

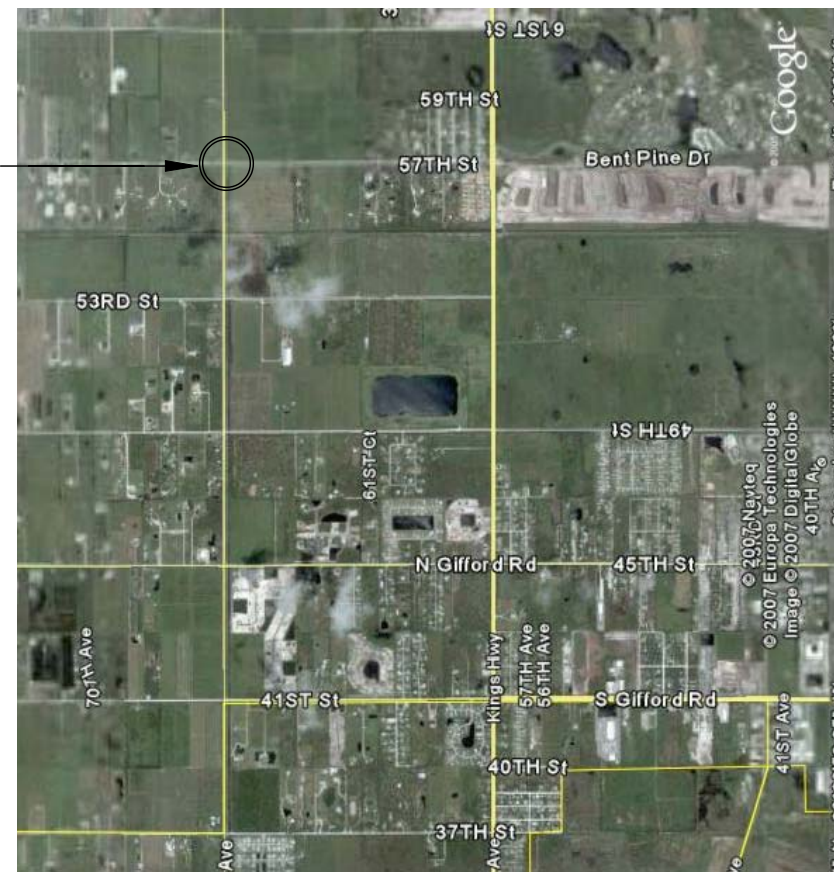
# INDIAN RIVER COUNTY BOARD OF COUNTY COMMISSIONERS



57th Street over Lateral "A" Canal

PROJECT  
C.P. No. 06040

Project Location →



THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS. (BOOKLET DATED JANUARY, 2004)

GOVERNING SPECIFICATIONS: THE FLORIDA DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, DATED 2008, AND SPECIAL PROVISIONS THERETO IF IN NOTED IN THE CONTRACT SPECIFICATIONS FOR THIS PROJECT.

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN ALTERED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

ENGINEER'S CERTIFICATION: I HEREBY CERTIFY THAT THE ATTACHED PLANS AND DESIGN ARE IN GENERAL COMPLIANCE WITH THE DESIGN STANDARDS AND CRITERIA IN EFFECT ON THIS DATE FOR INDIAN RIVER COUNTY ENGINEERING DEPARTMENT AND THE STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION.

DATE \_\_\_\_\_ PROFESSIONAL ENGINEER # \_\_\_\_\_

DATE: Apr 03, 2009 2:38pm C:\Projects\Bridge Design Associates\2005-06\05-01\95 57th St Bridge over Lateral A Canal\B1-57th\_COVER.dwg

VERIFY SCALE

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**BRIDGE DESIGN ASSOCIATES, INC.**  
1402 Royal Palm Beach Blvd, Bldg. 200, Royal Palm Beach, FL 33411  
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**C O N S U L T I N G E N G I N E E R S**  
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NO.	REVISION	DATE	BY

*Department of Public Works*  
**Engineering Division**

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Approved: \_\_\_\_\_  
Drawn: C.A.B.  
Checked: B.C.R.  
Date: 03/16/09  
Field Book No: \_\_\_\_\_

PROJECT:  
Proposed Concrete Bridge for:  
**57th Street over Lateral "A" Canal**  
  
Indian River County, Florida

SEAL

Brian C. Rheault P.E. - 38797  
FLORIDA P.E. NAME & NUMBER

SHEET

B1

PROJECT NO.  
05-619F

## INDEX OF SHEETS – BRIDGE PLANS

B1	COVER SHEET AND LOCATION MAP
B2	INDEX OF SHEETS
B3	PROPOSED SECTION
B4	NOTES
B5	SUMMARY OF QUANTITIES
B6	BRIDGE PLAN
B7	BRIDGE ELEVATION
B8	SUBSTRUCTURE PILE PLAN
B9	PILE DATA TABLE & SOILS REPORT
B10	FINISH GRADE ELEVATIONS
B11	END BENT #1 PLAN & ELEVATION
B12	END BENT #2 PLAN & ELEVATION
B13	END BENT DETAILS
B14	END BENT BILL OF REINFORCING STEEL
B15	TYPICAL PRECAST SLAB PLACEMENT SECTION
B16	PRECAST SLAB PLAN
B17	ENLARGED SLAB PLAN AT SIDEWALK & BARRIERS
B18	PRECAST SLAB DETAILS
B19	PRECAST SLAB DETAILS
B20	PRECAST SLAB DETAILS
B21	PRECAST SLAB DETAILS
B22	APPROACH SLAB PLANS
B23	SHEET WALL DETAILS
B24	MISC. DETAILS

F.D.O.T. STANDARD SHEETS  
INDEX NO.

B25	20600	GENERAL NOTES AND DETAILS FOR PRESTRESSED CONCRETE PILES
B26	20601	PRESTRESSED CONCRETE PILE SPLICES
B27	20614	14" SQUARE PRESTRESSED CONCRETE PILE
B28	20618	18" SQUARE PRESTRESSED CONCRETE PILE
B29	410	CONCRETE BARRIER WALL (CANTILEVER WALL), SHEET 5 OF 22
B30	420	TRAFFIC RAILING BARRIER – (32" F SHAPE), SHEET 1 OF 3
B31	420	TRAFFIC RAILING BARRIER – (32" F SHAPE), SHEET 2 OF 3
B32	420	TRAFFIC RAILING BARRIER – (32" F SHAPE), SHEET 3 OF 3
B33	423	TRAFFIC RAILING BARRIER – (32" VERTICAL SHAPE), SHEET 1 OF 3
B34	423	TRAFFIC RAILING BARRIER – (32" VERTICAL SHAPE), SHEET 2 OF 3
B35	423	TRAFFIC RAILING BARRIER – (32" VERTICAL SHAPE), SHEET 3 OF 3
B36	821	ALUMINUM PEDESTRIAN/BICYCLE BULLET RAILING FOR TRAFFIC RAILING BARRIER – (32" F SHAPE)
B37	822	ALUMINUM PEDESTRIAN/BICYCLE BULLET RAILING DETAILS (SHEET 1 OF 2)
B38	822	ALUMINUM PEDESTRIAN/BICYCLE BULLET RAILING DETAILS (SHEET 2 OF 2)
B39	20910	APPROACH SLABS (RIGID PAVEMENT APPROACHES), SHEET 1 OF 2
B40	20910	APPROACH SLABS (RIGID PAVEMENT APPROACHES), SHEET 2 OF 2

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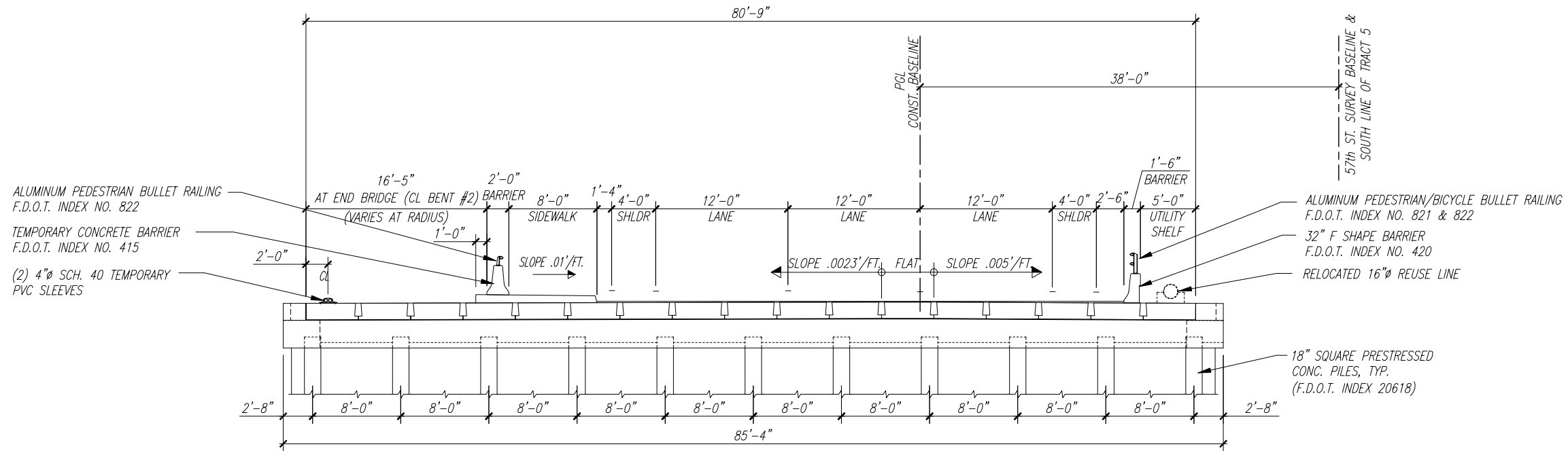
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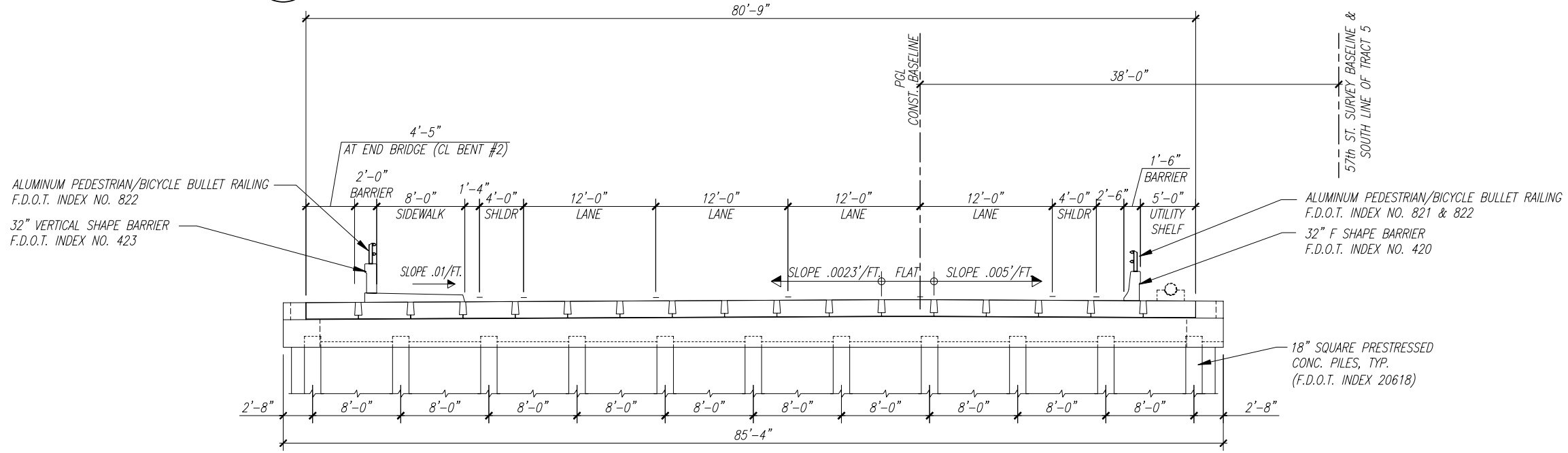
B2

PROJECT NO.  
05-619F



**A** PROPOSED BRIDGE CROSS SECTION LOOKING EAST (PHASE I)

Scale: 3/16" = 1'-0"



**B** PROPOSED BRIDGE CROSS SECTION LOOKING EAST (PHASE II)

Scale: 3/16" = 1'-0"

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SHEET

**B3**

PROJECT NO.  
 05-619F

**GENERAL NOTES**

GENERAL SPECIFICATIONS:  
Florida Department of Transportation Standard Specification for Road and Bridge Construction (2004).

DESIGN SPECIFICATION:  
2004 Edition of the AASHTO LRFD Bridge Design Specifications with current interims.  
2004 Edition of the F.D.O.T. Structure Design Guidelines with current interims.

DESIGN LOADING:  
HL-93

**CONCRETE:**

Note: Concrete to be in compliance with F.D.O.T. Specifications 346.

CONCRETE CLASS	MIN. 28 DAY COMPRESSIVE STRESS (ksi)	LOCATION OF CONCRETE IN STRUCTURE
Class II	fc' = 3.4	CIP Closure Pours, Pour Strips and Barriers
Class II (Bridge Deck)	fc' = 4.5	Cast-in-place Approach Slabs
Class V (Special)	fc' = 6.0	Prestressed Slabs
Class II	fc' = 3.4	Cast-in-place Pile Caps and Sheet Piles
Class V (Special)	fc' = 6.0	Prestressed Piling

CONCRETE:  
1. Provide 3/4 inch chamfers on all exposed edges and corners except as otherwise noted.

2. Construction joints will be permitted only at the locations indicated on the plans, additional construction joints or alterations to those shown will require approval by the engineer.

REINFORCEMENT:  
1. Reinforcement shall be ASTM A-615, Grade 60. Spiral ties for prestressed concrete piles shall be manufactured from cold drawn steel wire meeting the requirements of ASTM A82.  
2. All dimensions pertaining to location of reinforcing are to centerline of bars except where the clear dimension is shown to face of concrete.  
3. Reinforcement detail dimensions are out-to-out of bars.

MINIMUM CONCRETE COVER:  
CIP Superstructure = 2 in. (Typical except as noted).

CIP Substructure/Bent Cap = 4 in. for external surfaces cast against earth.  
CIP Substructure/Bent Cap = 3 in. for other external surfaces.

CIP Substructure/Sheet Walls = 3 in.

Concrete covers shown in the plans do not include placement and fabrication tolerances unless shown as "minimum cover". See F.D.O.T. Standard Specifications for allowable tolerances.

DESIGN METHOD:  
All elements were designed using the LRFD (Load and Resistance Factor Design)

PILE LOAD:  
See Sheet B9 for Pile Loads.

PILES:  
14 inch square prestressed concrete piles.  
18 inch square prestressed concrete piles.

FUTURE WEARING SURFACE:  
15 pounds per square foot.

SURFACE FINISH:  
All exposed surfaces of end bent wing walls, barriers, and exterior face of deck units & approach slabs shall receive a "Class 5 applied finish coating".

ENVIRONMENT:  
Superstructure: Slightly Aggressive  
Substructure: Slightly Aggressive

PAYMENT:  
Payment for incidental items which are not covered in the individual bid items shall be included in the contract unit price for the bid items.

**PRESTRESSED MEMBERS NOTES**

FINISH:  
The top of prestressed units shall be finished smooth, dense surface with a steel trowel, then coarsely broomed or raked to provide a surface suitable for bonding to asphalt. All other surfaces of the unit shall receive a "Class 3" surface finish. The edge of the top of the surface of the units shall be finished by use of a small radius tool.

CONCRETE STRENGTH:  
At transfer of the prestressing load, the cylinder strength of the concrete shall be 4000 psi. It shall be 6000 psi at twenty-eight (28) days for slab units.

HANDLING AND STORAGE:  
During handling and storage, the prestressed units must be picked up at the ends of the units to prevent damage. The prestressed units must be stored in an up-right position at all times.

FORMS AND PALLETS:  
All prestressed units shall be cast on concrete based pallets and in metal forms. Keyway form may be wood.

STRAND EXTENSION:  
All strands shall extend 2-1/2 inches beyond the ends of the prestressed units.

SHOP DRAWINGS:  
The contractor shall submit seven (7) sets of shop drawings, showing complete details of the proposed prestressed units. The drawings shall include reinforcing steel, prestressing steel, prestressing bed layout, tensioning and detensioning schedules, and all computations required to control the work.

BEARING PADS:  
Neoprene bearing pads shall be 1/2 inch X 6 inch strips in accordance with section 932-2 of the specifications. The pads may be continuous strips or multiple lengths of 2 feet and 0 inches minimum length. The pads may be cut from commercially available sheets.

PAYMENT:  
The contract unit prices for the precast-prestressed units shall include the units, prestressed strands, reinforcing steel shipped with the units, post-tension cables and anchor assemblies, and temporary post tensioning cables and hardware, neoprene bearing pads, premoulded expansion material, epoxy grout and non-shrink grout.

POST TENSIONING:  
Post tension cables shall be three (3) .6 inch diameter 270k LO-LAX strands or equivalent. Cables should be in accordance with ASTM specification A-421. The cables shall be stressed and anchored at 132,000 pounds per post-tension cable. The transverse post-tension cables shall not be tensioned until the concrete in the joints and keyways has been cured for a minimum of seventy-two (72) hours or has achieved 75% of design strength.

CABLE ANCHORAGES:  
The fabricator shall submit details of the cable anchorage and anchorage reinforcement details for approval with the shop drawings.

**CONSTRUCTION NOTES**

EQUIPMENT ON UNITS:  
Before heavy construction equipment is permitted on the structure during construction, sketches showing the axle spacing and anticipated loadings shall be submitted to and approved by the Engineer.

POST-TENSIONING SEQUENCE:  
Post-tensioning shall be done according to the number sequence shown on the precast slab layout sheet.

FILLING CONCRETE JOINTS BETWEEN UNITS:  
Joints between slab units shall be poured a minimum of seventy-two (72) hours or have 75% of the design strength before any post-tensioning operations can begin. Care should be taken to prevent intrusion of mix into ducts.

GROUTING POST-TENSION DUCTS:  
The post-tensioned strands shall be grouted in accordance with section 934 of the specifications. The grouted strands shall not be disturbed, nor shall appreciable loads be placed on the span for a period of seventy-two (72) hours following grouting operations.

FILLING ANCHORAGE BLOCKOUTS:  
All anchorage blockouts shall be filled with concrete and finished flush with surface of deck face.

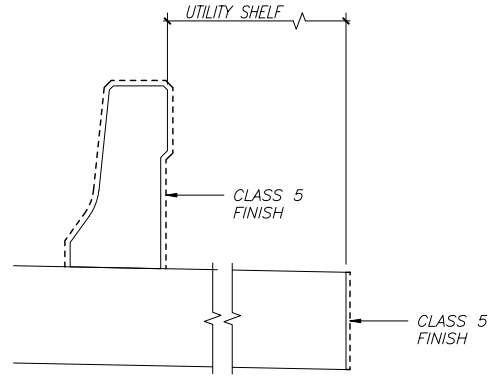
PLACING BARRIER WALLS AND SURFACING:  
All post-tensioning strands shall have been grouted and the minimum seventy-two 72 hours have passed before the barrier walls and wearing course can be placed.

**CONSTRUCTION NOTES**

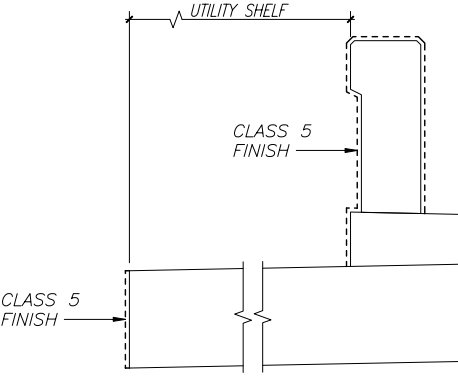
DATUM:  
All elevations are referred to the National Geodetic Vertical Datum (N.G.V.D.) of 1929.

UTILITIES:  
The underground utilities shown in the bridge plans are at approximate locations. For additional information refer to Roadway Plans. All involved utilities shall be verified by the contractor prior to starting work. The Contractor shall notify all involved utility companies prior to excavation, pile driving, or construction and shall be responsible for making its own determination to avoid damage. Any required relocation of existing utilities shall be done by others. Contractor shall assure that active utilities are properly maintained during construction.

MAINTENANCE OF TRAFFIC:  
For Maintenance of Traffic, See Roadway Plans.



CLASS 5 FINISH DETAIL  
NO SCALE



CLASS 5 FINISH DETAIL  
NO SCALE

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INDIAN RIVER COUNTY FLORIDA  
**Department of Public Works**  
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SEAL  
Brian C. Rheault P.E. - 38797  
FLORIDA P.E. NAME & NUMBER

SHEET  
B4  
PROJECT NO.  
05-619F

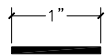
## SUMMARY OF QUANTITIES

ITEM NO.	ITEM	NO. REQUIRED	UNIT	QUANTITY	AS BUILT
	<i>BRIDGE</i>				
100-1	<i>MOBILIZATION</i>		<i>L. S.</i>	<i>1</i>	
110-3	<i>DEMOLITION AND REMOVAL OF EXISTING BRIDGE</i>		<i>L. S.</i>	<i>1</i>	
102-1	<i>MAINTENANCE OF TRAFFIC</i>		<i>L. S.</i>	<i>1</i>	
	<i>STORM WATER POLLUTION PREVENTION PLAN &amp; WATER QUALITY TESTING</i>		<i>L. S.</i>	<i>1</i>	
	<i>(SUPERSTRUCTURE)</i>				
12450-88-18	<i>PRESTRESSED PRECAST DECK UNITS</i>				
	<i>18" x 4'-3" x 36'-0"</i>	<i>15</i>	<i>L. F.</i>	<i>540'-0"</i>	
	<i>18" x 4'-6" x 36'-0"</i>	<i>2</i>	<i>L. F.</i>	<i>72'-0"</i>	
400-2-4	<i>CLASS II CONCRETE FOR CLOSURE POURS BETWEEN DECK UNITS</i>		<i>Cu. Yds.</i>	<i>21</i>	
415-1-4	<i>REINFORCING STEEL</i>		<i>Lbs.</i>	<i>1218</i>	
521-5-1	<i>CONCRETE TRAFFIC RAILING BARRIER - (32" F SHAPE)</i>		<i>L. F.</i>	<i>46'-0"</i>	
	<i>TEMPORARY BARRIER RAILING &amp; HARWARE</i>		<i>L. F.</i>	<i>54'-0"</i>	
	<i>CONCRETE BARRIER WALL (CANTILEVER WALL) (INDEX 410 SHT 5 of 22)</i>		<i>L. F.</i>	<i>40'-0"</i>	
460-70-2	<i>ALUMINUM BICYCLE BULLET BARRIER RAILING</i>		<i>L.F.</i>	<i>37'-0"</i>	
	<i>(SUBSTRUCTURE)</i>				
400-2-5	<i>CLASS II CONCRETE FOR PILES CAPS</i>		<i>Cu. Yds.</i>	<i>82</i>	
415-1-5	<i>REINFORCING STEEL</i>		<i>Lbs.</i>	<i>11,290</i>	
455-34-3	<i>PRESTRESSED PILES</i>				
	<i>(ABUTMENT)</i>				
	<i>18" SQUARE x 65'-0" MINIMUM (TEST PILE - ABUTMENT)</i>	<i>1 EACH</i>	<i>L. F.</i>	<i>65'-0"</i>	
	<i>18" SQUARE x 50'-0" MINIMUM (ABUTMENT)</i>	<i>21 EACH</i>	<i>L. F.</i>	<i>1050'-0"</i>	
	<i>14" SQUARE x 40'-0" MINIMUM (WING BENT)</i>	<i>12 EACH</i>	<i>L. F.</i>	<i>480'-0"</i>	
455-137	<i>PILE DYNAMIC LOAD TESTING</i>	<i>1 EACH</i>	<i>L. S.</i>	<i>1</i>	
455-133	<i>8" x 8'-0" x 14'-0" Sheet Wall</i>	<i>28 EACH</i>	<i>L. F.</i>	<i>392'-0"</i>	
	<i>(SIDEWALKS)</i>				
400-2-4	<i>CLASS II CONCRETE</i>		<i>Cu. Yds.</i>	<i>49</i>	
415-1-9	<i>REINFORCING STEEL</i>		<i>Lbs.</i>	<i>2589</i>	
	<i>(APPROACH SLABS)</i>		<i>Each</i>	<i>2</i>	
339-1	<i>MISCELLANEOUS ASPHALT</i>		<i>S. F.</i>	<i>328</i>	
530-78	<i>(ROCK RUBBLE) (CANAL EXCAVATION AS REQUIRED SHALL BE INCLUDED IN THE COST OF THE SLOPE PROTECTION)</i>		<i>S. F.</i>	<i>3511</i>	

Contractor shall verify all dimensions and quantities prior to construction and fabrication. Discrepancies shall be brought to the attention of the Engineer before construction.


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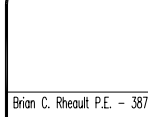


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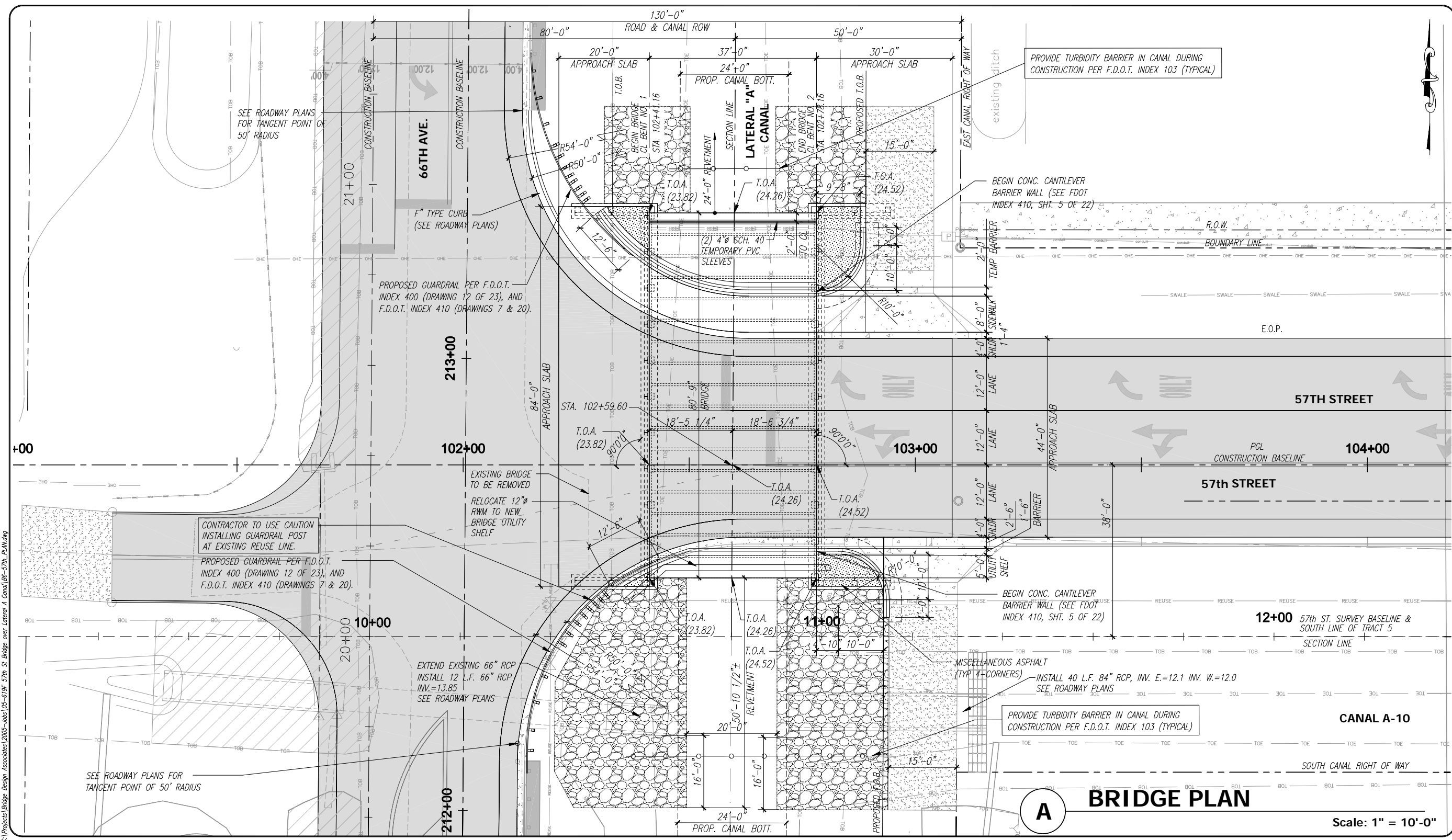


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B5

PROJECT NO.  
05-619F



**A BRIDGE PLAN**

Scale: 1" = 10'-0"

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**CONSULTING ENGINEERS**  
 FLORIDA E.C. NO. 4992

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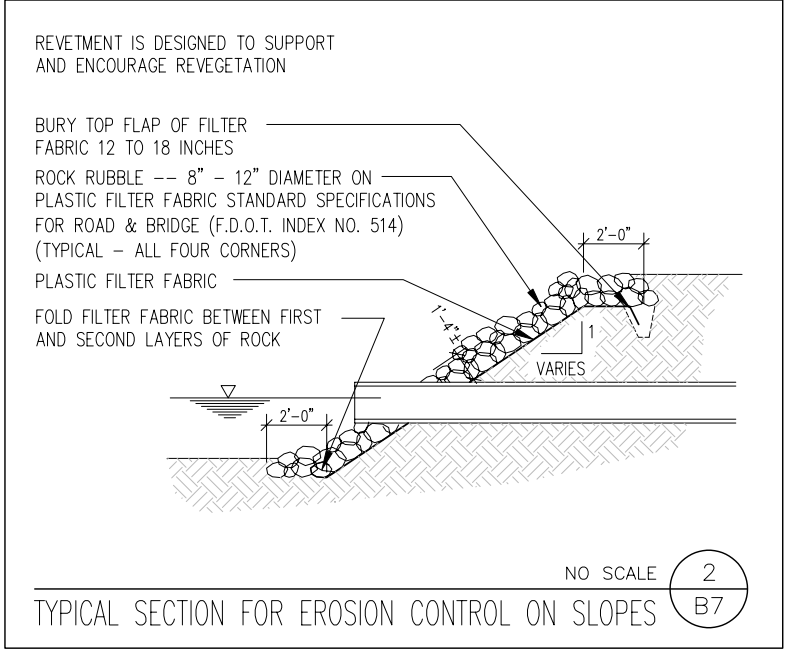
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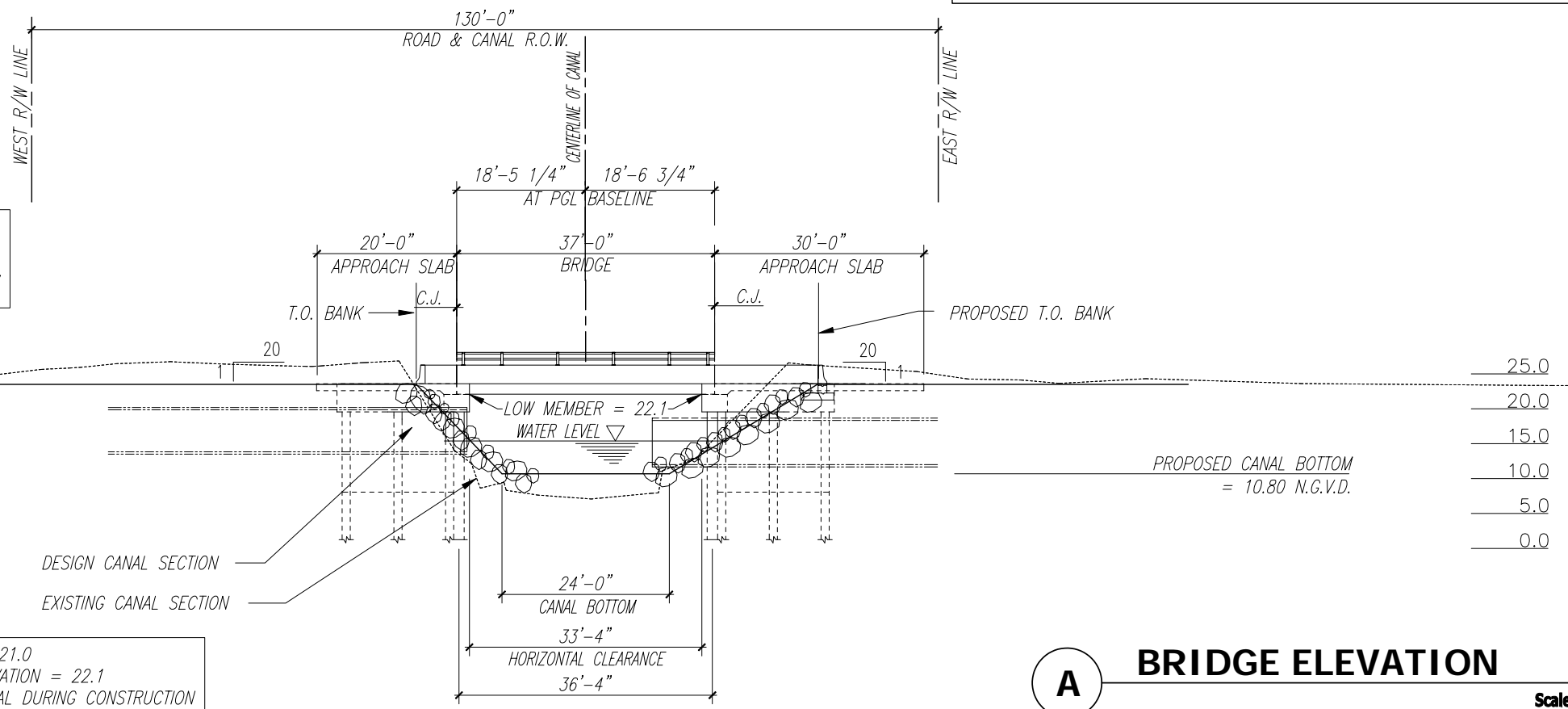
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SHEET  
**B6**  
 PROJECT NO.  
 05-619F



NOTE:  
 SEE ROADWAY PLANS FOR SIDEWALK, INDEX 410 BARRIER, AND GUARDRAIL LOCATIONS.



100 YEAR FLOW ELEVATION = 21.0  
 ALLOWABLE LOW MEMBER ELEVATION = 22.1  
 PROVIDE SILT BARRIER IN CANAL DURING CONSTRUCTION

**A BRIDGE ELEVATION**  
 Scale: 1" = 10'-0"

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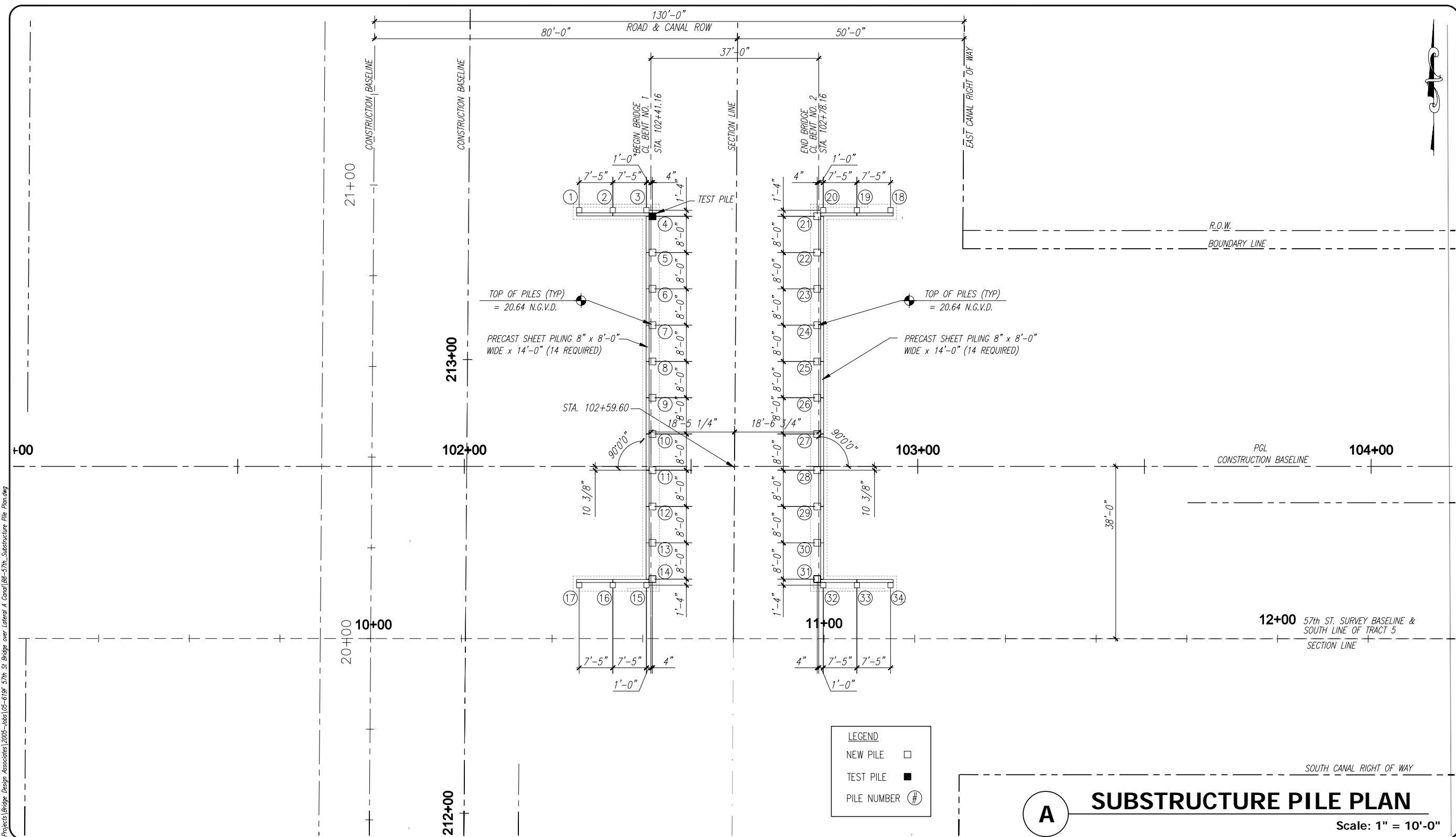
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 Indian River County, Florida

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 Brian C. Rheault P.E. - 38797  
 FLORIDA P.E. NAME & NUMBER

SHEET  
B7  
 PROJECT NO.  
 05-619F

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**LEGEND**

- NEW PILE □
- TEST PILE ■
- PILE NUMBER #

**A SUBSTRUCTURE PILE PLAN**  
Scale: 1" = 10'-0"

VERIFY SCALE  
1" = 10'-0"  
BAR IS ONE INCH ON ORIGINAL DRAWINGS. ADJUST SCALES AS NECESSARY.

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Checked: B.C.R.  
Date: 03/16/09  
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PROJECT:  
Proposed Concrete Bridge for:  
57th Street over Lateral "A" Canal  
Indian River County, Florida

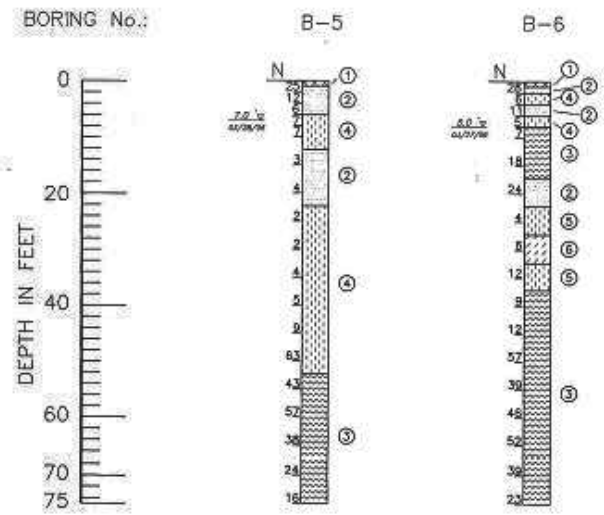
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FLORIDA P.E. NAME & NUMBER

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**B8**  
PROJECT NO.  
05-619F



# Soil Borings

SEE REPORT DATED 11/30/2005.  
PREPARED BY TIERRA  
FILE NO. 6611-05-417-2



### LEGEND

- ① TOPSOIL (PT)
- ② GRAY-TO BROWN SAND (SP)
- ③ BROWN SAND WITH SHELL FRAGMENTS (SP)
- ④ BROWN SILTY SAND (SM)
- ⑤ BROWN SILTY SAND WITH SHELL FRAGMENTS (SM)
- ⑥ BROWN CLAYEY SAND (SC)

Groundwater Depth in feet,  
with date of reading.

Borings were drilled on October and  
November of 2005 using a Mobil  
B-50 drilling rig.

(SP) Unified Soil Classification System  
Group Symbol (ASTM D 2488)

N Number of blows of a 140 lb. hammer  
freely falling a distance of 30 inches,  
required to drive a 2-inch diameter  
sampler a distance of 12 inches.  
(ASTM D 1586)

# 57th Street - Pile Data Table

Bent/Pier	Installation Criteria							Design Criteria						
	Pile Size (in.)	Nominal Bearing Capacity (tons)	Tension Capacity (tons)	Minimum Tip Elevation (ft., N.G.V.D.)	Test Pile Length (ft.)	Required Jet Elevation (ft., N.G.V.D.)	Required Preform Elevation (ft., N.G.V.D.)	Factored Design Load (tons)	Down Drag (tons)	Total Scour Resistance (tons)	Net Scour Resistance (tons)	Long Term Scour Elevation (ft.)	100 Year Scour Elevation (ft.)	Ø
<b>Abutments</b>														
Pile 4	18	160	N/A	(-) 40	65	N/A	N/A	104	0	N/A	N/A	N/A	N/A	0.65
Pile 5 - 14	18	160	N/A	(-) 10		N/A	N/A	104	0	N/A	N/A	N/A	N/A	0.65
Pile 21 - 31	18	160	N/A	(-) 10		N/A	N/A	104	0	N/A	N/A	N/A	N/A	0.65
Pile 1 - 3 & 15 - 17	14	31	N/A	(-) 10		N/A	N/A	20	0	N/A	N/A	N/A	N/A	0.65
Pile 18 - 20 & 32 - 34	14	31	N/A	(-) 10		N/A	N/A	20	0	N/A	N/A	N/A	N/A	0.65

### PILE DATA - ABUTMENTS

PILE ④ TEST PILE 65'-0" LONG MINIMUM.  
USE TEST PILE TO DETERMINE FINAL PILE LENGTHS.

PRECAST PRESTRESSED CONCRETE PILING  
LOADING SHALL BE AS FOLLOWS:

PILES ① - ③ & ⑮ - ⑰  
14" SQUARE PILES WITH 40'-0" LONG MINIMUM.

PILES ⑱ - ⑳ & ⑳ - ㉿  
14" SQUARE PILES WITH 40'-0" LONG MINIMUM.

PILES ⑤ - ⑭  
18" SQUARE PILES WITH 50'-0" LONG MINIMUM.

PILES ㉑ - ㉓  
18" SQUARE PILES WITH 50'-0" LONG MINIMUM.

### PILE INSTALLATION NOTES:

Contractor to verify location of all utilities prior to any pile driving.

Minimum Tip Elevations required for lateral stability.

### NOTES:

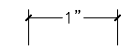
Nominal Bearing Capacity (NBC) = (Factored Design Load +  
Net Scour Resistance + Down Drag) / Ø

Test piles are to be monitored dynamically  
with the Pile Driving Analyzer (PDA).

Service Load: 68 Tons

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Checked: B.C.R.

Date: 03/16/09

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PROJECT:

Proposed Concrete Bridge for:  
57th Street over Lateral "A" Canal

Indian River County, Florida

SEAL

Brian C. Rheault P.E. - 38797

FLORIDA P.E. NAME & NUMBER

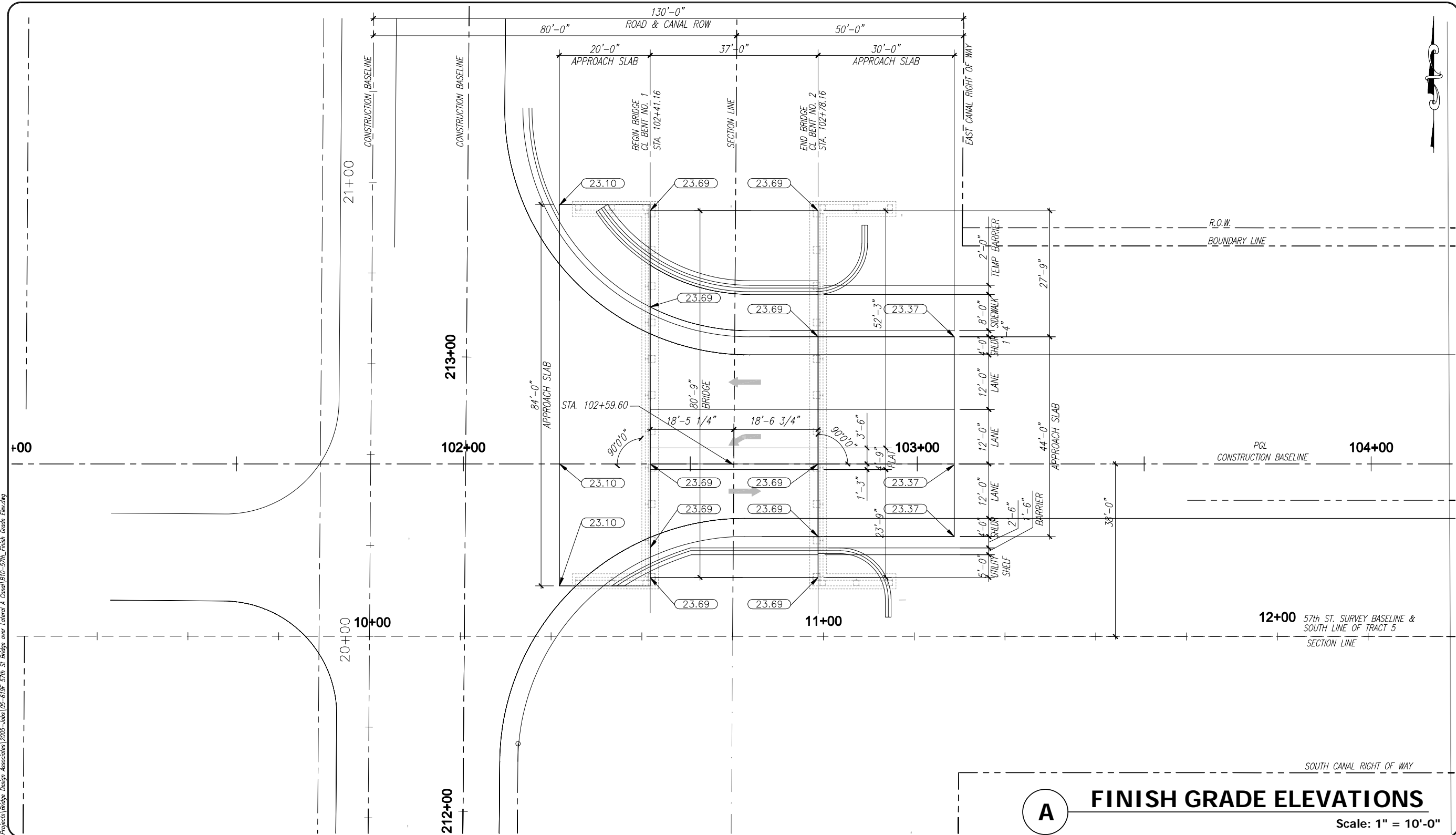
SHEET

B9

PROJECT NO.

05-619F

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**A FINISH GRADE ELEVATIONS**  
Scale: 1" = 10'-0"

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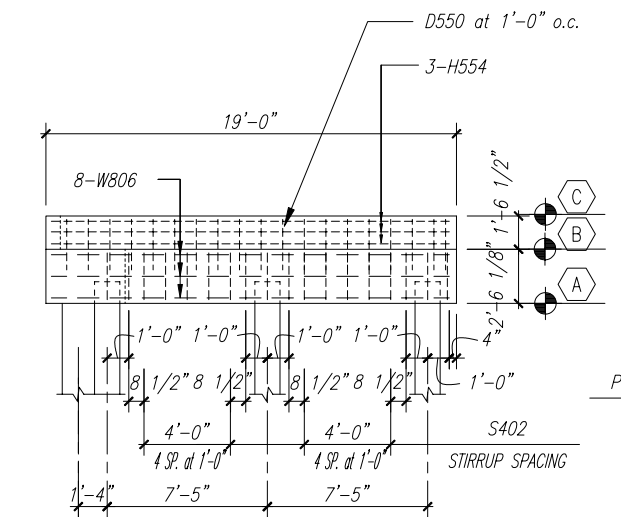
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 Drawn: C.A.B.  
 Checked: B.C.R.  
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 Proposed Concrete Bridge for:  
 57th Street over Lateral "A" Canal  
 Indian River County, Florida

SEAL  
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 FLORIDA P.E. NAME & NUMBER

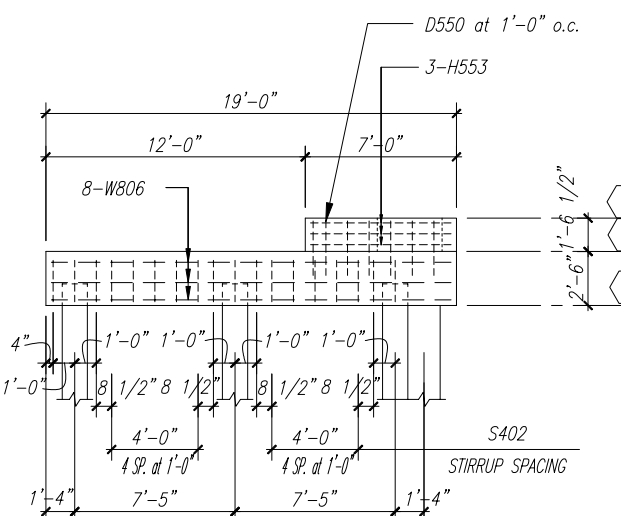
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**B10**  
 PROJECT NO.  
 05-619F

END BENT ELEVATIONS						
BENT #	MARK					
	A	B	C	D	E	F
END BENT #1	19.64	22.15	23.69	22.14	23.68	22.28



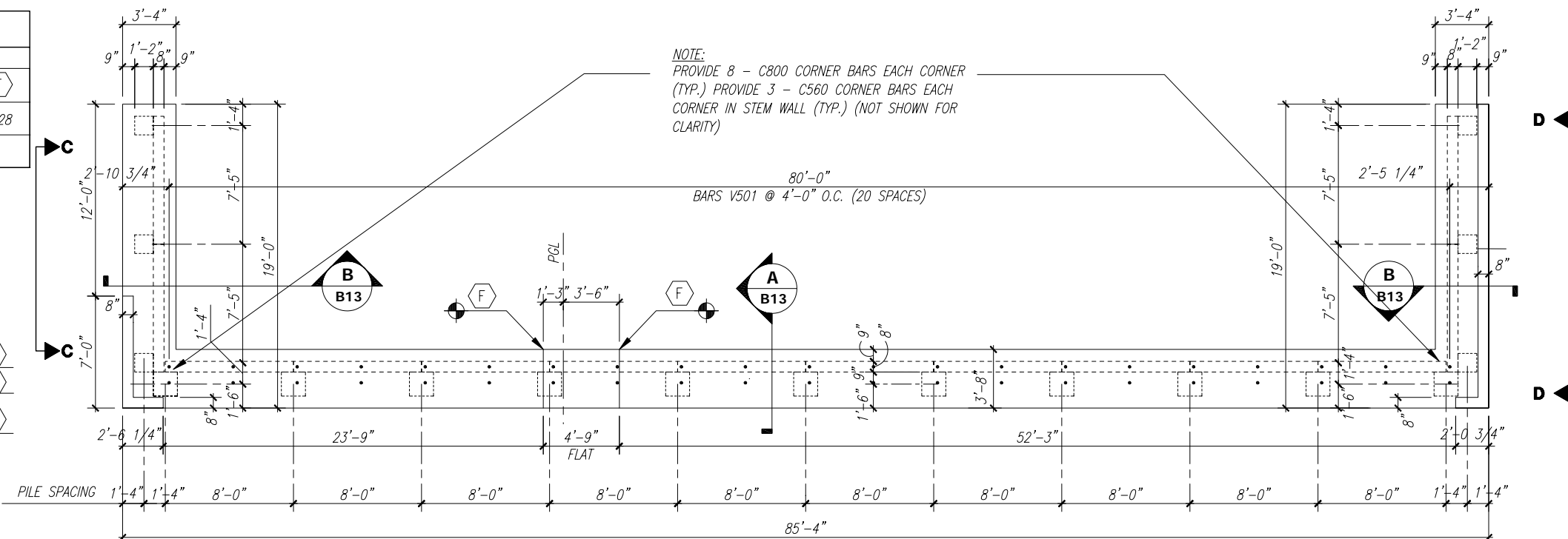
**ELEVATION D - D**

Scale: 1/4" = 1'-0"



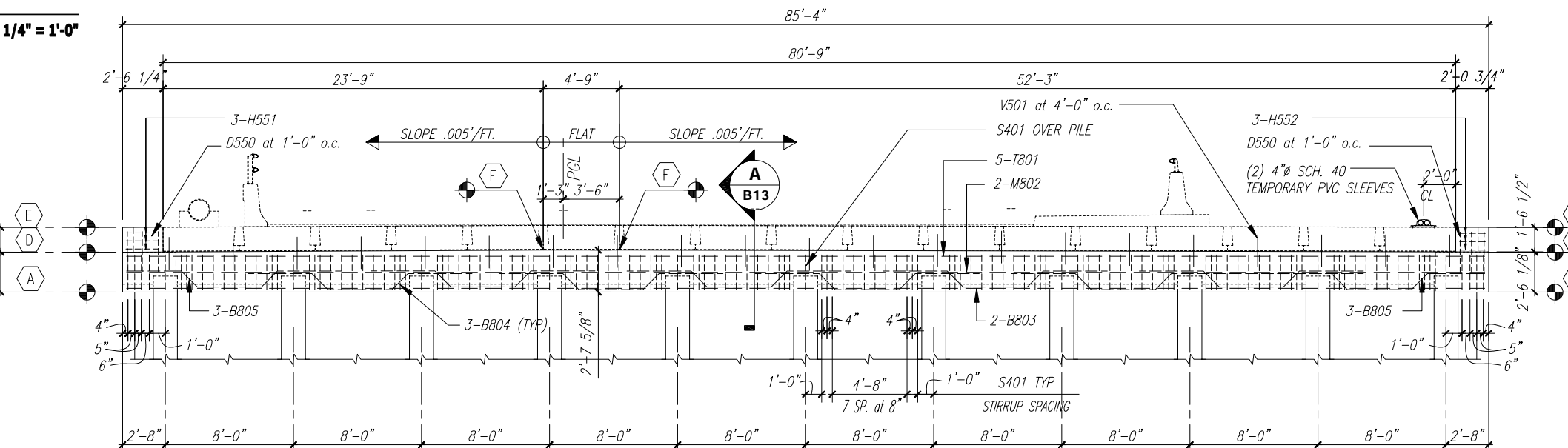
**ELEVATION C - C**

Scale: 1/4" = 1'-0"



**END BENT NO. 1 PLAN**

Scale: 1/4" = 1'-0"



**END BENT NO. 1 ELEVATION**

Scale: 1/4" = 1'-0"

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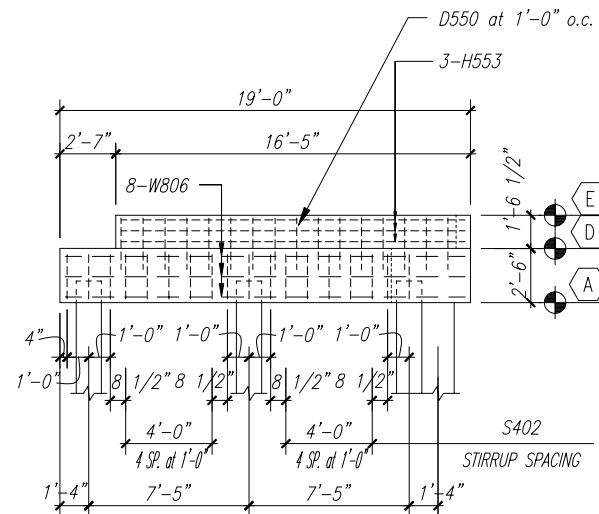
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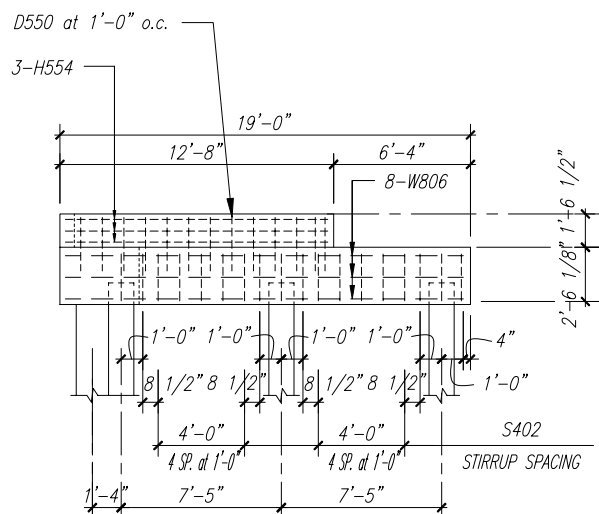
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 PROJECT NO.  
 05-619F

END BENT ELEVATIONS						
BENT #	MARK					
	A	B	C	D	E	F
END BENT #2	19.64	22.15	23.69	22.14	23.68	22.28



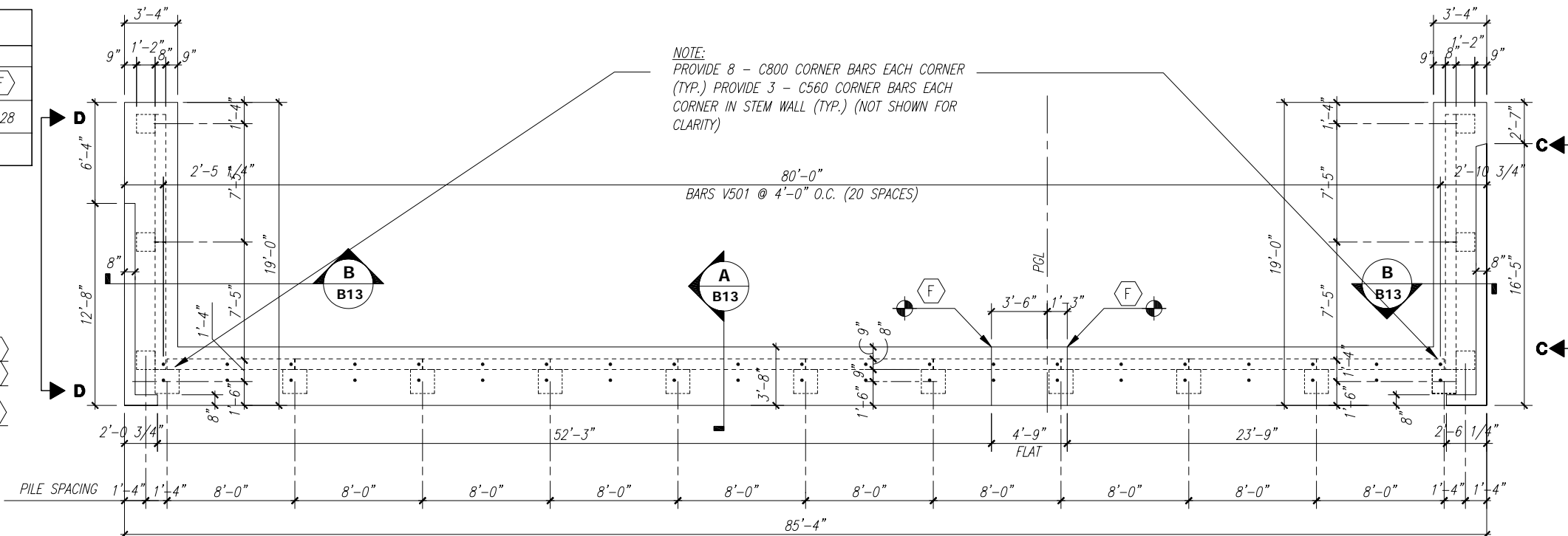
**C ELEVATION C - C**

Scale: 1/4" = 1'-0"



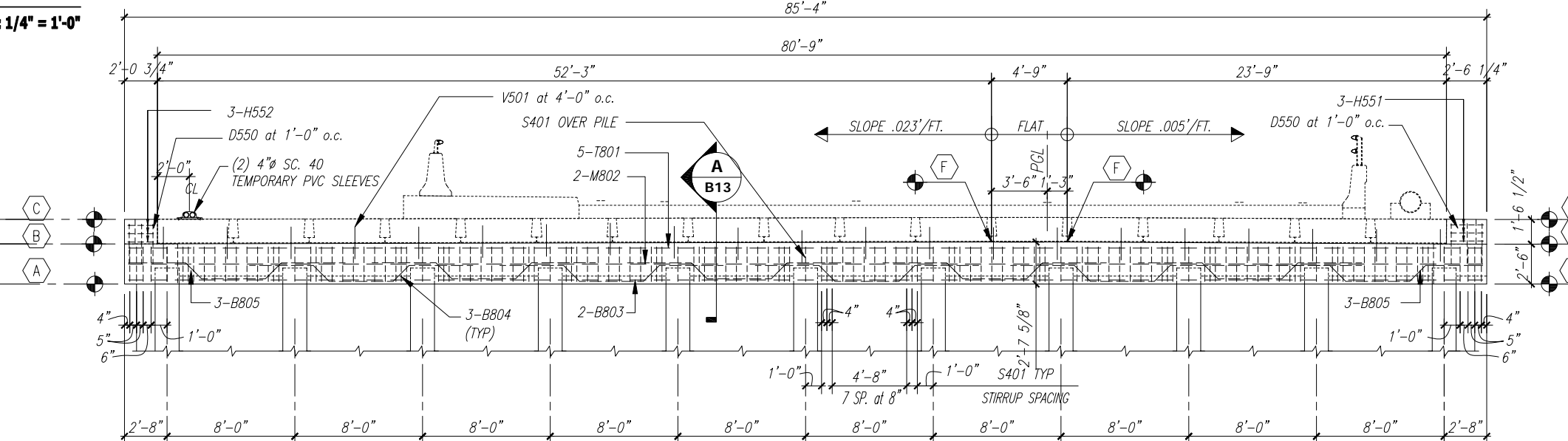
**D ELEVATION D - D**

Scale: 1/4" = 1'-0"



**A END BENT NO. 2 PLAN**

Scale: 1/4" = 1'-0"



**B END BENT NO. 2 ELEVATION**

Scale: 1/4" = 1'-0"

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VERIFY SCALE

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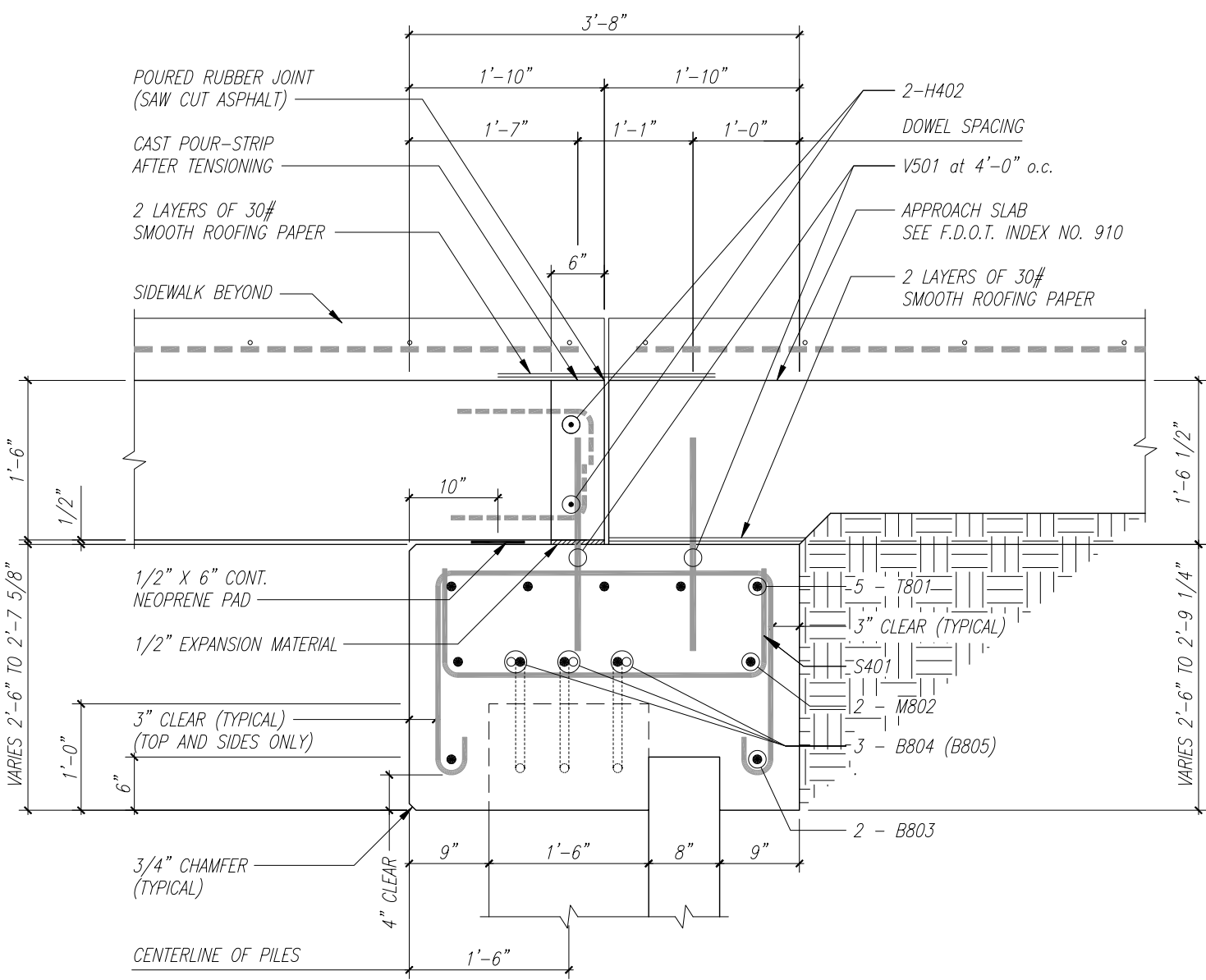
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 Indian River County, Florida

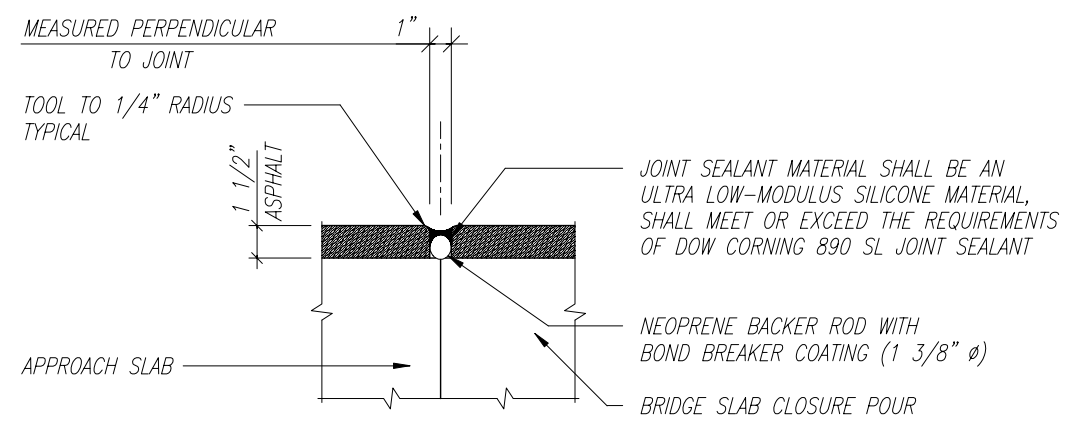
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 PROJECT NO.  
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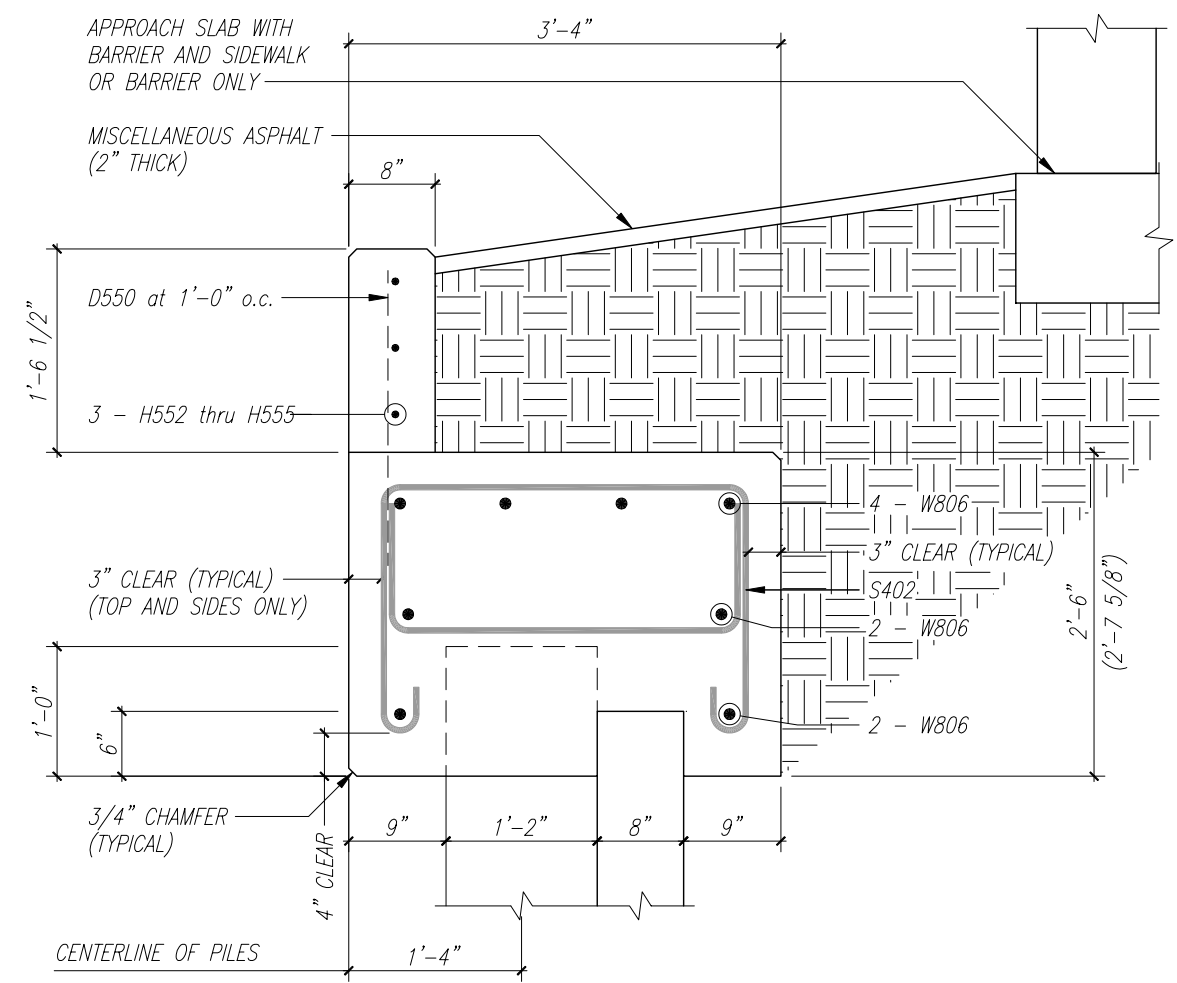
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END BENT DETAIL A/B13



JOINT AT END BENT DETAIL



WING BENT DETAIL B/B13

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**B13**

PROJECT NO.  
 05-619F

*Estimated End Bent #1 Quantities*

Item	Unit	Quantity
Class II Concrete (Pile Cap)	Cu. Yds.	42
Reinforcing Steel (Pile Cap)	lbs.	5643

*Bill of Reinforcing Steel (End Bent #1)*

Mark	Size	No. Req'd	Length + Lap	Total Length	Bending	Weight (lbs.)
C800	#8	16		8'-0"	Bar C800	342
T801	#8	5	84'-10" + (6'-6" x 2)	97'-10"	Straight	1306
M802	#8	2	84'-10" + (4'-6" x 2)	93'-10"	Straight	501
B803	#8	2	84'-10" + (4'-6" x 2)	93'-10"	Straight	501
B804	#8	24		14'-10"	Bar B804	951
B805	#8	6		14'-3"	Bar B805	228
S401	#4	139		13'-4"	Bar S401	1238
S402	#4	36		12'-8"	Bar S402	305
V501	#5	42		2'-3"	Straight	99
D550	#5	32		2'-6"	Straight	83
H551	#5	3		2'-0"	Straight	6
H552	#5	3		1'-6 1/2"	Straight	5
H553	#5	3		6'-6"	Straight	20
H554	#5	3		18'-6"	Straight	58

*Estimated End Bent #2 Quantities*

Item	Unit	Quantity
Class II Concrete (Pile Cap)	Cu. Yds.	42
Reinforcing Steel (Pile Cap)	lbs.	5660

*Bill of Reinforcing Steel (End Bent #2)*

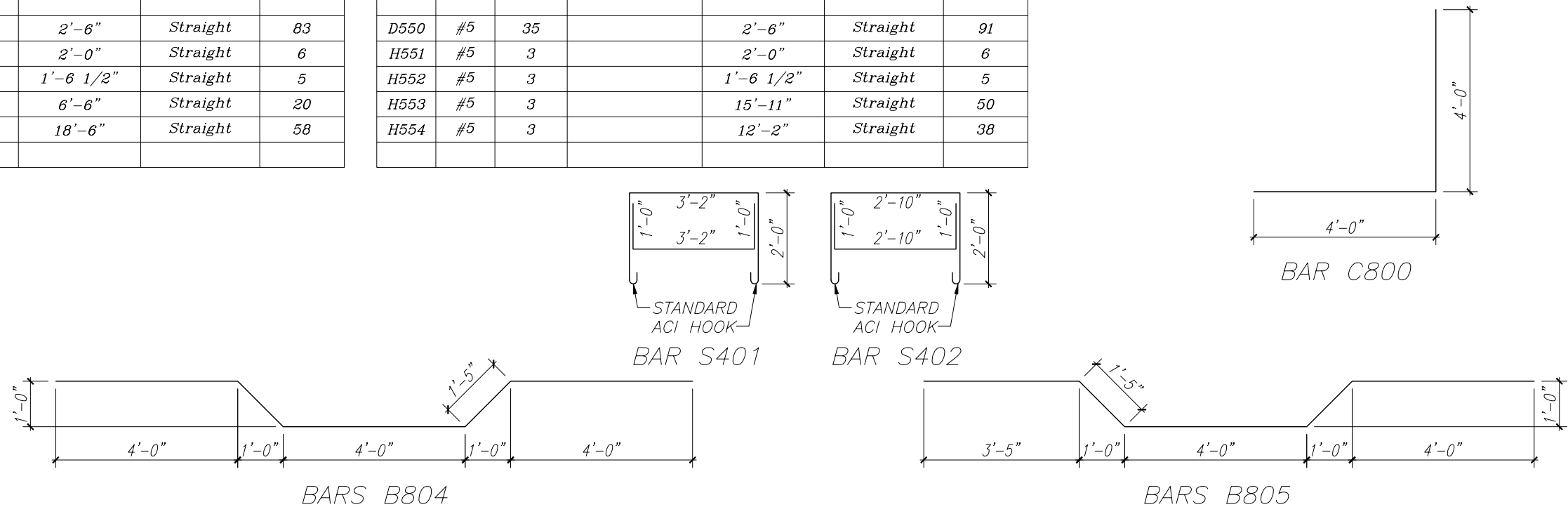
Mark	Size	No. Req'd	Length + Lap	Total Length	Bending	Weight (lbs.)
C800	#8	16		8'-0"	Bar C800	342
T801	#8	5	84'-10" + (6'-6" x 2)	97'-10"	Straight	1306
M802	#8	2	84'-10" + (4'-6" x 2)	93'-10"	Straight	501
B803	#8	2	84'-10" + (4'-6" x 2)	93'-10"	Straight	501
B804	#8	24		14'-10"	Bar B804	951
B805	#8	6		14'-3"	Bar B805	228
S401	#4	139		13'-4"	Bar S401	1238
S402	#4	36		12'-8"	Bar S402	305
V501	#5	42		2'-3"	Straight	99
D550	#5	35		2'-6"	Straight	91
H551	#5	3		2'-0"	Straight	6
H552	#5	3		1'-6 1/2"	Straight	5
H553	#5	3		15'-11"	Straight	50
H554	#5	3		12'-2"	Straight	38

*Required Bar Lap Splices*

Mark	Size	Splice Length
T	#4	29"
T	#5	36"
T	#6	44"
T	#8	78"
M	#8	54"
B	#6	36"
B	#8	54"
W (Top)	#8	54"
W (Middle)	#8	54"
W (Bottom)	#8	54"
H	#4	24"
H	#5	36"

Note:  
Splice continuous bars thus:  
Top bars at mid-span between the piles  
Bottom bars at the piles

*BENDING DIAGRAM*



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VERIFY SCALE  
  
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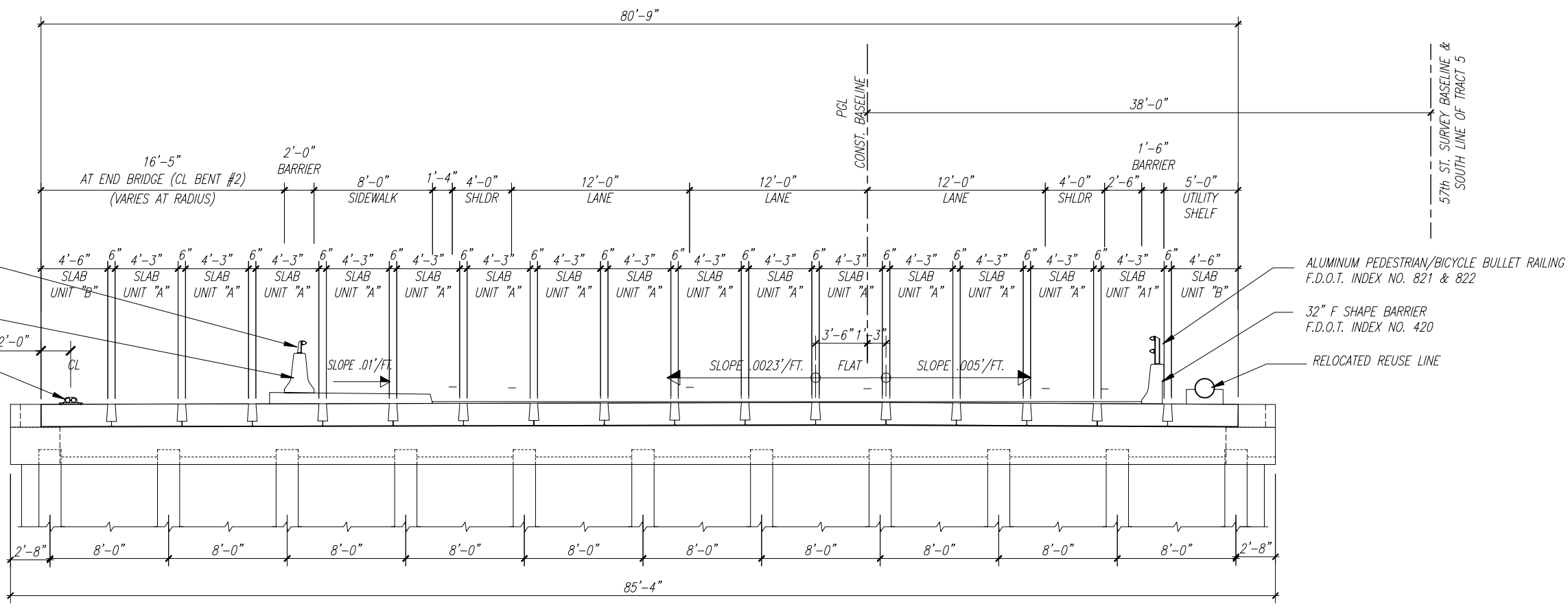
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 Checked: B.C.R.  
 Date: 03/16/09  
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 Proposed Concrete Bridge for:  
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**B14**  
 PROJECT NO.  
 05-619F

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**A** TYPICAL BRIDGE CROSS SECTION LOOKING EAST  
Scale: 1/4" = 1'-0"

VERIFY SCALE  
1" = 1'-0"  
BAR IS ONE INCH ON ORIGINAL DRAWINGS. ADJUST SCALES AS NECESSARY.

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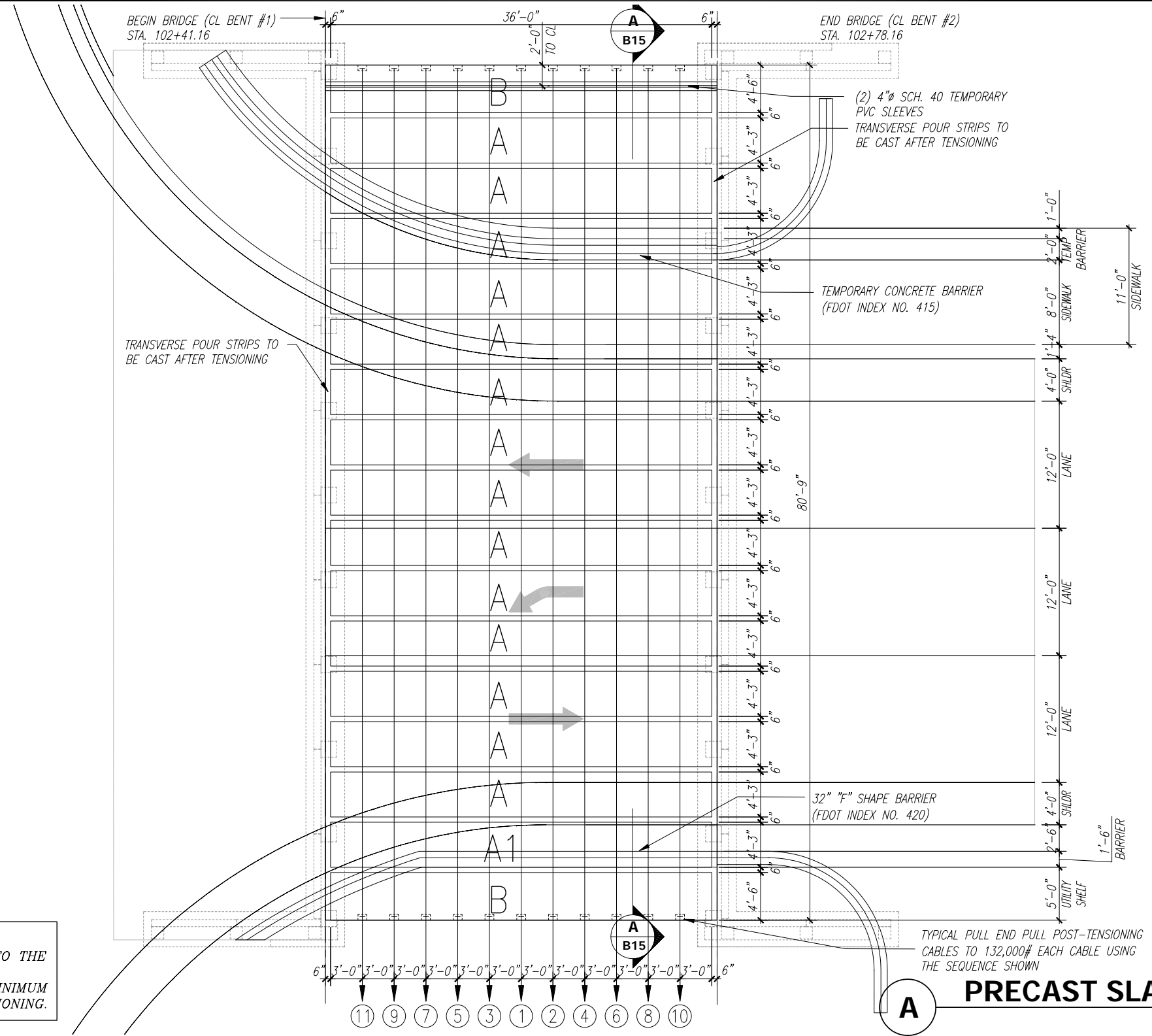
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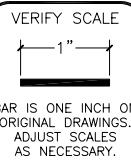
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05-619F

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**POST-TENSIONING SEQUENCE**  
 POST-TENSIONING SHALL BE DONE ACCORDING TO THE NUMBER SEQUENCE ON THE SUPER-STRUCTURE. CONCRETE IN CLOSURE POURS SHALL HAVE A MINIMUM CYLINDER STRENGTH OF 3000 psi BEFORE TENSIONING.

**PRECAST SLAB LAYOUT PLAN**  
 Scale: 3/16"=1'-0"



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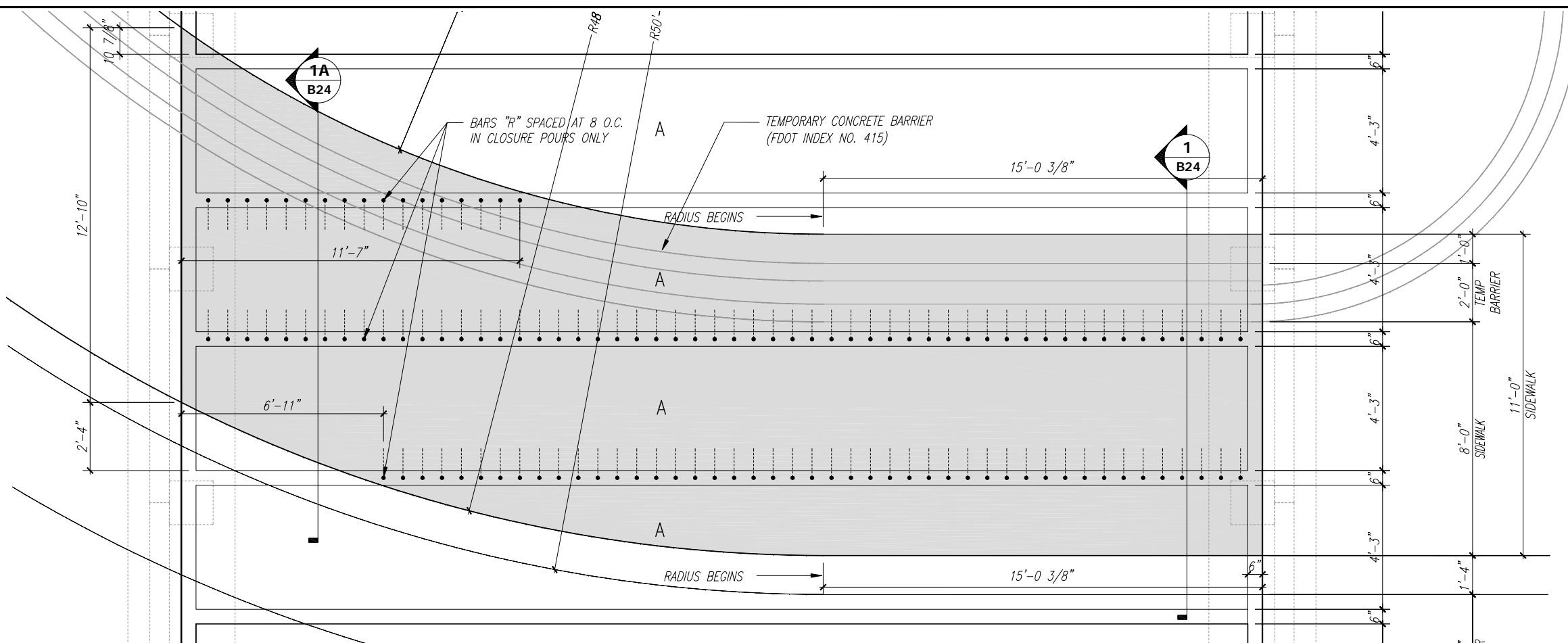
PROJECT:  
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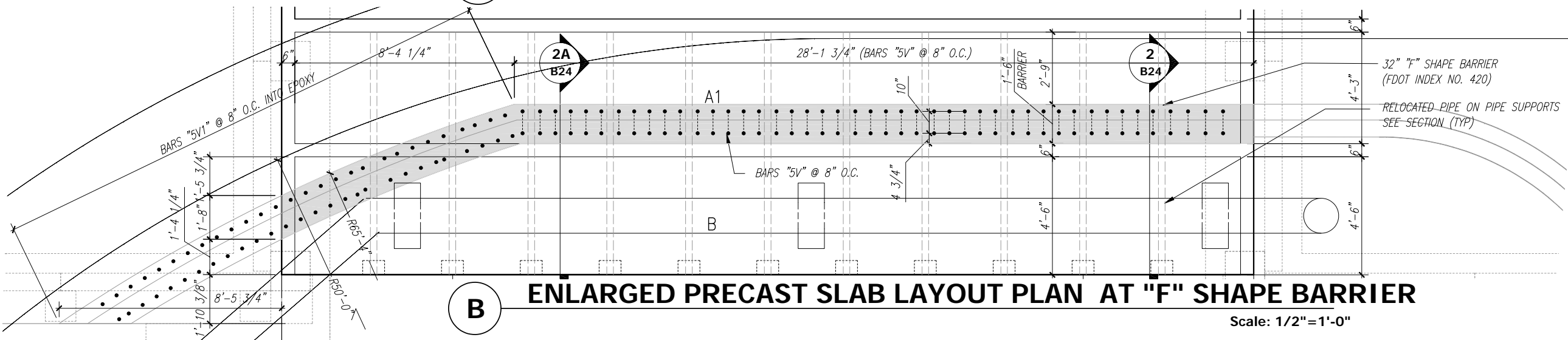
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**A ENLARGED PRECAST SLAB LAYOUT PLAN AT SIDEWALK**  
Scale: 1/2"=1'-0"



**B ENLARGED PRECAST SLAB LAYOUT PLAN AT "F" SHAPE BARRIER**  
Scale: 1/2"=1'-0"

VERIFY SCALE  
1" = 1'  
BAR IS ONE INCH ON ORIGINAL DRAWINGS. ADJUST SCALES AS NECESSARY.

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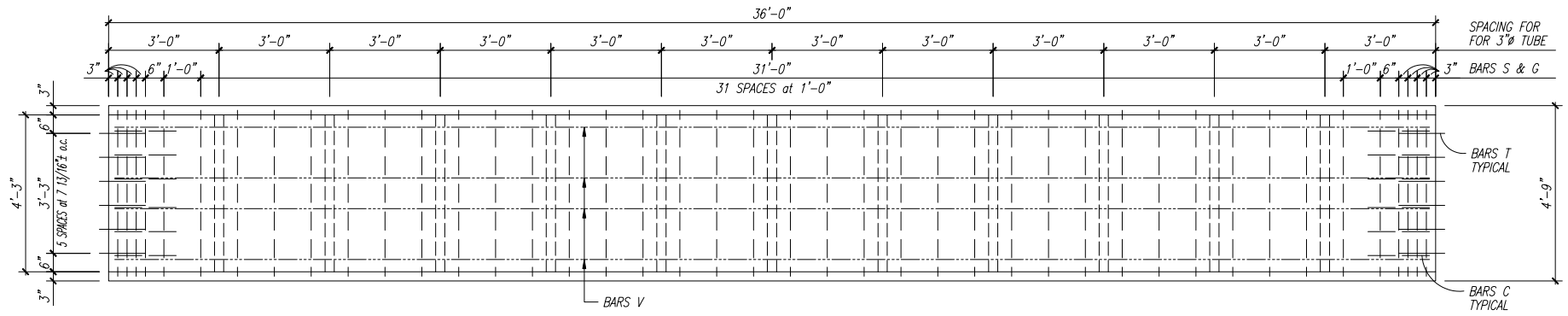
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Date: 03/16/09  
Field Book No:

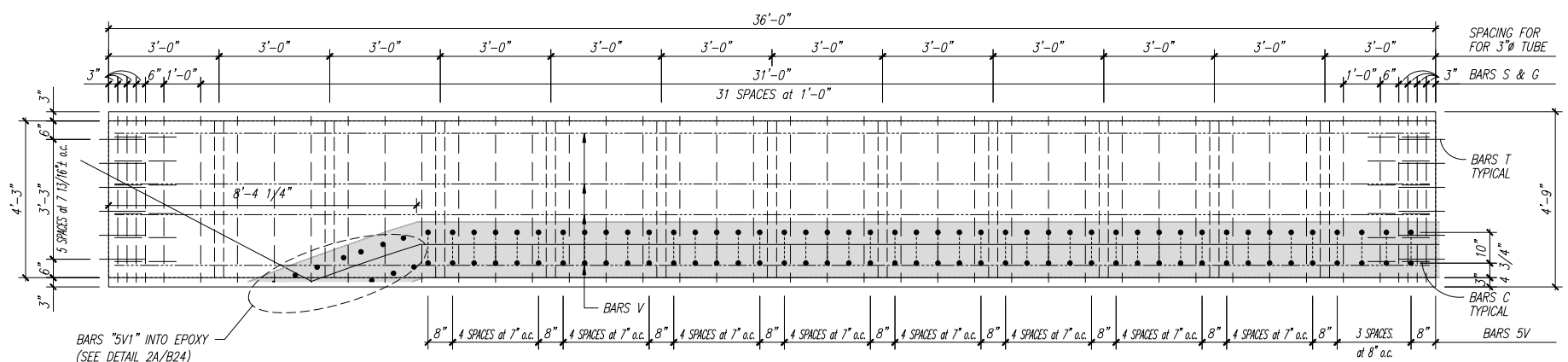
PROJECT:  
Proposed Concrete Bridge for:  
57th Street over Lateral "A" Canal  
Indian River County, Florida

SEAL  
Brian C. Rheault P.E. - 38797  
FLORIDA P.E. NAME & NUMBER

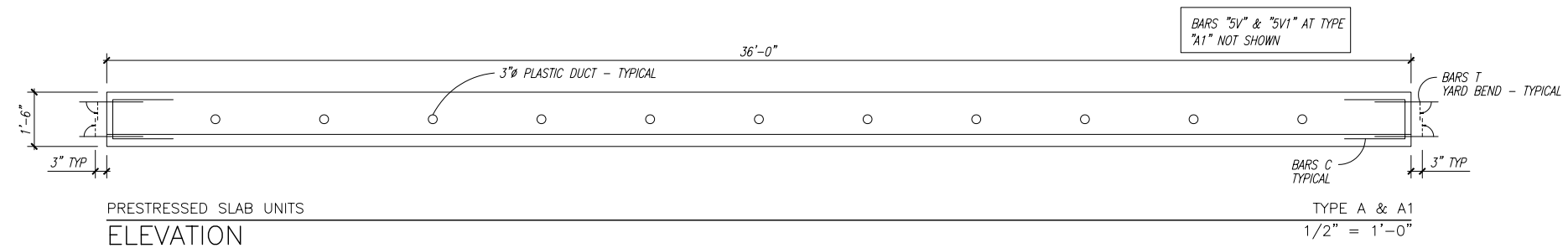
SHEET  
**B17**  
PROJECT NO.  
05-619F



PRESTRESSED SLAB UNITS  
**PLAN**  
 TYPE A  
 1/2" = 1'-0"



PRESTRESSED SLAB UNITS  
**PLAN**  
 TYPE A1  
 1/2" = 1'-0"



PRESTRESSED SLAB UNITS  
**ELEVATION**  
 TYPE A & A1  
 1/2" = 1'-0"

**ESTIMATED QUANTITIES**

ITEM	UNIT	QUANTITY
TYPE A SLAB UNITS (14 REQUIRED)	L.F.	504'-0"
TYPE A1 SLAB UNITS (1 REQUIRED)	L.F.	36'-0"

**BILL OF REINFORCING STEEL**

MARK	SIZE	NUMBER REQUIRED		LENGTH	BENDING
		A	A1		
C	4	12	12	4'-4 1/2"	SEE DIAG.
G	4	42	42	4'-3"	STRAIGHT
S	4	42	42	15'-2"	SEE DIAG.
T	4	24	24	1'-9"	SEE DIAG.
V	5	4	4	35'-6"	STRAIGHT
5V	5	-	45	VARIES	SEE DIAG.
5V1	5	-	6	VARIES	SEE DIAG.

SEE SHEET B20 FOR BENDING DIAGRAM

DATE: Apr. 03, 2009 2:39pm C:\Projects\Bridge Design Associates\2005-10b\05-619F 57th St. Bridge over Lateral A Canal\B18-B19-Slab Details.dwg

VERIFY SCALE  
  
 BAR IS ONE INCH ON ORIGINAL DRAWINGS. ADJUST SCALES AS NECESSARY.

**BRIDGE DESIGN ASSOCIATES, INC.**  
 1402 Royal Palm Beach Blvd, Bldg. 200, Royal Palm Beach, FL 33411  
 Tel. (561) 688-3660 Fax (561) 791-1995  
**C O N S U L T I N G E N G I N E E R S**  
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NO.	REVISION	DATE	BY

**Department of Public Works**  
**Engineering Division**

Scale: AS NOTED  
 Approved:  
 Drawn: C.A.B.  
 Checked: B.C.R.  
 Date: 03/16/09  
 Field Book No:

PROJECT:  
 Proposed Concrete Bridge for:  
 57th Street over Lateral "A" Canal  
 Indian River County, Florida

SEAL  
 Brian C. Rheault P.E. - 38797  
 FLORIDA P.E. NAME & NUMBER

SHEET  
**B18**  
 PROJECT NO.  
 05-619F

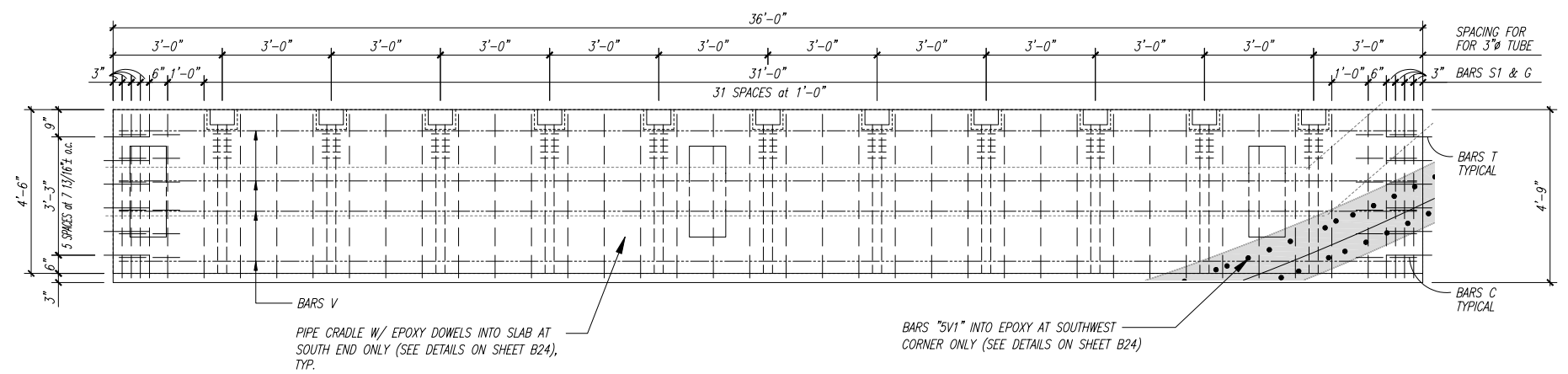
### ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
TYPE B SLAB UNITS (2 REQUIRED)	L.F.	72'-0"

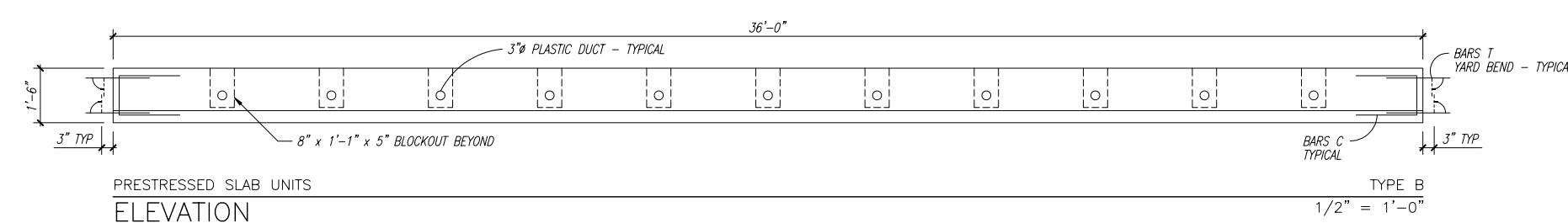
### BILL OF REINFORCING STEEL

MARK	SIZE	NUMBER REQUIRED				LENGTH	BENDING
		TYPE					
C	4	12				4'-4 1/2"	SEE DIAG.
G	4	42				4'-3"	STRAIGHT
S1	4	42				16'-2"	SEE DIAG.
T	4	24				1'-9"	SEE DIAG.
V	5	4				35'-6"	STRAIGHT
D	3	55				2'-0"	STRAIGHT
5V1	5	11				VARIES	SEE DIAG.

SEE SHEET B21 FOR BENDING DIAGRAM



PRESTRESSED SLAB UNITS PLAN TYPE B 1/2" = 1'-0"



PRESTRESSED SLAB UNITS ELEVATION TYPE B 1/2" = 1'-0"

DATE: Apr 03, 2009 2:39pm C:\Projects\Bridges\Design\Associates\2005-166\05-619F\57th St Bridge over Lateral A Canal\B19-B19-Slab Details.dwg

VERIFY SCALE

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**C O N S U L T I N G E N G I N E E R S**  
 F L O R I D A C. E. N. O. 4952

NO.	REVISION	DATE	BY

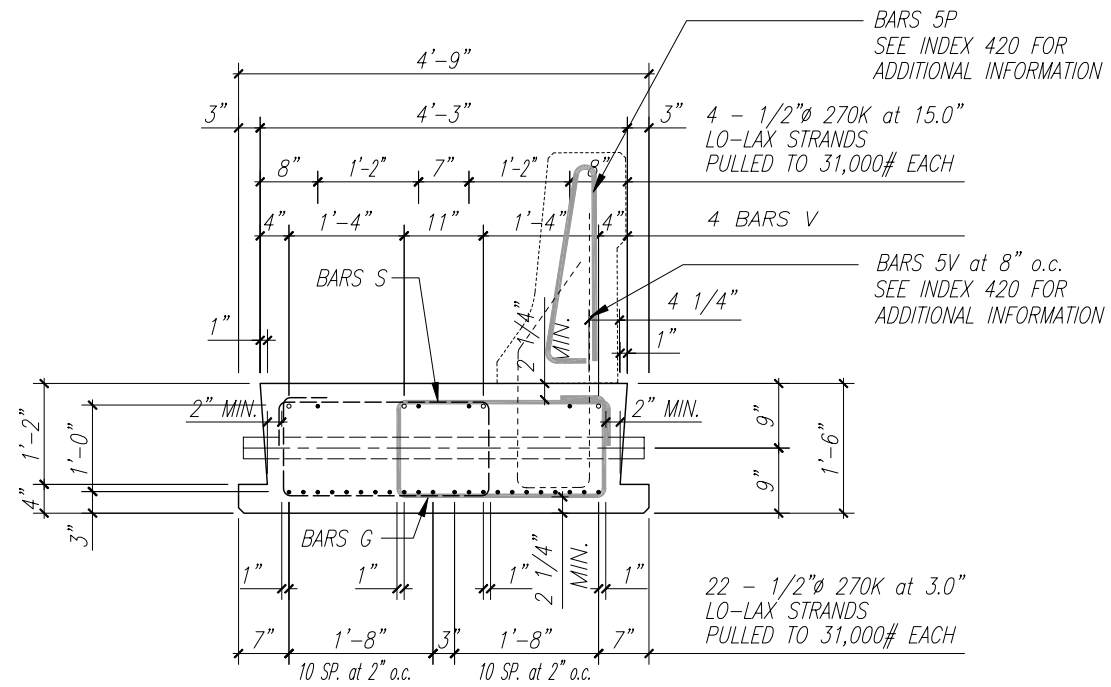
**Department of Public Works**  
**Engineering Division**

Scale: AS NOTED  
 Approved:   
 Drawn: C.A.B.  
 Checked: B.C.R.  
 Date: 03/16/09  
 Field Book No:

PROJECT:  
 Proposed Concrete Bridge for:  
 57th Street over Lateral "A" Canal  
 Indian River County, Florida

SEAL  
 Brian C. Rheault P.E. - 38797  
 FLORIDA P.E. NAME & NUMBER

SHEET  
**B19**  
 PROJECT NO.  
 05-619F

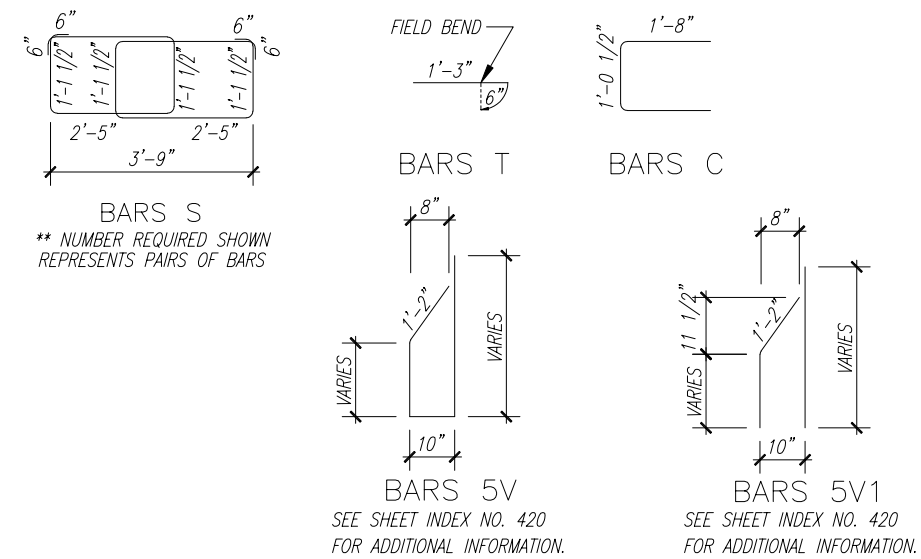


TYPE A (TYPE A1 W/ BARRIER)

TYPICAL SECTION

SCALE: 1"=1'-0"

BENDING DIAGRAM



\* MEASUREMENTS ARE FROM OUT TO OUT OF REINFORCING STEEL. \*

DATE: Apr 03, 2009 2:39pm C:\Projects\Bridge Design Associates\2005-606\05-619F 57th St Bridge over Lateral A Canal\200-Sub Details.dwg

VERIFY SCALE

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**CONSULTING ENGINEERS**  
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NO.	REVISION	DATE	BY

**Department of Public Works**  
 Engineering Division

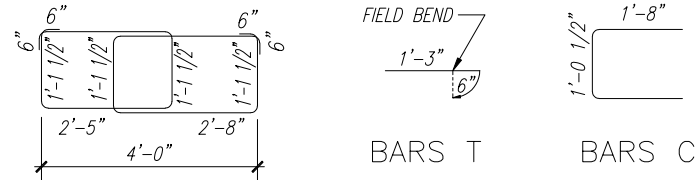
Scale: AS NOTED  
 Approved:   
 Drawn: C.A.B.  
 Checked: B.C.R.  
 Date: 03/16/09  
 Field Book No:

PROJECT:  
 Proposed Concrete Bridge for:  
 57th Street over Lateral "A" Canal  
 Indian River County, Florida

SEAL  
 Brian C. Rheault P.E. - 38797  
 FLORIDA P.E. NAME & NUMBER

SHEET  
**B20**  
 PROJECT NO.  
 05-619F

### BENDING DIAGRAM

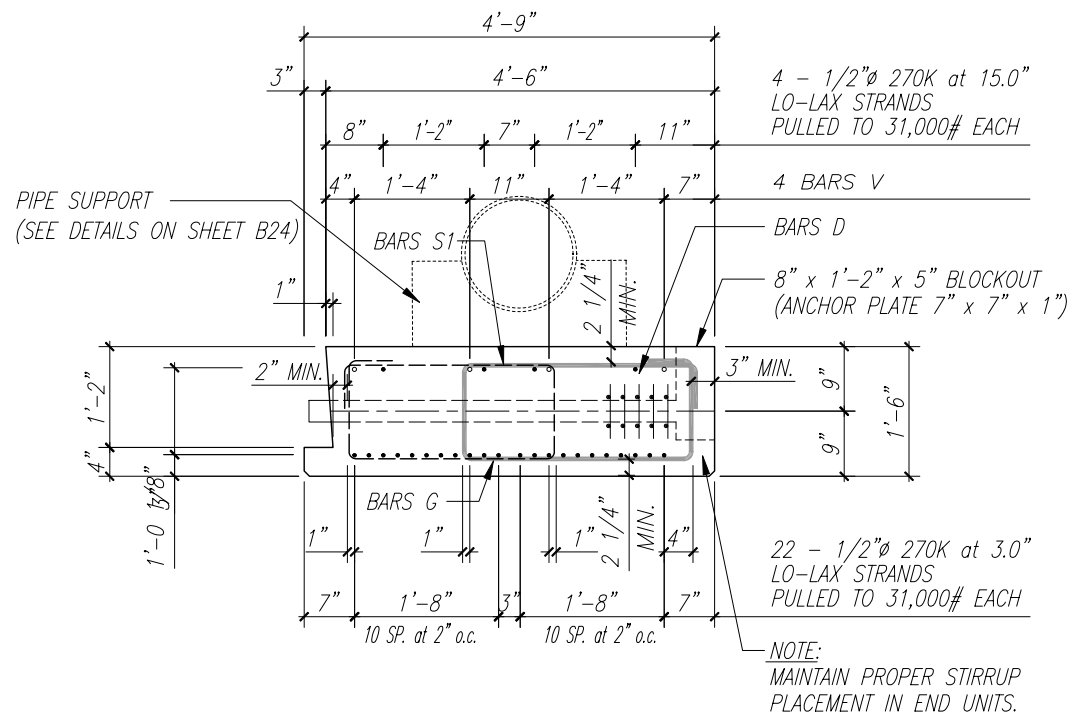


BARS S1  
 \*\* NUMBER REQUIRED SHOWN  
 REPRESENTS PAIRS OF BARS



BARS D

\* MEASUREMENTS ARE FROM OUT TO OUT OF REINFORCING STEEL. \*



TYPE B  
 TYPICAL SECTION

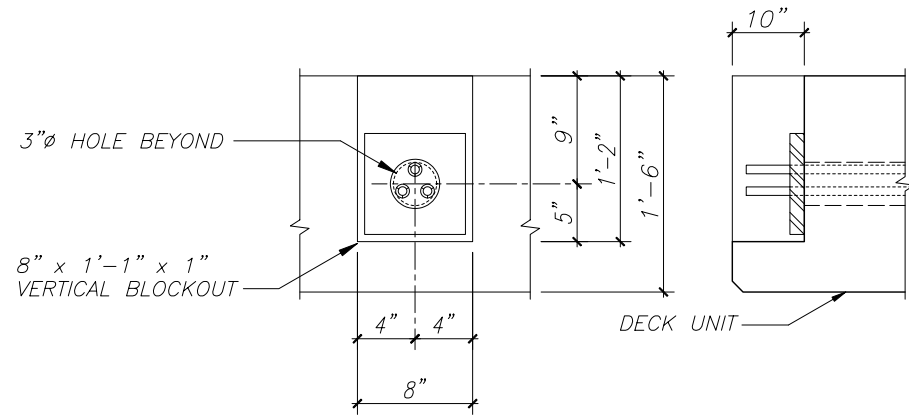
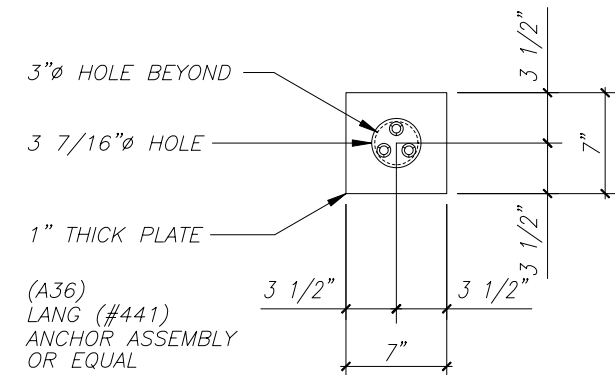


PLATE BLOCKOUT DETAIL



TYPICAL ANCHOR PLATE DETAIL

DATE: Apr. 03, 2009 2:39pm C:\Projects\Bridge Design Associates\2005-06\05-619F 57th St. Bridge over Lateral A Canal\B21-Sub Details.dwg

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 Tel. (561) 688-3660 Fax (561) 791-1995  
**C O N S U L T I N G E N G I N E E R S**  
 F L O R I D A E . C . N . O . 4 9 9 2

NO.	REVISION	DATE	BY

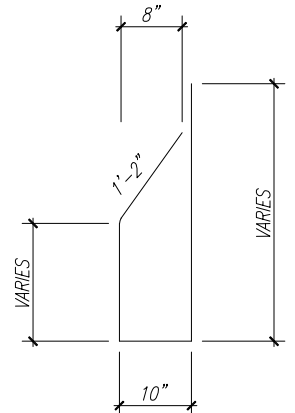
**Department of Public Works**  
 Engineering Division

Scale: AS NOTED  
 Approved: \_\_\_\_\_  
 Drawn: C.A.B.  
 Checked: B.C.R.  
 Date: 03/16/09  
 Field Book No: \_\_\_\_\_

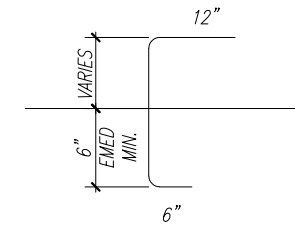
PROJECT:  
 Proposed Concrete Bridge for:  
 57th Street over Lateral "A" Canal  
 Indian River County, Florida

SEAL  
 Brian C. Rheault P.E. - 38797  
 FLORIDA P.E. NAME & NUMBER

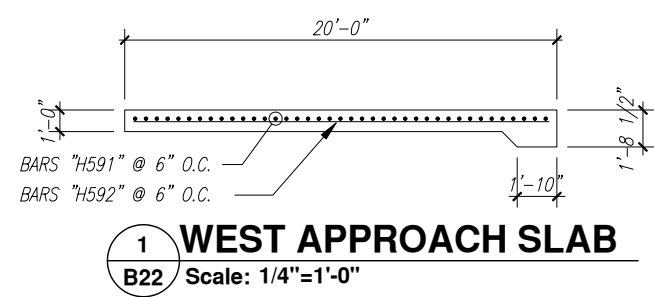
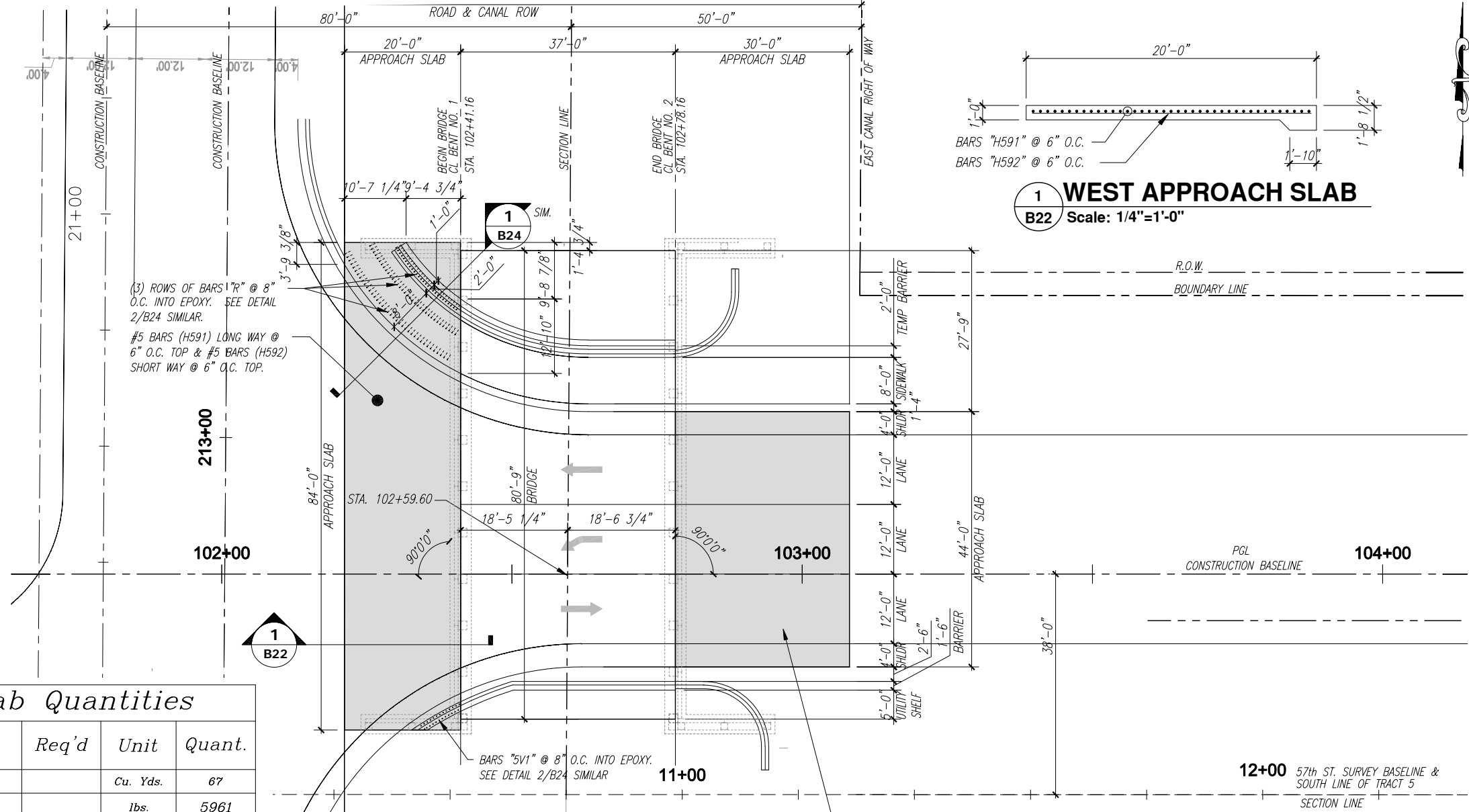
SHEET  
**B21**  
 PROJECT NO.  
 05-619F



**BARS 5V**  
SEE SHEET INDEX NO. 420  
FOR ADDITIONAL INFORMATION.



**BARS R**



**1 WEST APPROACH SLAB**  
**B22** Scale: 1/4"=1'-0"

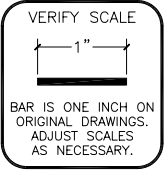
Item	Req'd	Unit	Quant.
Class II Concrete (Approach Slab)		Cu. Yds.	87
Reinforcing Steel (Approach Slab)		lbs.	5961

Mark	Size	# Req'd	Length + Lap	Total Length	Bending	Weight (lbs.)
H591	5	40	83'-6" + (3' x 2)	89'-6"	Straight	3734
H592	5	168		19'-6"	Straight	2188
R	4	100		Varies	See Diag.	234
5V1	5	12		Varies	See Diag.	235

REFER TO F.D.O.T. INDEX NO. 20910 FOR  
APPROACH SLAB REINFORCING AND CONCRETE  
THICKNESS FOR EAST APPROACH SLAB.

**A APPROACH SLAB PLANS**  
Scale: 1" = 10'-0"

DATE: Apr. 03, 2009 2:39pm C:\Projects\Bridge Design Associates\2005-06\05-619F 57th St. Bridge over Lateral A Canal\B22-57th Approach Slab Plans.dwg



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Tel. (561) 686-5660 Fax (561) 791-1995  
**CONSULTING ENGINEERS**  
FLORIDA E.C.B. NO. 4932

NO.	REVISION	DATE	BY

**INDIAN RIVER COUNTY**  
**Department of Public Works**  
**Engineering Division**

Scale: AS NOTED  
Approved:  
Drawn: C.A.B.  
Checked: B.C.R.  
Date: 03/16/09  
Field Book No:

PROJECT:  
Proposed Concrete Bridge for:  
57th Street over Lateral "A" Canal  
Indian River County, Florida

SEAL  
Brian C. Rheault P.E. - 38797  
FLORIDA P.E. NAME & NUMBER

SHEET  
**B22**  
PROJECT NO.  
05-619F

GENERAL NOTES

PAYMENT

THE CONTRACT UNIT PRICE FOR PRECAST CONCRETE SHEET PILING SHALL INCLUDE REINFORCING STEEL AND PICK-UP BARS. ALL CORNER PILING SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR CONCRETE SHEET PILING.

CONCRETE

CLASS II CONCRETE ( $f'_c = 3400$  p.s.i.)

PICKUP BARS

AT THE OPTION OF THE CONTRACTOR, 2-7/16" STRANDS MAY BE SUBSTITUTED FOR NO. 6 PICKUP BAR. STRANDS SHALL BE EMBEDDED IN PILE A MINIMUM OF TWO (2) FEET.

REINFORCING STEEL

REINFORCING STEEL SHALL BE GRADE 60.

PLASTIC FILTER FABRIC

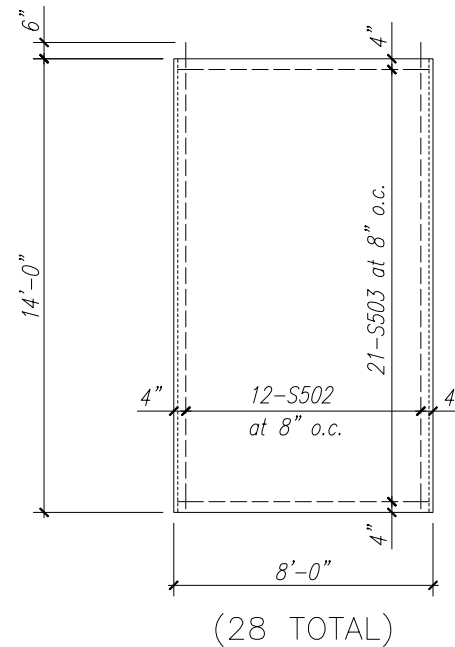
A PLASTIC FILTER FABRIC (SEE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION) SHALL BE PLACED BETWEEN FILL AND BULKHEAD CAP AND BETWEEN FILL AND PRECAST SHEET PILES TO TWO (2) FEET BELOW MUD LINE. COST OF ALL LABOR AND MATERIALS REQUIRED FOR INSTALLING PLASTIC FILTER FABRIC SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR SHEET PILING.

*Estimated Quantities*

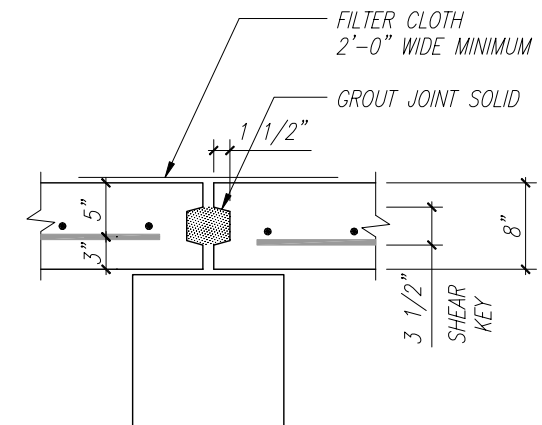
Item	Required	Unit	Quantity
8" x 8'-0" x 14'-0" Sheet Wall	28	L. F.	392'-0"

*Bill of Reinforcing Steel*

Mark	Size	Number Required	Total Length	Bending	Weight (lbs.)
SHEET WALLS (TOTAL)					
S502	5	336	14'-2"	Straight	4965
S503	5	588	7'-4"	Straight	4497



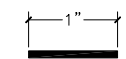
8" SHEET WALL DETAIL



SHEET WALL JOINT DETAIL

DATE: Apr. 03, 2009 2:39pm C:\Projects\Bridge Design Associates\2005-06\05-619F 57th St. Bridge over Lateral A Canal\B23 Sheet Wall Detail.dwg

VERIFY SCALE



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FLORIDA E.C.B.-N.O.-4932

NO.	REVISION	DATE	BY



Department of Public Works  
Engineering Division

Scale: AS NOTED

Approved:

Drawn: C.A.B.

Checked: B.C.R.

Date: 03/16/09

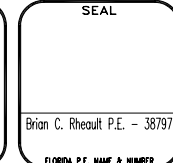
Field Book No:

PROJECT:

Proposed Concrete Bridge for:  
57th Street over Lateral "A" Canal

Indian River County, Florida

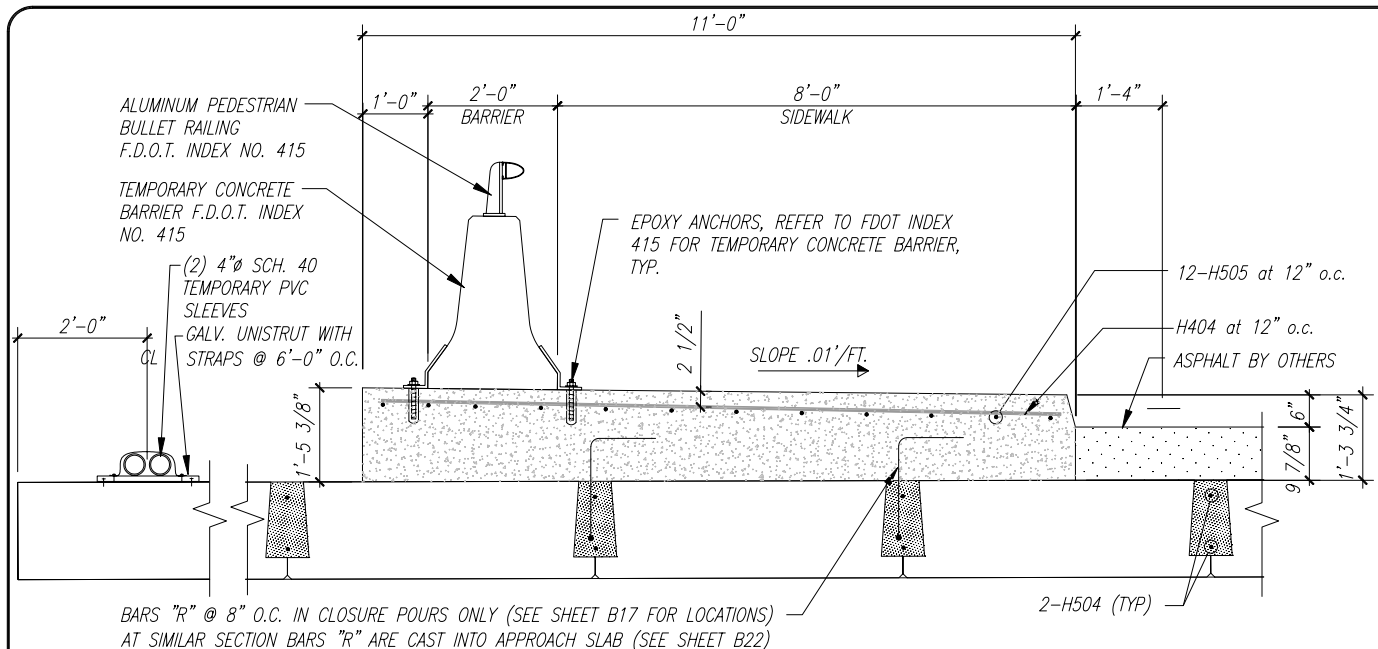
SEAL



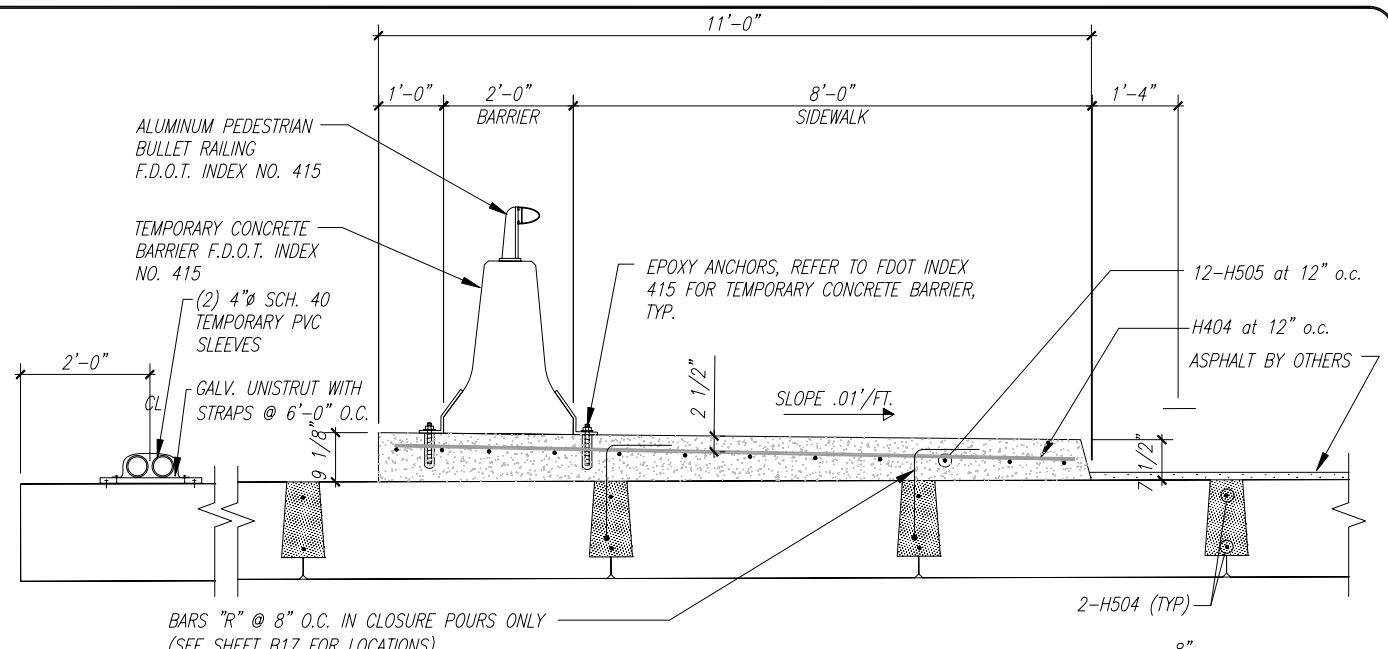
SHEET

B23

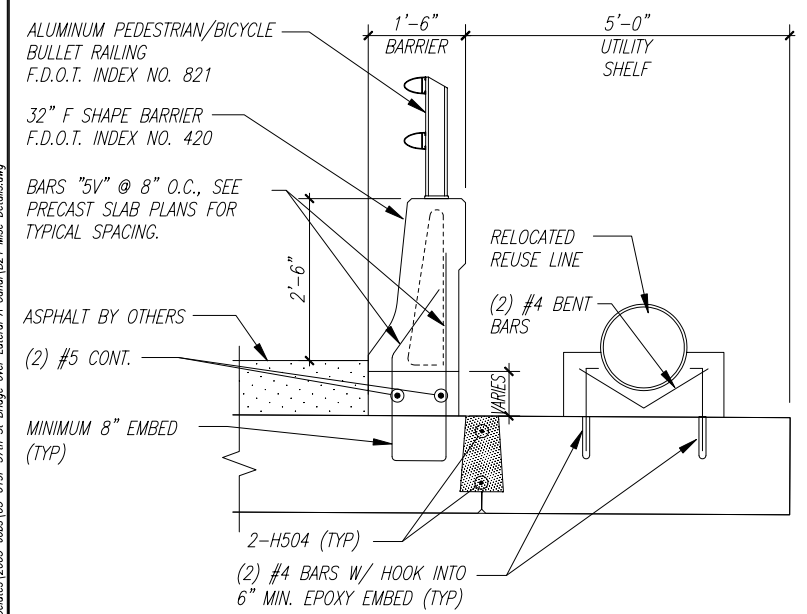
PROJECT NO.  
05-619F



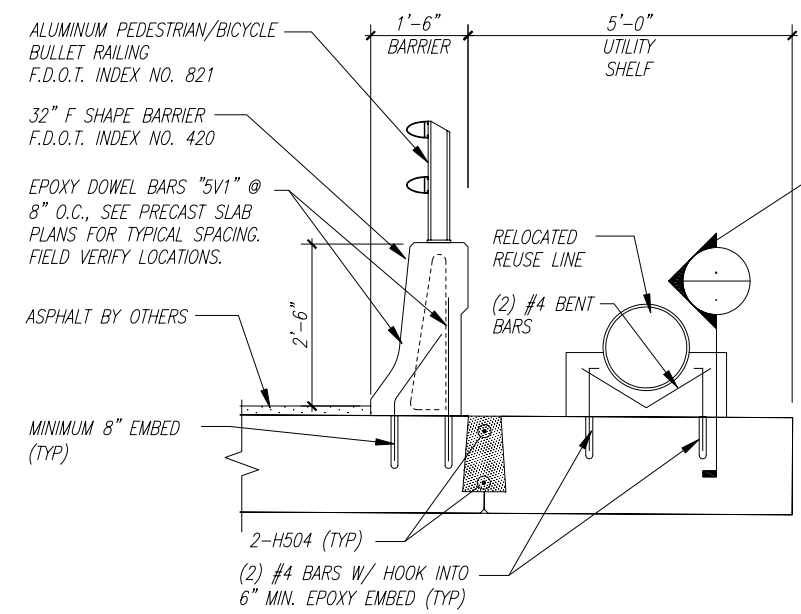
**1**  
**SECTION AT SIDEWALK/TEMP. BARRIER (NEAR END BENT #2)**  
 B24 Scale: 3/4"=1'-0"



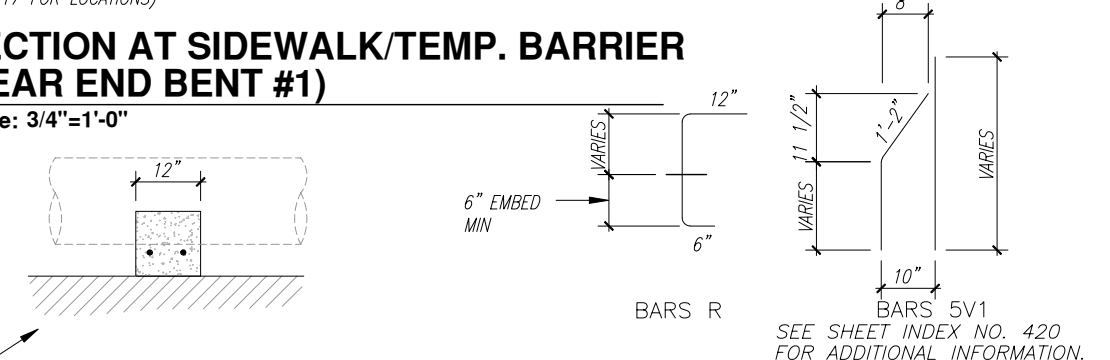
**A**  
**SECTION AT SIDEWALK/TEMP. BARRIER (NEAR END BENT #1)**  
 B24 Scale: 3/4"=1'-0"



**2**  
**SECTION AT BARRIER NEAR END BENT #2**  
 B24 Scale: 3/4"=1'-0"



**2A**  
**SECTION AT BARRIER NEAR END BENT #1**  
 B24 Scale: 3/4"=1'-0"



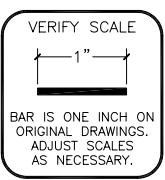
**Estimated Misc. Quantities**

Item	Required	Unit	Quantity
Class II Concrete (Closure Pours)		Cu. Yds.	21
Reinforcing Steel (Closure Pours)		lbs.	1218
Class II Concrete (Sidewalks including Approach Slabs)		Cu. Yds.	49
Reinforcing Steel (Sidewalks including Approach Slabs)		lbs.	2588

**Misc. Bill of Reinforcing Steel**

Mark	Size	Number Required	Total Length	Bending	Weight (lbs.)
<b>CLOSURE POURS (TOTAL)</b>					
H504	5	32	36'-6"	Straight	1218
<b>SIDEWALKS (TOTAL)</b>					
H404	4	87	10'-6"	Straight	610
H505	5	12	158'-0"	Straight	1978

DATE: Apr. 03, 2009 2:39pm C:\Projects\Bridge Design Associates\2005-06\57th St. Bridge over Lateral A Canal\B24 Misc Details.dwg



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NO.	REVISION	DATE	BY

**Department of Public Works**  
 Engineering Division

Scale: AS NOTED  
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 Checked: B.C.R.  
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 Indian River County, Florida

SEAL  
 Brian C. Rheault P.E. - 38797  
 FLORIDA P.E. NAME & NUMBER

SHEET  
**B24**  
 PROJECT NO.  
 05-619F