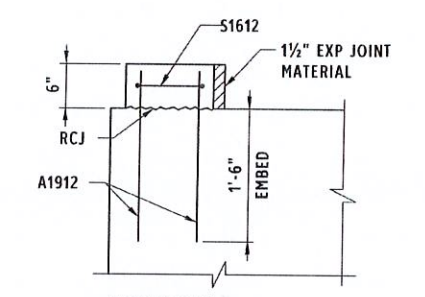
SECTION B-B
SCALE: 3/4" = 1'-0"



VIEW C-C
SCALE: 3/4" = 1'-0"



PLAN



ELEVATION

LATERAL GUIDE DETAIL
SCALE: 1" = 1'-0"

Note:
Lateral guides to be cast after all cored slab units have been placed and 1 1/4" transverse tie rods post-tensioned.

REINFORCING STEEL SCHEDULE					
MARK	TOTAL REQ'D	"a"	"b"	"c"	LENGTH
A1611	4	29'-3"			29'-3"
A1911	36	3'-0"			3'-0"
A1912	16	1'-10"			1'-10"
A2911	6	29'-3"			29'-3"
J1611	8	2'-5"	0'-6"		3'-5"
J2911	8	3'-9"	1'-7"		6'-11"
S1611	20	2'-8"	2'-8"	0'-8"	12'-0"
S1612	2	0'-8"	2'-8"	0'-8"	8'-0"
SA1611	10	2'-8"	2'-8"	0'-7"	9'-2"

FOR REINFORCING BENDING DETAILS, SEE SHEET 14.

ESTIMATED QUANTITIES		
ITEM	UNITS	QUANTITY
Concrete, Class 4000	CY	9.5
Reinforcing Steel (Grade 60)	LB	1,505
Prestressed Concrete Piling (18" SQ.)	LF	175
Prestressed Pile Points (W8x58)	LF	42.5
Pile Build-Up Prep (18" SQ.)	EA	5

CLR - CLEAR
EF - EACH FACE
RCJ - ROUGHENED CONSTRUCTION JOINT

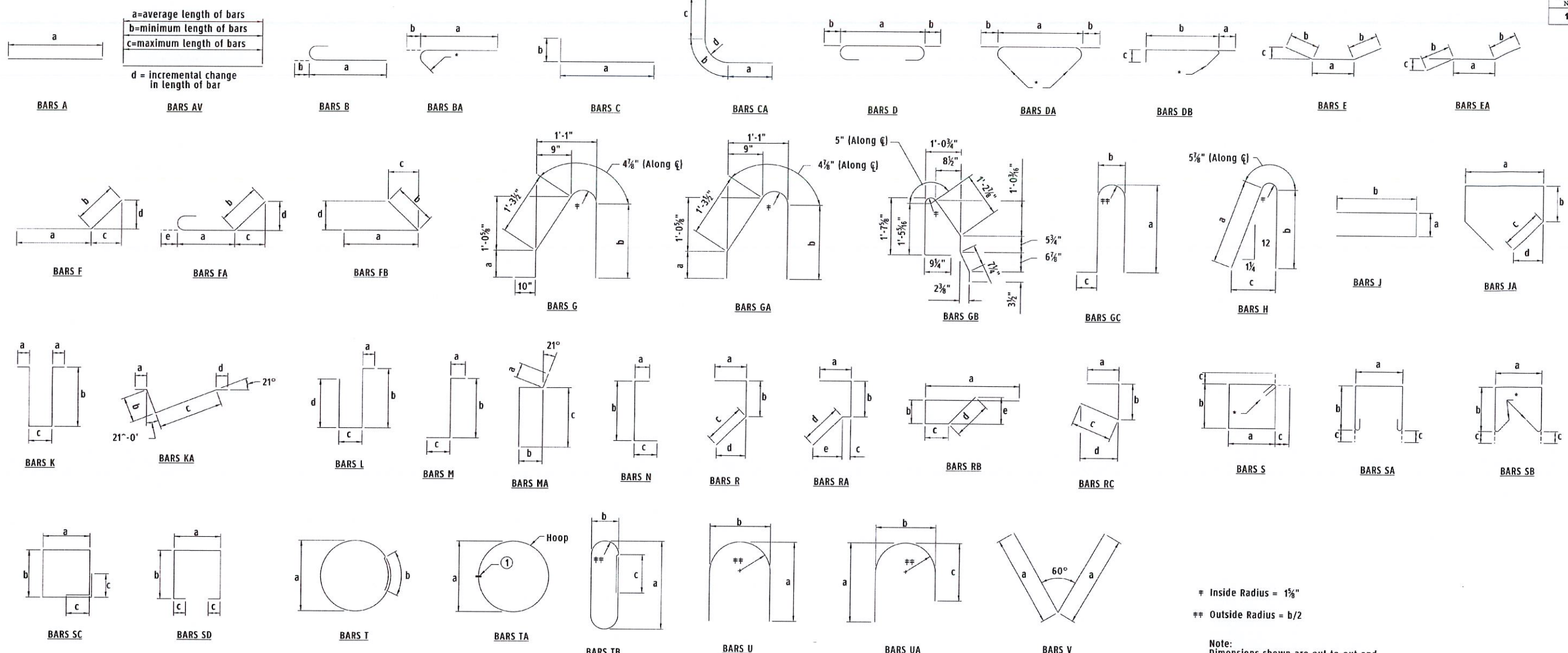
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QUAN.			
DR.	TLP	AEM	09/19
DES.	PCB	AEM	09/19
BY	CHK	DATE	

NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK

INTERIOR BENT
SECTIONS AND REINFORCING

SCALE: VARIES	ROUTE: OLD JOLLYSTREET ROAD	COUNTY: NEWBERRY
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a=average length of bars
 b=minimum length of bars
 c=maximum length of bars
 d = incremental change in length of bar

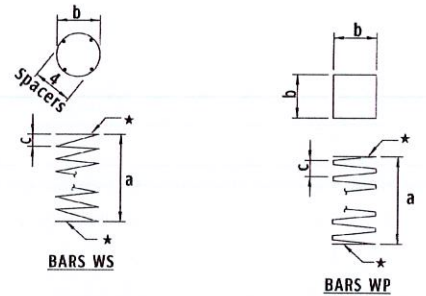
† Inside Radius = 1 1/2"
 †† Outside Radius = b/2

Note:
 Dimensions shown are out-to-out and Standard C.R.S.I. bending details shall apply, except as noted.

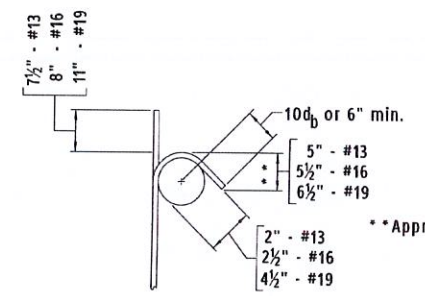
REINFORCING STEEL CODE

TYPE	SIZE	SERIES	COUPLER
A	16	D1	②

② If a mechanical coupler is required, the reinforcing steel code includes a designation of "S" for a standard coupler and a designation of "U" for an Ultimate Coupler. Unless noted otherwise, bar lengths shown in the Reinforcing Steel Schedules are to the center of the coupler. If necessary, adjust the length of the bars to maintain the required concrete cover.



NOTE:
 Splice WS and WP bars with either ultimate welded lap splices or ultimate mechanical couplers. Use over and under lap splices, not side by side, to maintain bar clearances.

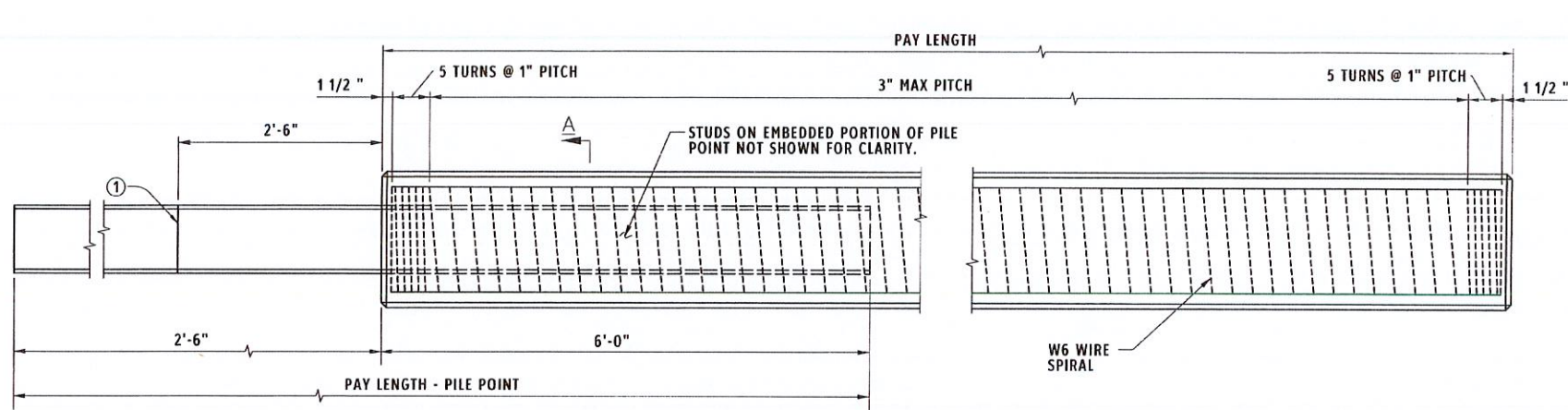


** Approx. Dimension

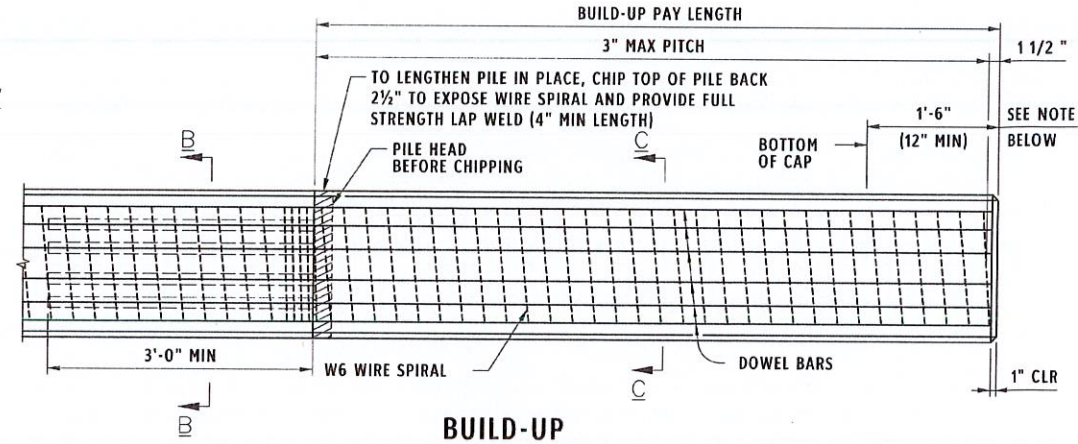
* STANDARD 135° SEISMIC HOOK

* 1 1/2 turns @ a closed pitch secured by an ultimate welded lap splice.
 ① Ultimate Butt-Welded Splice - Use complete joint penetration butt weld conforming to the requirements of Structural Welding Code - Reinforcing Steel (ANSI/AWS D1.4, latest edition) and the Standard Specifications.

		REV. _____ REV. _____ REV. _____	NEWBERRY COUNTY OLD JOLLYSTREET ROAD OVER CANNONS CREEK
		REVIEWED PCB QUAN. _____ DR. TLP AEM 09/19 DES. PCB AEM 09/19 BY CHK. DATE	
SCALE: NTS		ROUTE: OLD JOLLYSTREET ROAD	COUNTY: NEWBERRY



TYPICAL PILE ELEVATION
SCALE: 1"= 1'-0"



BUILD-UP
SCALE: 1"= 1'-0"

NOTES FOR BUILD-UP

Chip back top of piles and field drill holes as shown. Grout dowel bars in the holes using an approved non-shrink grout with $f'c = 5$ ksi. Terminate dowel bars 1" clear from the top of pile. Submit dowel bar lengths to the RCE for approval. Include all costs associated with preparation of the pile for build-up in the unit price bid for Pile Build-up Preparation.

Build up all piles that have an embedment length less than the minimum shown in the plans. Use the build-up details shown on this sheet. The option is available to cast build-ups with bent caps provided rebar and wire spiral are continued a distance equal to one pile width into the cap and the cap is cast with Class 5000 concrete. Pay for cap concrete as Class 4000 concrete regardless of the actual class used. Include an embedment length equal to the pile width, "T", in the pile build-up length measured for payment. Pay for the pile build-up, including all costs for dowel bars, wire spirals, and build-up concrete as an additional length of prestressed concrete piling equal to the build-up pay length shown in the build-up detail.

MATERIALS

Prestressing Strand - Grade 270, Low Relaxation AASHTO M 203
Wire Spiral - AASHTO M 32, M 225
Reinforcing Steel - Grade 60 ASTM A 706
Concrete - Class 5000 Standard Spec. Sect. 701
W or HP Pile Point - Grade 36 AASHTO M 270
Studs - Grade 1015, 1018, or 1020 AASHTO M 169

1 Extension may be attached to embedded portion of pile point prior to handling, transporting, and erecting the composite pile.

2 Determine pick-up points using the following:

1. Determine maximum lengths for pick-up of the composite pile (as a unit or in parts) using the following load assumption and allowable stresses.
 - a. Loading: 1 1/2 times the full dead load
 - b. Allowable tensile stress in precast, prestressed concrete portion of the pile: $0.158/f'c$ (ksi)
 - c. Allowable bending stress in Pile Point section: 20 ksi.
2. Stress and loading criteria are based on normal care in handling the pile. If handling is such that damage in the pile becomes evident, the Engineer may require a higher load factor or lower allowable stress as necessary to insure no damage to piles.
3. Mark piles at pick-up points to indicate proper points for attaching handling lines.

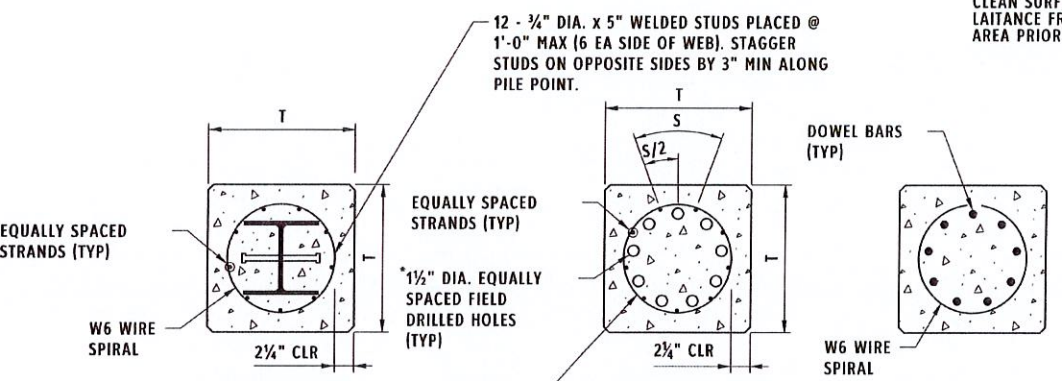
PILE DATA ②				
PILE SIZE "T"	STRANDS	STRESS (ksi)	DOWEL BARS	PILE POINT SIZE
18"	8 - 0.6"	0.890	8 # 29	W8X58

GENERAL NOTES

- Chamfer all exposed edges 1/4" unless noted otherwise.
- All dimensions relative to reinforcing steel are to centers of bars (except as noted).
- Release alternate strands simultaneously at opposite ends without shock.
- Tie wire spiral to cables and reinforcing bars as required to maintain pitch of the spiral. Splice wire spiral using full strength lap welds.
- Anchor the piles into the bent caps using the details shown on this sheet. Include all costs for this work in the unit price bid for prestressed concrete piling.

DESIGN DATA

Low Relaxation Strands
Tensile Strength (fpu) = 270 ksi
Initial Prestress (0.75 fpu) = 202.5 ksi
Class 5000 Concrete
 $f'c = 5$ ksi
 $f'ci = 3.5$ ksi



SECTION A-A
SCALE: 1"= 1'-0"

SECTION B-B
SCALE: 1"= 1'-0"

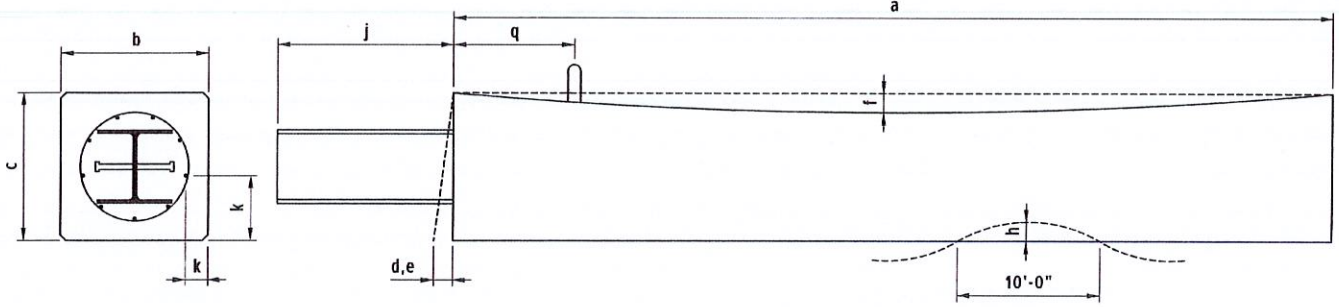
SECTION C-C
SCALE: 1"= 1'-0"

PILE ANCHORAGE DETAILS
SCALE: 1"= 1'-0"

② IF THIS DIMENSION IS LESS THAN 12", BUILD UP THE PILE AS DETAILED ABOVE.

TOLERANCES

- a. Length +/- 1"
- b. Width or Diameter +/- 3/8", + 1/2" (including form draft)
- c. Depth +/- 3/8"
- d. Variation from Specified Plan End
Squareness or Skew +/- 1/4" per 12", +/- 1/2" maximum
- e. Variation from Specified Elevation
End Squareness or Skew +/- 1/4" per 12", +/- 1/2" maximum
- f. Sweep (Variation from straight line parallel to centerline of member) (considered to be a form tolerance) - +/- 1/8" per 10'
- h. Local Smoothness of Any Surface 1/4" in 10'
- j. Projection of steel pile point from end of pile +/- 1"
Position of steel pile point +/- 1/2"
Alignment of steel pile point +/- 1/2"
Length of steel pile point 3", + 6"
- k. Location of Strand +/- 1/4"
- q. Location of Handling Device +/- 6"
Longitudinal Spacing of Stirrups or Spiral Reinforcement +/- 3/4"



CROSS SECTION

ELEVATION



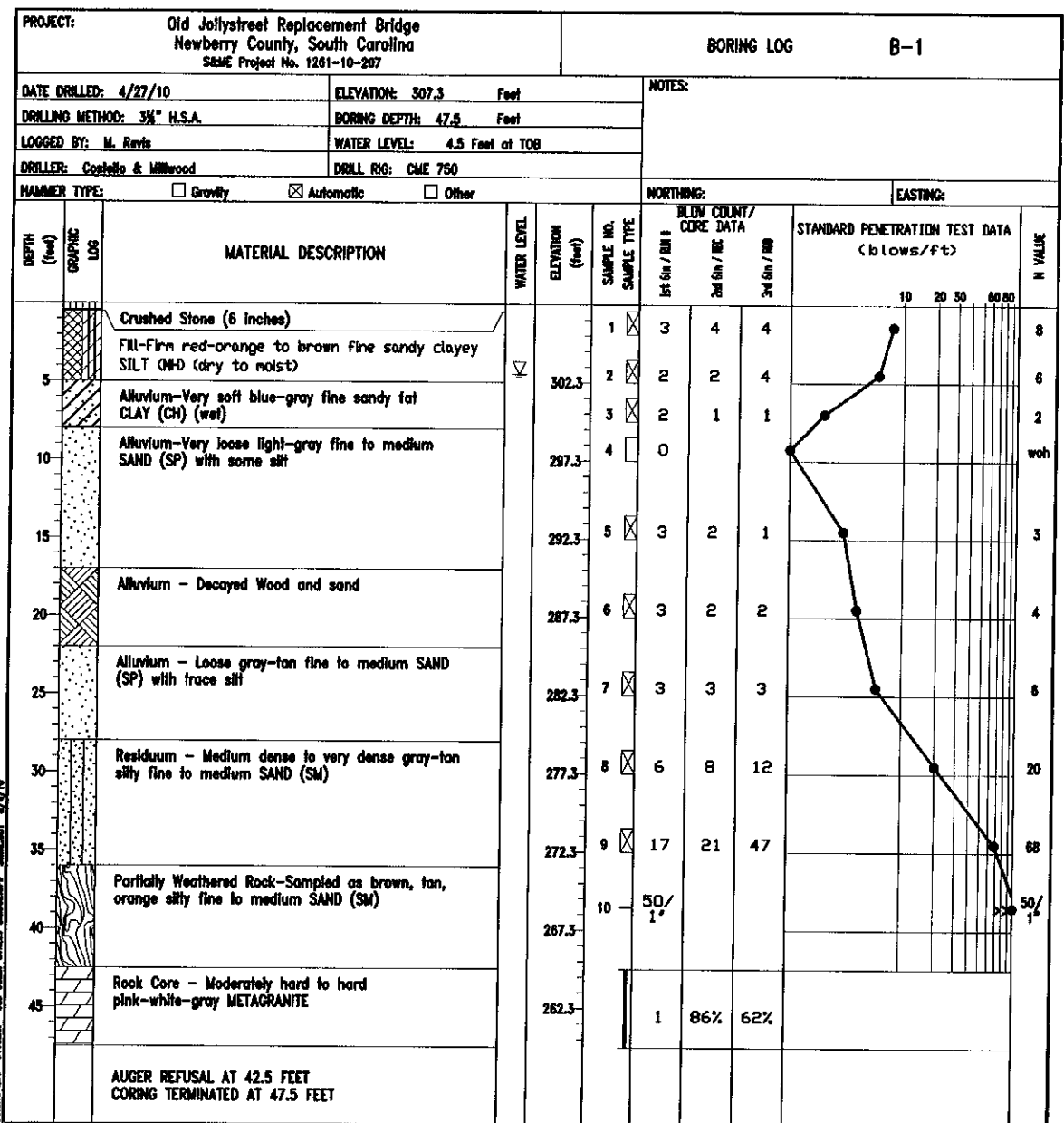
REV.			
REV.			
REV.			
REVIEWED	PCB		
QUAN.			
DR.	TLP	AEM	09/19
DES.	PCB	AEM	09/19
BY	CHK.	DATE	

NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK

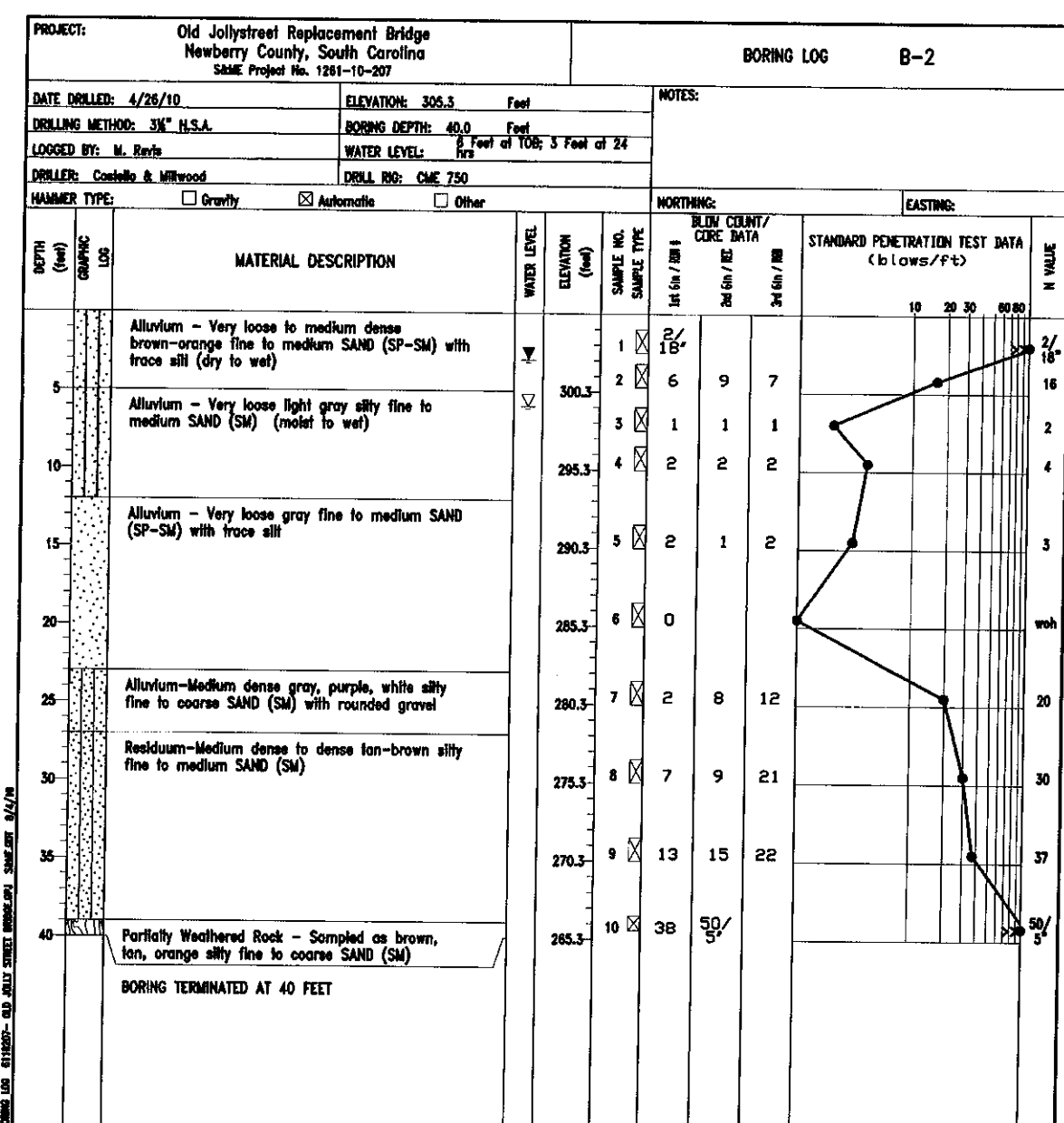
PRESTRESSED CONCRETE PILES WITH POINTS



SCALE: VARIES	ROUTE OLD JOLLYSTREET ROAD	COUNTY NEWBERRY
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- NOTES:
- THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
 - BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
 - STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
 - WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.
- REFERENCE:



- NOTES:
- THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
 - BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
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 - WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.
- REFERENCE:

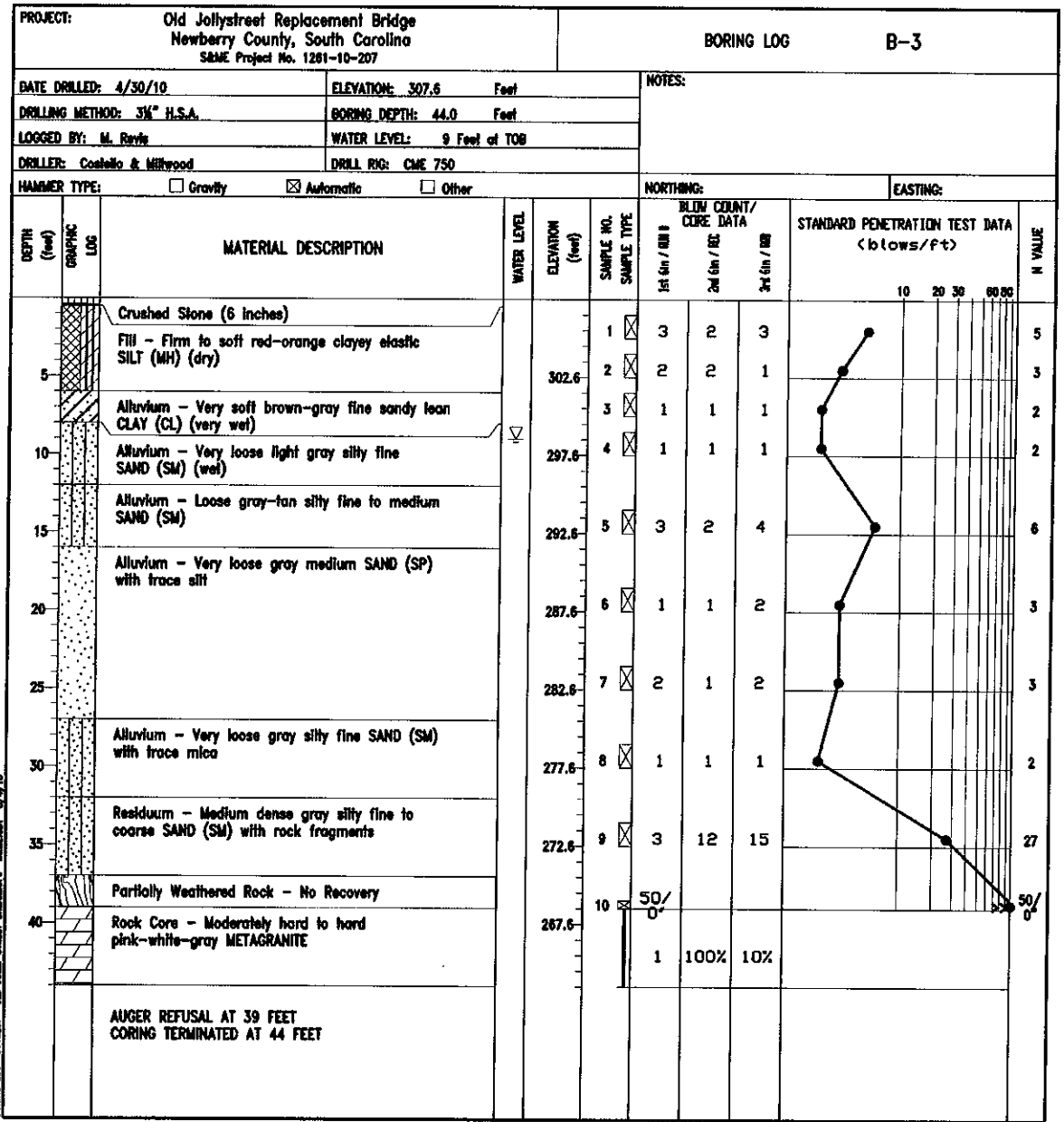


REV.					
REV.					
REV.					
REVIEWED			PCB		
QUAN.					
DR.	TLP	AEM	09/19		
DES.	PCB	AEM	09/19		
BY	CHE	DATE			

**NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK**

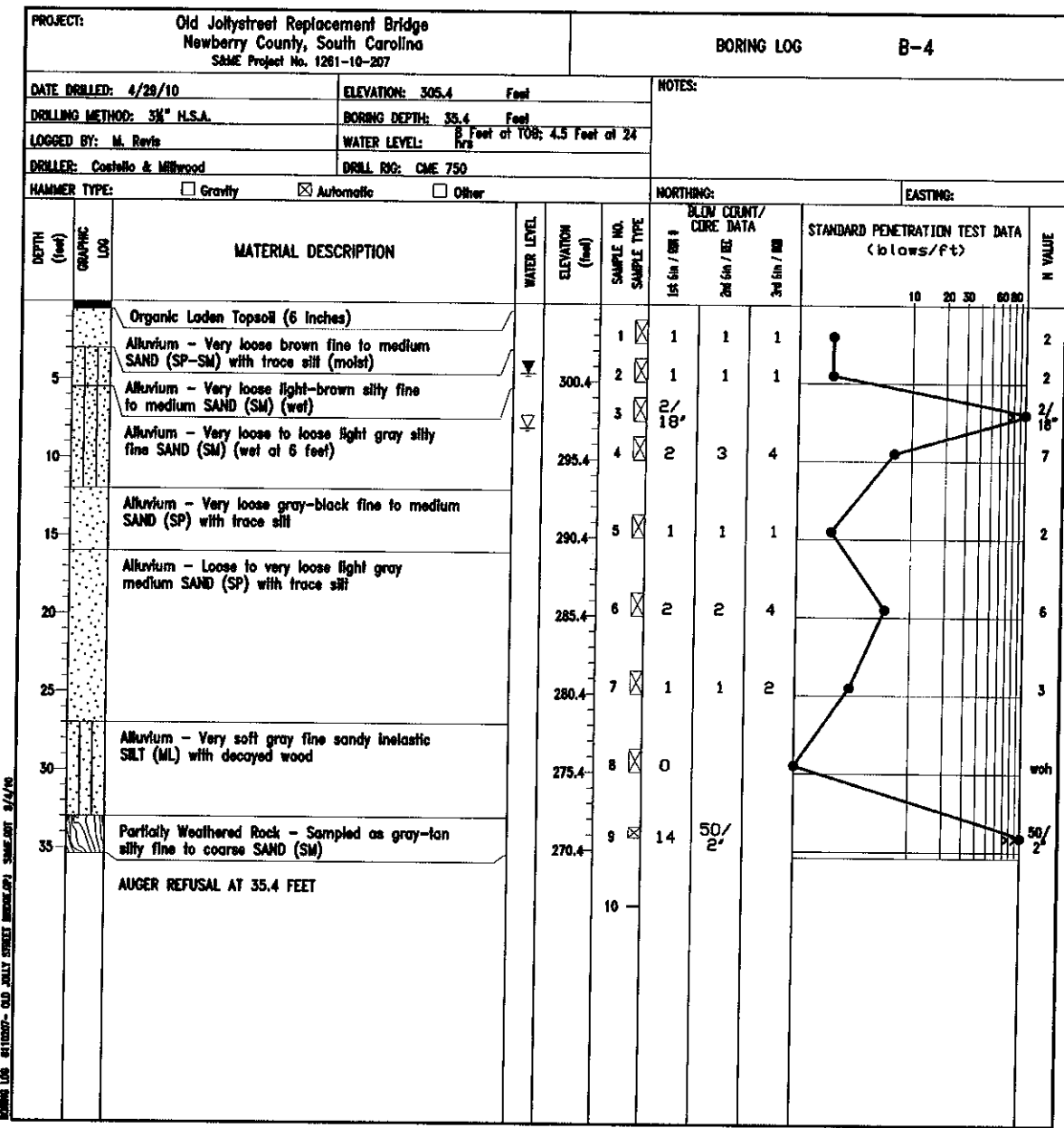
**CORE BORING LOGS
B-1 AND B-2**

SCALE: NTS	ROUTE: OLD JOLLYSTREET ROAD	COUNTY: NEWBERRY
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NOTES:
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 2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
 3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
 4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

REFERENCE:



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 3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
 4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

REFERENCE:



REV.		NEWBERRY COUNTY OLD JOLLYSTREET ROAD OVER CANNONS CREEK
REV.		
REV.		
REVIEWED	PCB	CORE BORING LOGS B-3 AND B-4
QUAN.		
DR.	TLP AEM 09/19	SCALE: NTS
DES.	PCB AEM 09/19	
BY	CHK. DATE	ROUTE OLD JOLLYSTREET ROAD
		COUNTY NEWBERRY

NORTHING: 888659.79 FT
EASTING: 1855978.12 FT
ELEVATION: 304.65 FT



NORTHING: 888682.50 FT
EASTING: 1856065.17 FT
ELEVATION: 304.72 FT



NORTHING: 888427.70 FT
EASTING: 1856324.91 FT
ELEVATION: 308.33 FT



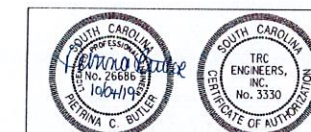
NORTHING: 888755.53 FT
EASTING: 1856261.76 FT
ELEVATION: 307.14 FT



NORTHING: 888972.53 FT
EASTING: 1856196.54 FT
ELEVATION: 307.87 FT



NORTHING: 888635.50 FT
EASTING: 1856475.46 FT
ELEVATION: 303.33 FT



REV.			
REV.			
REV.			
REVIEWED	PCB		
QUAN.			
DR.	TLP	AEM	09/19
DES.	PCB	AEM	09/19
BY	CHK.	DATE	

**NEWBERRY COUNTY
OLD JOLLYSTREET ROAD OVER
CANNONS CREEK**

REFERENCE POINTS

SCALE: 40.1 ROUTE: OLD JOLLYSTREET ROAD COUNTY: NEWBERRY