A J Garcia

STRUCTURES STANDARDS

JANUARY 1981

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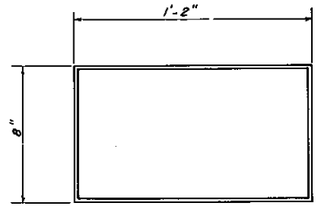
NOTE : Numbers in parenthes in block with Index Number, When Shown, indicates revision number.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

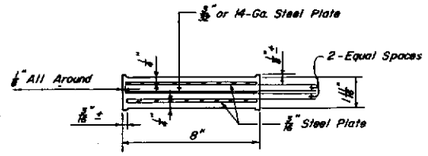
BRIDGE DESIGN STANDARDS

DIETZGEN CORP. 138-X13

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			

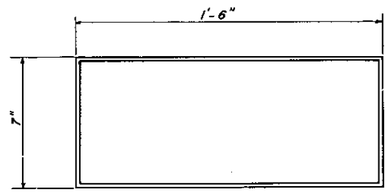


PLAN



TYPICAL SECTION

COMPOSITE PAD
For Type II Beams



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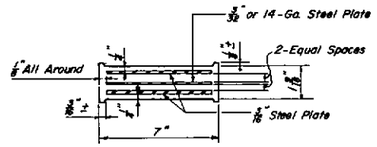
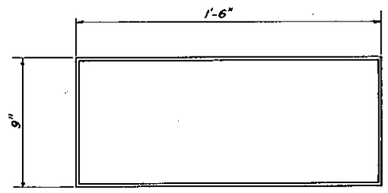


TYPICAL SECTION

COMPOSITE PAD
For Type III Beams



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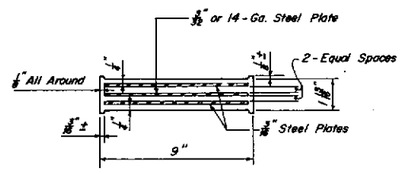
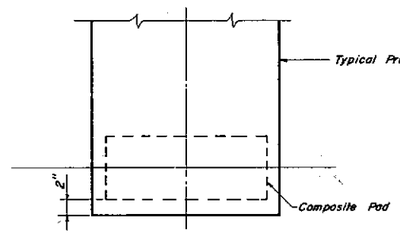
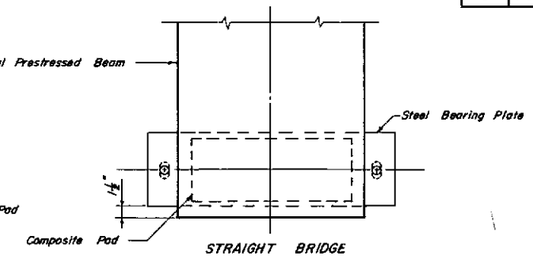


TYPICAL SECTION

COMPOSITE PAD
For Type IV Beams



STRAIGHT BRIDGE



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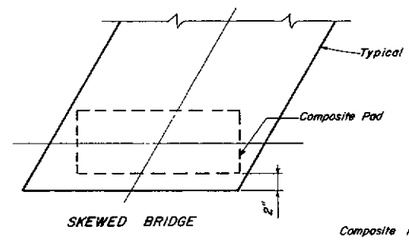

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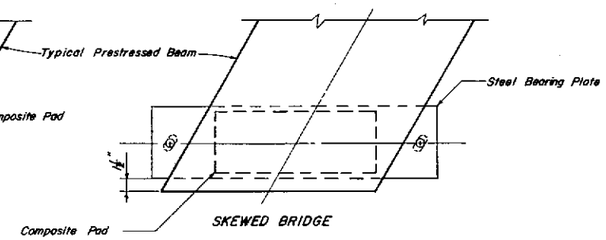

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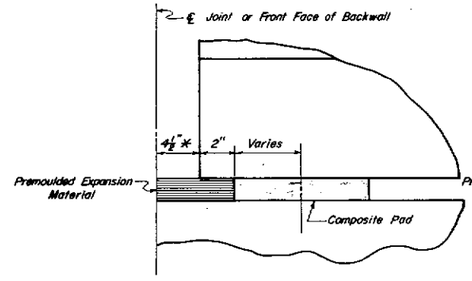
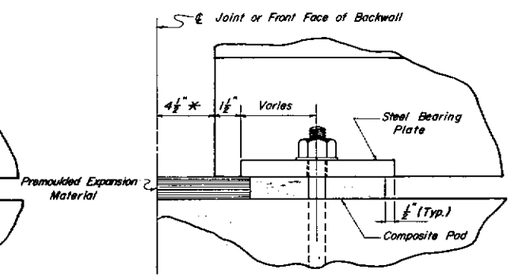
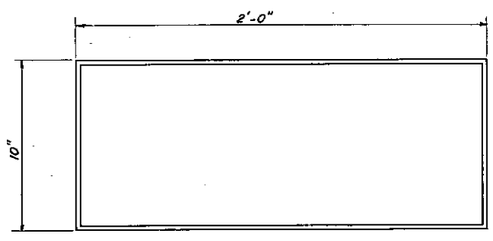


TYPICAL PAD DETAIL
INTERIOR BEAM



TYPICAL PAD DETAIL
EXTERIOR BEAM

* Unless otherwise noted on Beam Sheets.



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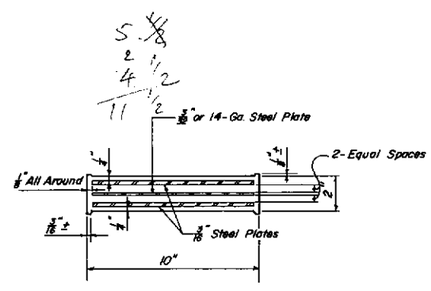


TYPICAL SECTION

COMPOSITE PAD
For Type V & VI Beams

GENERAL NOTES

Neoprene in all Bearing Pads shall have a Grade 50 durometer hardness.

Steel plates in composite pads shall conform to A.S.T.M. A-36 or A-245 Grade C or D, or A-570 Grade C or SAE 1010, SAE 1020.
Variations in pad dimensions will be allowed provided revised pads will meet the current specifications and are approved by the Engineer.

Bearing seat shall be finished parallel to the bottom of Beam.

Steel Bearing Plates, Anchor Bolts, Nuts and Washers shall be hot dip galvanized in accordance with A.S.T.M. Specification A-123. Payment for steel bearing plate assemblies shall be included in the Contract Unit Price for Prestressed Beams or Structural Steel. For location and details of Bearing Plates see Beam sheets.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

COMPOSITE NEOPRENE BEARING PADS

REVISIONS	
Dates	Descriptions

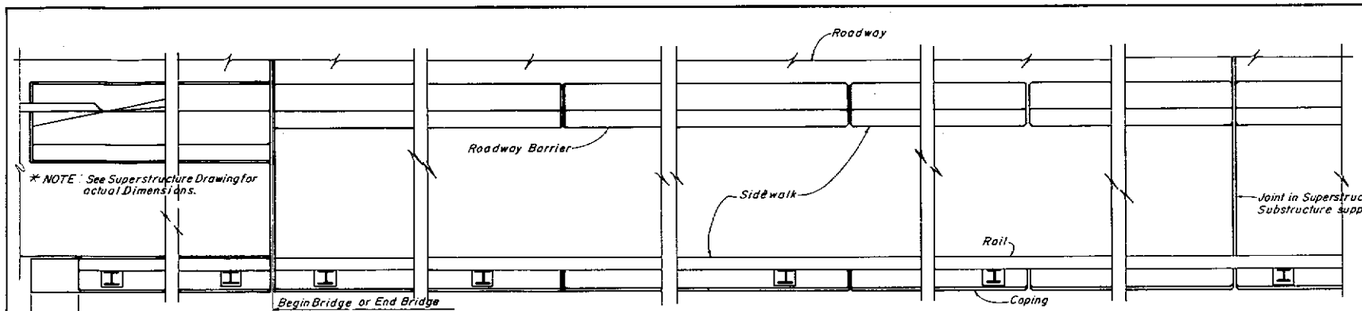
ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	W E H	9-76
Checked by	D E K	9-76
Quantities by		
Checked by		
Supervised by	S H N	

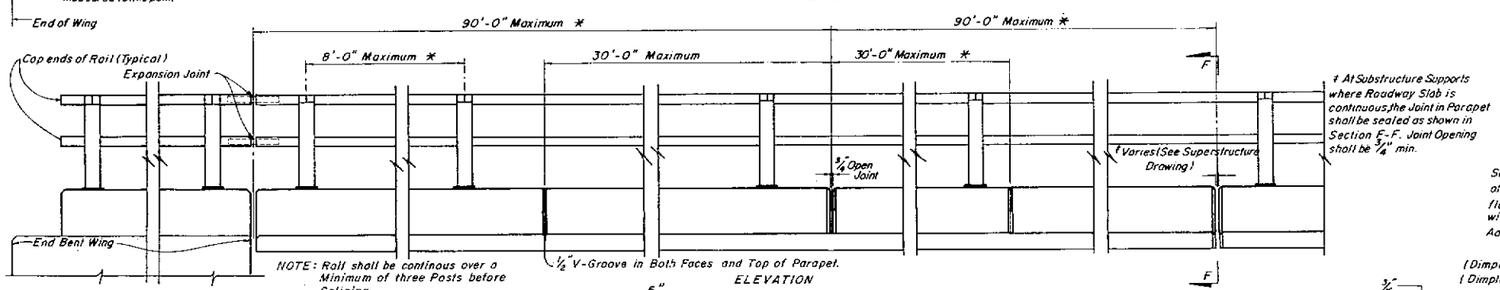
APPROVED BY: T. Ali — Deputy Design Engineer, Structures

Drawing No.	Index No.
1 of 1	12037

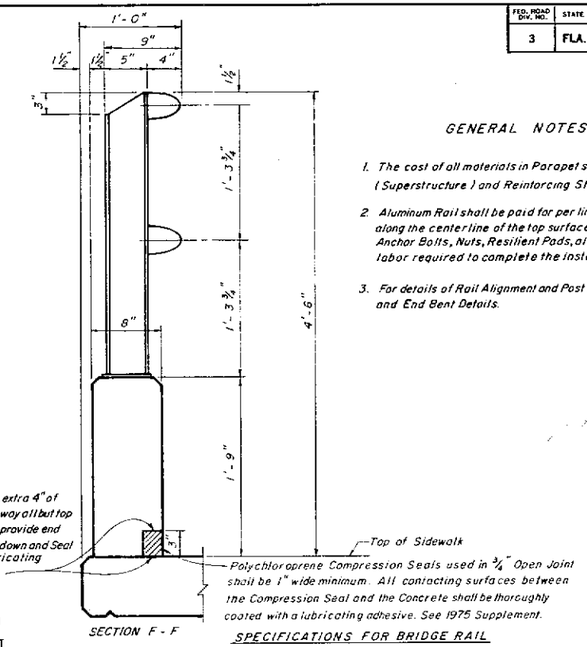
FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			



PLAN



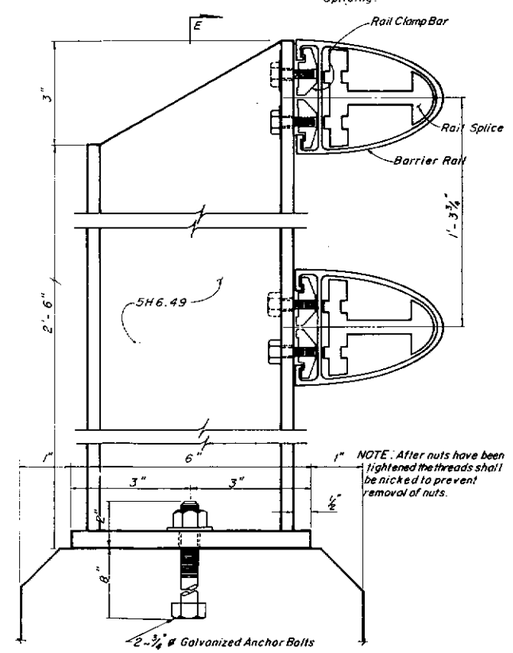
ELEVATION



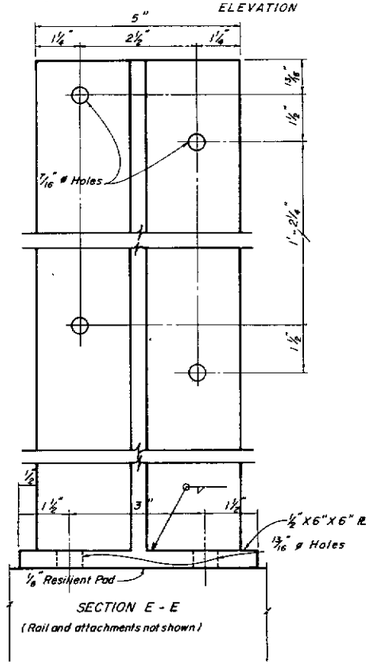
SECTION F - F

GENERAL NOTES

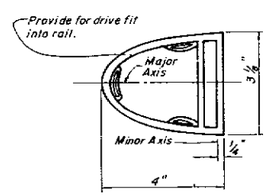
1. The cost of all materials in Parapet shall be included in Concrete (Superstructure) and Reinforcing Steel (Superstructure).
2. Aluminum Rail shall be paid for per linear foot and shall be measured along the centerline of the top surface of the Rail. Payment includes Anchor Bolts, Nuts, Resilient Pads, all incidental materials and labor required to complete the installation.
3. For details of Rail Alignment and Post Spacing see Superstructure and End Bent Details.



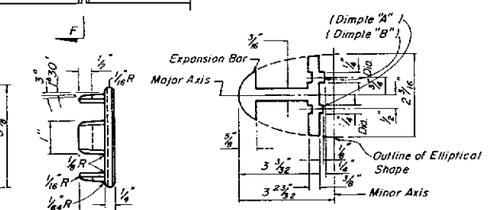
SECTION THRU RAIL



SECTION E - E
(Rail and attachments not shown)

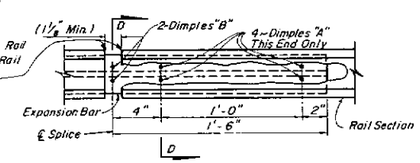


RAIL END CAP

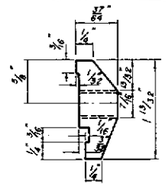


SECTION D-D

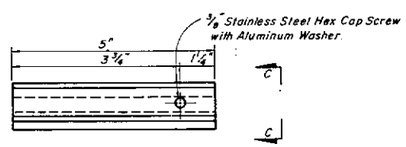
Round all sharp edges of Rail at Expansion Joints and Rail Splices.



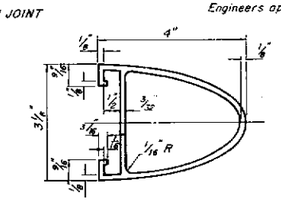
RAIL SPLICE AND EXPANSION JOINT



VIEW C-C



RAIL CLAMP BAR



RAIL

SPECIFICATIONS FOR BRIDGE RAIL

POST: Aluminum A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5 with welding using filler wire 4043.

RAIL & RAIL SPLICE: Aluminum; A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5.

RAIL CLAMP BAR: Aluminum; A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5.

ANCHOR BOLTS: Anchor Bolts shall be in accordance with A.S.T.M. A-36 or A-307. Anchor Bolts, nuts and washers shall be hot-dip galvanized in accordance with A.S.T.M. Designation A-153.

RAIL END CAP: A.S.T.M. B 26 sand cast aluminum alloy, S G 70A-F (Alum. Assoc. alloy designation A-356-F1).

RAIL INSTALLATION: Rail Post shall be normal to Profile Grade. Posts shall be seated on 1/8" thick resilient pads in accordance with Article 932-2.1. The dimension shall be the same as the post base. Rail expansion joints shall occur in the panel between post on either side of Bridge expansion joints. Rail expansion joints shall be similar to rail splices with provision for movement equal to 1.5 times the bridge joint opening.

SHOP DRAWINGS: Complete details and description of materials of the proposed bridge rail shall be submitted by the contractor for the Engineers approval prior to fabrication.

NOTE: Where Aluminum comes in contact with Concrete or other metals, contacting surfaces shall be thoroughly coated with Aluminum impregnated caulking compound.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

ALUMINUM HANDRAIL (SIDEWALK)

REVISIONS	
Dates	Descriptions
1-4-79	Change Curb from 9" to 1'-9".
3-21-80	Added note to "Rail Splice And Expansion Joint."

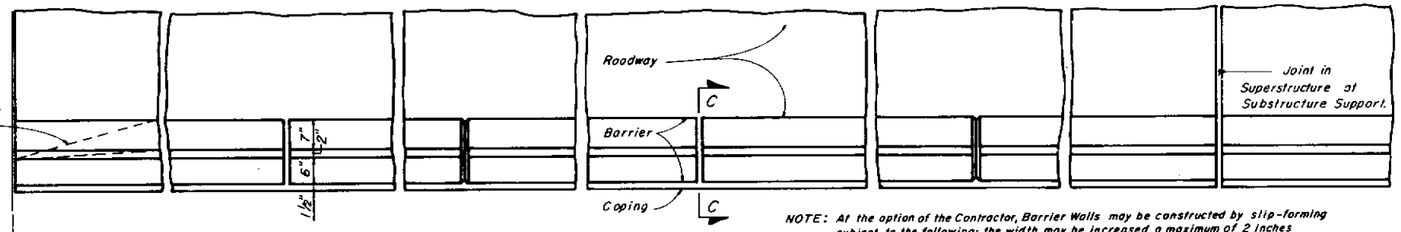
ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	W.L.D./J.F.L.	9/76
Checked by	R.D.S.	9/76
Quantities by		
Checked by		
Supervised by	P. BYRD	

APPROVED BY: T. [illegible] — Deputy Design Engineer, Structures

Drawing No.	Index No.
1 of 1	12,087

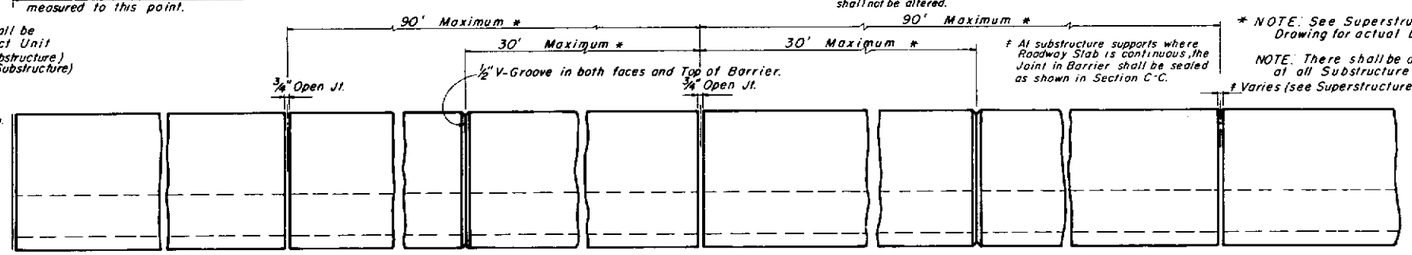
FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			



PLAN

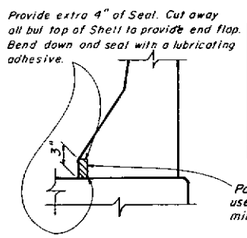
NOTE: At the option of the Contractor, Barrier Walls may be constructed by slip-forming subject to the following: the width may be increased a maximum of 2 inches provided that the front face at the base of each barrier infringes on the clear roadway width no more than ½" and that any additional materials required are at the expense of the Contractor. The shape of the Barrier on the Roadway side shall not be altered.

NOTE: Concrete Wing Post shall be paid for at the Contract Unit Price for Concrete (Substructure) and Reinforcing Steel (Substructure)



‡ At substructure supports where Roadway Slab is continuous, the Joint in Barrier shall be sealed as shown in Section C-C.

ELEVATION

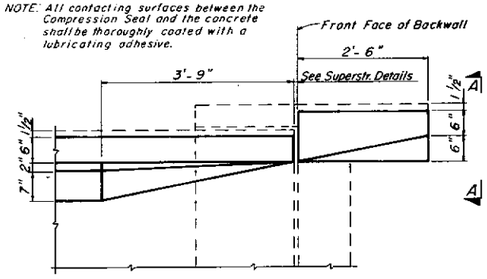


SECTION C-C

NOTE: All contacting surfaces between the Compression Seal and the concrete shall be thoroughly coated with a lubricating adhesive.

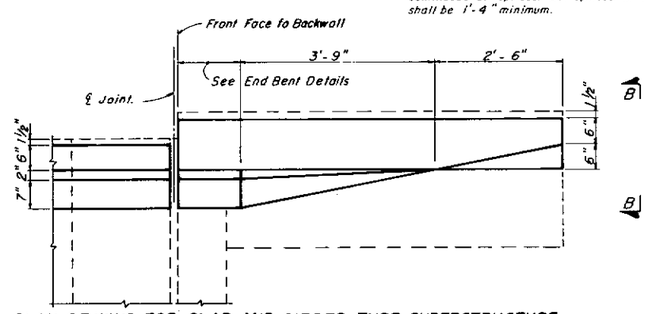
REINFORCING STEEL NOTES

All Reinforcing Steel in Barrier shall be No. 4's. Bars 4R, 4T & 4U to be spaced at 8" c.c.
At all open joints bars 4R, 4T, 4U and the ends of bars 4S shall have 2" min. cover.
At all construction joints bars 4S may be either continuous or spliced. All splices in bars 4S shall be 1'-4" minimum.

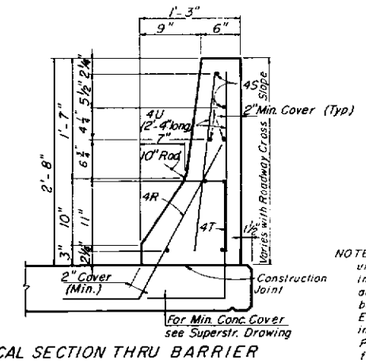


PLAN OF WING FOR SLAB TYPE SUPERSTRUCTURE

NOTE: For Reinforcing Steel in Transition Area on Slab Type Superstructure adjust and field bend as required for minimum cover.

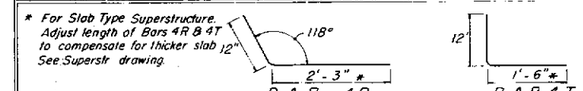


PLAN OF WING FOR SLAB AND GIRDER TYPE SUPERSTRUCTURE



TYPICAL SECTION THRU BARRIER

BENDING DIAGRAMS

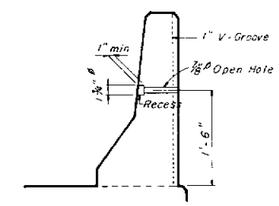


NOTE: All bar dimensions are out-to-out.

QUANTITIES: Class II Concrete = 0.07594 Cu. Yds. per linear ft. of Barrier. (Based on Roadway Cross Slope of 02'/ft.)
REINFORCING STEEL = 15.782 lbs. per linear ft. of Barrier

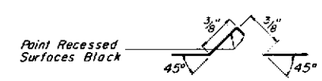
GENERAL NOTES

CONCRETE: Class II Concrete shall be used in Barrier.
REINFORCING STEEL: Reinforcing Steel shall be Grade 60.
PAYMENT: Barrier shall be paid for per linear foot, which shall include all Concrete and Reinforcing Steel. Barrier shall be measured along the center line of the top surface of the Barrier.
CYLINDER STRENGTH: The Cylinder Strength of the Concrete shall be 3,400 p.s.i. minimum at 28 days.
MARKERS: Markers recording the Elevation shall be placed on top of the Barrier at End Bents. On Bridges longer than 100 ft. one marker shall be placed at each end of the Bridge. On Bridges less than 100 ft. long, one marker shall be placed at one end of the Bridge only. Markers are to be furnished by the Department of Transportation and installed by the Contractor. The Cost of installing the Markers shall be included in the Contract Unit Price for Concrete Barrier.
ANCHOR BOLTS: Anchor Bolts, Nuts, and Washers shall be hot dip galvanized in accordance with A.S.T.M. A-123.



HOLES FOR INCIDENTAL SIGNING

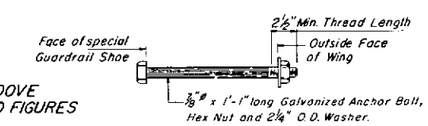
NOTE: Holes and grooves shall be placed on barrier type handrails of divided and undivided bridges as shown in the plans for designated type "C" single column, informational, guide, regulatory and warning sign locations (see signing plans) and at approximately 500' intervals along the right handrails of bridges between designated locations for future signs as directed by the Engineer. The cost of the extra holes and grooves shall be included in the contract unit price for Concrete Handrail (Barrier). If Signing Plans are not available the Project Engineer should secure necessary information from the District Maintenance or Traffic Operations Office.



SECTION THRU RECESSED "V" GROOVE TO FORM INSCRIBED LETTERS AND FIGURES

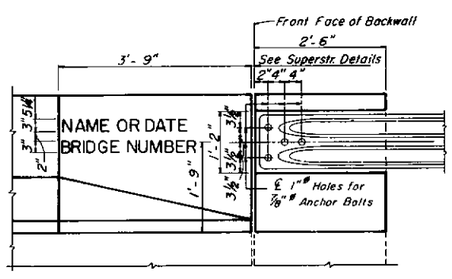
NOTES

The Name and Bridge Number to be placed on the Barrier shall be seen on the drivers right when approaching Bridge. The Date to be placed on the drivers left when approaching Bridge. The Date shall be the Year the Bridge is constructed.
Black Plastic Letters and Figures 3" in height as approved by the Engineer may be used in lieu of Letters and Figures formed by ⅜" "V" Grooves. "V" Grooves shall be formed by preformed Letters and Figures.

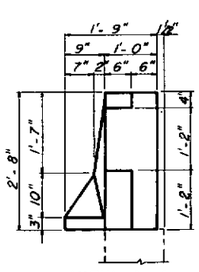


ANCHOR BOLT DETAIL

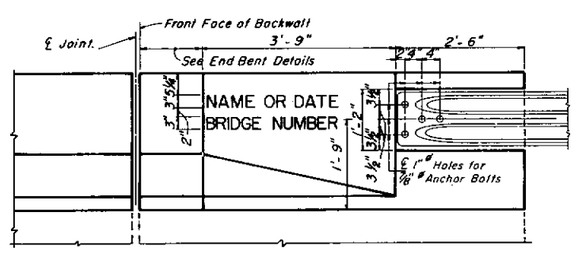
NOTE: Cost of Anchor Bolts to be included in the Contract Unit Price for Guardrail.



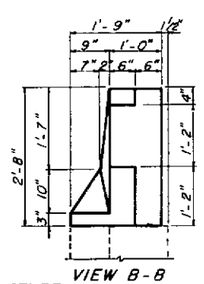
ELEVATION OF WING FOR SLAB TYPE SUPERSTRUCTURE



VIEW A-A



ELEVATION OF WING FOR SLAB AND GIRDER TYPE SUPERSTRUCTURE



VIEW B-B

DETAILS OF GUARDRAIL ATTACHMENT AT WING POSTS

NOTE: For Guardrail Shoe See Standard Drawing in Roadway Plans.

REVISIONS	
Dates	Descriptions
10-12-77	Change Anchor Bolt Detail
1-6-78	Has Used on Anchor Bolt
9-22-78	Paint Steel Revised & Deleted Reference to 1975 Supplement
7-17-80	Slip-Forming Note Added

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

CONCRETE HANDRAIL BARRIER

ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	D.O.D.	3/78
Checked by	P.B.	3/78
Quantities by		
Checked by		
Supervised by	P.B.	

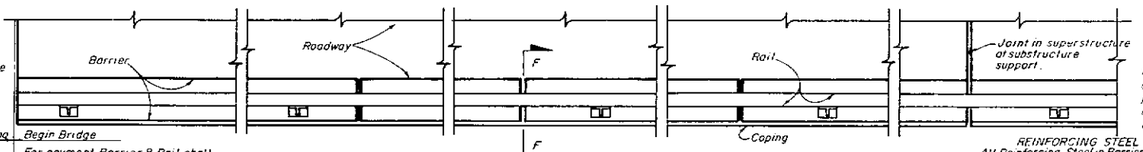
APPROVED BY T. Ellis Lee
Deputy Design Engineer, Structures

Drawing No.	Index No.
1 of 1	11407

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			

NOTE: For Barrier Transition at End Bents see Details below, this sheet.

* NOTE: See Superstructure Drawing for actual Dimensions.



PLAN

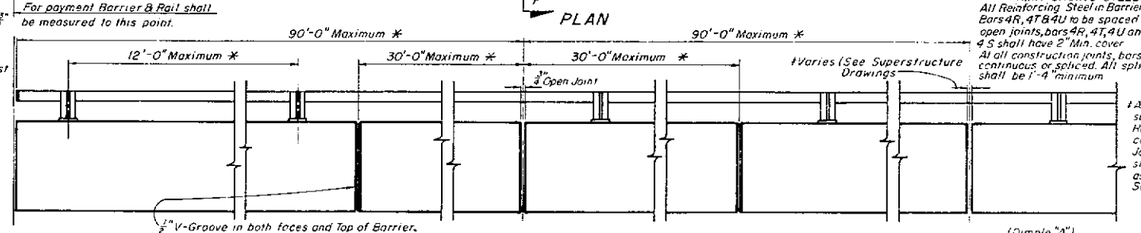
End Bent Wing Post — Begin Bridge

For payment Barrier & Rail shall be measured to this point.

NOTE: There shall be a $\frac{3}{4}$" Min. Open Joint at all Substructure Supports.

NOTE: Concrete Wing Post shall be paid for at the Contract Unit Price for Concrete (Substructure) and Reinforcing Steel (Substructure).

NOTE: Rail shall be continuous over a minimum of 3 Posts before splicing.



ELEVATION

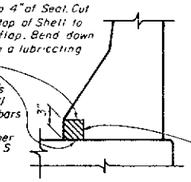
REINFORCING STEEL NOTES

All Reinforcing Steel in Barrier shall be No. 4's. Bars 4R, 4T & 4U to be spaced at 8" c.c. At all open joints, bars 4R, 4T, 4U and the ends of bars 4S shall have 2" Min. cover. At all constructing joints, bars 4S may be either continuous or spliced. All splices in bars 4S shall be 1'-4" minimum.

‡ At substructure supports where Roadway Slab is continuous, the Joint in Barrier shall be sealed as shown in Section F-F.

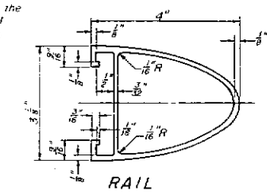
NOTE: All contacting surfaces between the Compression Seal and the concrete shall be thoroughly coated with a lubricating adhesive.

Provide extra 4" of Seal. Cut away all but top of Shell to provide end flap. Bend down and seal with a lubricating adhesive.



SECTION F-F

Polychloroprene Compression Seals used in $\frac{3}{4}$" Open Joints shall be 1" wide minimum.



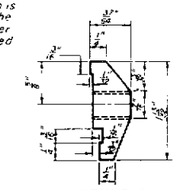
RAIL

BENDING DIAGRAM

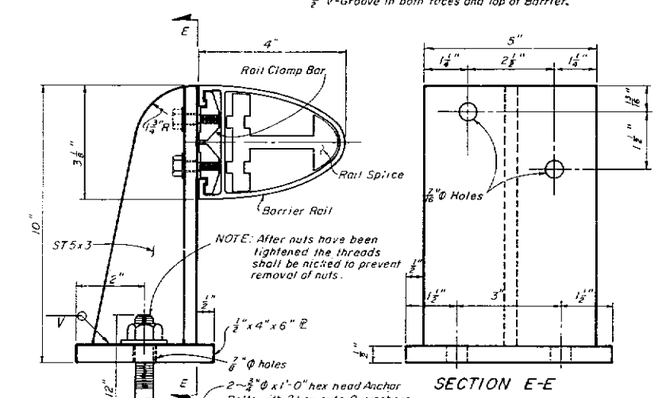
NOTE: All bar dimensions are out-to-out

BAR 4R — BAR 4T

QUANTITIES: Class B Concrete = 0.07594 Cu. Yds. per linear ft. of Barrier (based on Roadway Cross Slope of .02ft.).
REINFORCING STEEL = 15.782 lbs. per linear ft. of Barrier.

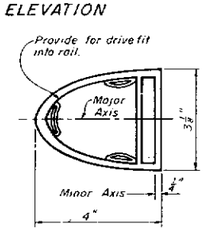


VIEW C-C



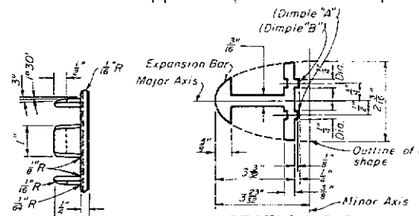
SECTION THRU RAIL

SECTION E-E

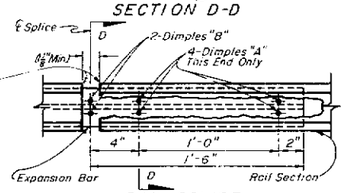


RAIL END CAP

Round all sharp edges of Rail at Expansion Joints and Rail Splices

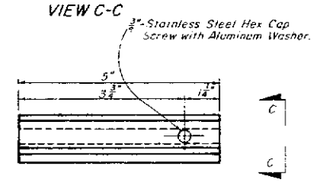


SECTION D-D

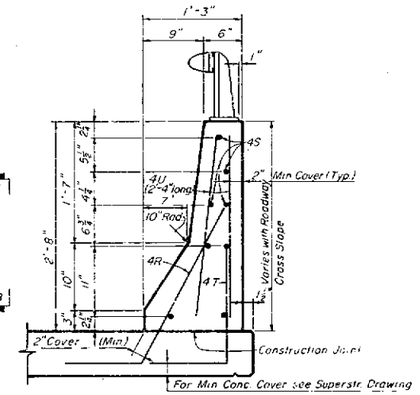


RAIL SPLICE

NOTE: At the option of the contractor, the bottom nut shown in "Section Thru Rail" may be used in conjunction with top nut to secure Anchor Bolt to form work during pour.



RAIL CLAMP BAR



TYPICAL SECTION THRU BARRIER

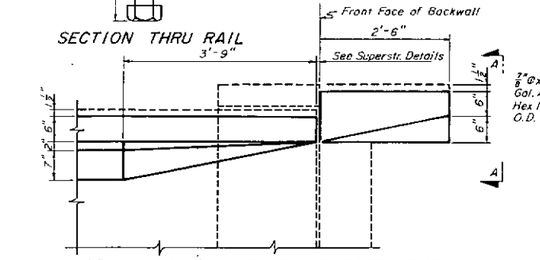
GENERAL NOTES

CONCRETE: Class B Concrete shall be used in Barrier.
REINFORCING STEEL: Reinforcing Steel shall be Grade 60.
PAYMENT: Barrier shall be paid for per linear feet, which shall include all Rail, Concrete and Reinforcing Steel. Barrier shall be measured along the centerline of the top surface of the Barrier.
CYLINDER STRENGTH: The Cylinder Strength of the Concrete shall be 3,400 p.s.i. minimum at 28 days.
MARKERS: Markers recording the Elevation shall be placed on top of the Barrier at End Bents. On Bridges longer than 100 ft. one marker shall be placed at each end of the Bridge. On Bridges less than 100 ft. long, one marker shall be placed at one end of the Bridge only. Markers are to be furnished by the Department of Transportation and installed by the Contractor. The Cost of installing the Markers shall be included in the Contract Unit Price for Concrete Barrier.
ANCHOR BOLTS: Anchor Bolts, Nuts and Washers shall be hot dip galvanized in accordance with A.S.T.M. A-123.

SPECIFICATIONS FOR BRIDGE RAIL

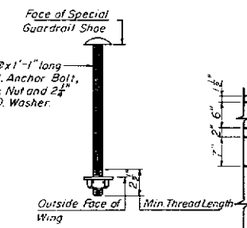
POST: Fabricated wrought aluminum A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5 with welding using filler wire 4043.
RAIL & RAIL SPLICE: Aluminum; A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5.
RAIL CLAMP BAR: Aluminum; A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5.
ANCHOR BOLTS: Anchor Bolts shall be in accordance with A.S.T.M. A-36 or A-307. Anchor Bolts, nuts and washers shall be hot-dip galvanized in accordance with A.S.T.M. Designation A-153.
RAIL END CAP: A.S.T.M. B 26 sand cast aluminum alloy, S.G. 70A-F (Alum Assoc. alloy designation A-356-F).
RAIL INSTALLATION: Rail Post shall be normal to Profile Grade. Posts shall be seated on $\frac{1}{8}$" thick resilient pads in accordance with Article 932-2.1. The dimension shall be the same as the post base. Rail expansion joints shall occur in the panel between posts on either side of Bridge expansion joints. Rail expansion joints shall be similar to rail splices with provision for movement equal to 1.5 times the bridge joint opening.
SHOP DRAWINGS: Complete details and description of materials of the proposed bridge rail shall be submitted by the contractor for the Engineers approval prior to fabrication.

NOTE: - At the option of the Contractor, Barrier Walls may be constructed by slip-forming subject to the following: the width may be increased a maximum of 2 inches provided that the front face at the base of each barrier infringes on the clear roadway width no more than $\frac{1}{2}$" and that any additional materials required are at the expense of the Contractor. The shape of the Barrier on the Roadway side shall not be altered.



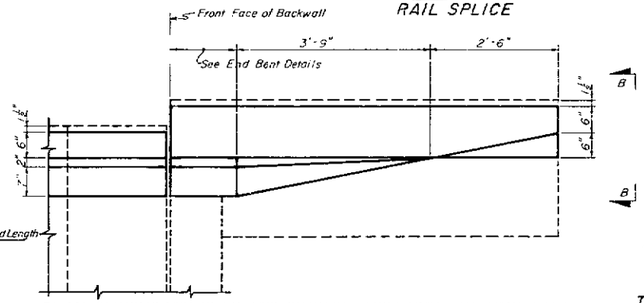
PLAN OF WING FOR SLAB TYPE SUPERSTRUCTURE

NOTE: For Reinforcing Steel in Transition Area on Slab Type Superstructure adjust and field bend as required for minimum cover.

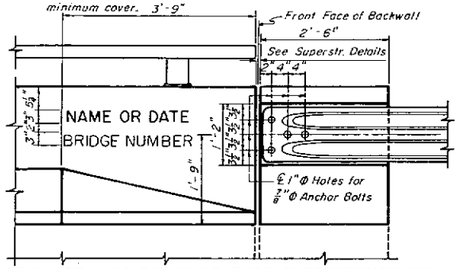


ANCHOR BOLT DETAIL

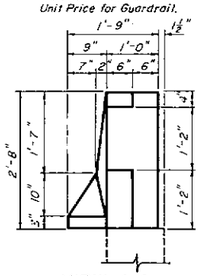
NOTE: Cost of Anchor Bolts to be included in the Contract Unit Price for Guardrail.



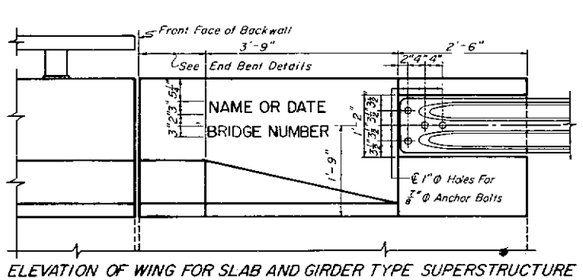
PLAN OF WING FOR SLAB AND GIRDER TYPE SUPERSTRUCTURE



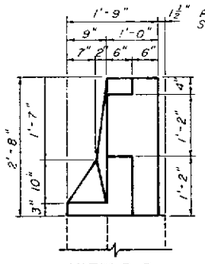
ELEVATION OF WING FOR SLAB TYPE SUPERSTRUCTURE



VIEW A-A



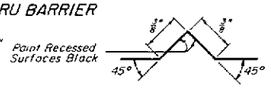
ELEVATION OF WING FOR SLAB AND GIRDER TYPE SUPERSTRUCTURE



VIEW B-B

DETAILS OF GUARDRAIL ATTACHMENT AT WING POSTS

NOTE: For Guardrail Shoe See Standard Drawing in Roadway Plans



SECTION THRU RECESSED "V" GROOVE TO FORM INSCRIBED LETTERS AND FIGURES

Black Plastic Letters and Figures 3" in height as approved by the Engineer may be used in lieu of Letters and Figures formed by $\frac{3}{8}$" "V" Grooves. "V" Grooves shall be formed by preformed Letters and Figures.

The Name and Bridge Number to be placed on the Barrier shall be seen on the drivers right when approaching Bridge. The date to be placed on the drivers left when approaching Bridge. The date shall be the Year the Bridge is constructed.

REVISIONS	
Dates	Descriptions
8/30/75	In reference to 1975 Supplement.
8-29-75	Bridge Number added to Wingwall
10-19-77	Change Anchor Bolt Detail
9-26-78	Paint Steel Revised & Deleted Reference to 1975 Supplement
3-21-80	Added note to "Rail Splice"
7-17-80	Slip-Forming Note Added

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

SIDEWALK BARRIER

ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	WHD	5-74
Checked by	JLM	5-74
Quantities by		
Checked by		
Supervised by	PB	

APPROVED BY T. Allen
Deputy Design Engineer, Structures

Drawing No.	Index No.
1 of 1	11,460

CHRISTIAN COMP. TUCKER, GEORGIA 13066-3 9-73

ORIGINAL

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			

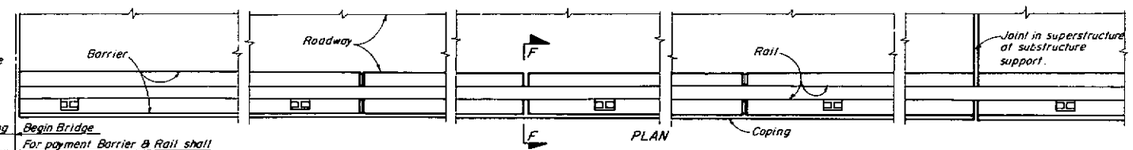
NOTE: For Barrier Transition at End Bents see Details below, this sheet.

* NOTE: See Superstructure drawing for actual dimensions.

NOTE: There shall be a $\frac{3}{4}$" Min. Open Joint at all Substructure Supports.

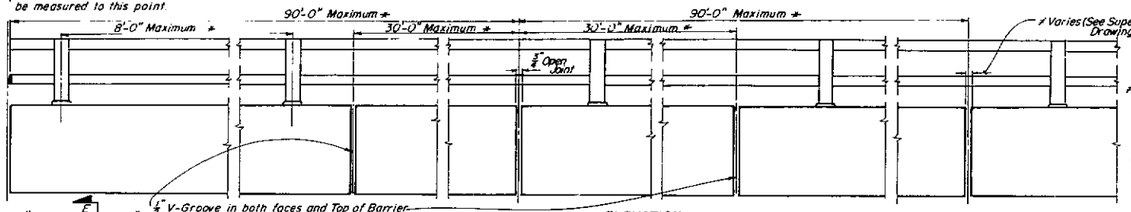
NOTE: Concrete Wing post shall be paid for at the Contract Unit Price for Concrete (Substructure) and Reinforcing Steel (Substructure)

NOTE: Rail shall be continuous over a minimum of 3 posts before splicing.



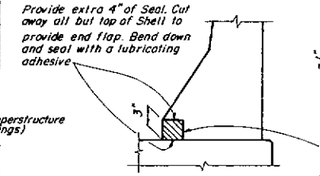
End Bent Wing Post — Begin Bridge

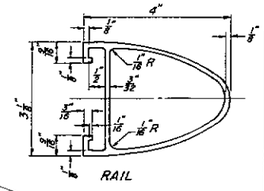
For payment Barrier & Rail shall be measured to this point.



* At substructure supports where Roadway Slab is continuous, the joint in Barrier shall be sealed as shown in Section F-F.

NOTE: All contacting surfaces between the Compression Seal and the concrete shall be thoroughly coated with a lubricating adhesive.

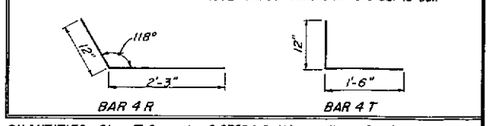




Polychloroprene Compression Seals used in $\frac{3}{4}$" Open Joints shall be 1" wide minimum.

BENDING DIAGRAM

NOTE: All bar dimensions are out-to-out.

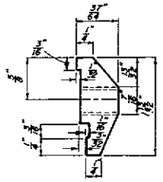


QUANTITIES: Class II Concrete = 0.07594 Cu.Yds. per linear ft. of Barrier (Based on Roadway Cross Slope of .02'/ft.)
REINFORCING STEEL = 15.782 lbs. per linear ft. of Barrier.

REINFORCING STEEL NOTES

All Reinforcing Steel in Barrier shall be No.4's. Bars 4R, 4T & 4U to be spaced at 9" C.C. At all open joints, Bars 4R, 4T, 4U and the ends of bars 4S shall have 2" Min. cover.

At all construction joints, bars 4S may be either continuous or spliced. All splices in bars 4S shall be 1'-4" minimum.



GENERAL NOTES

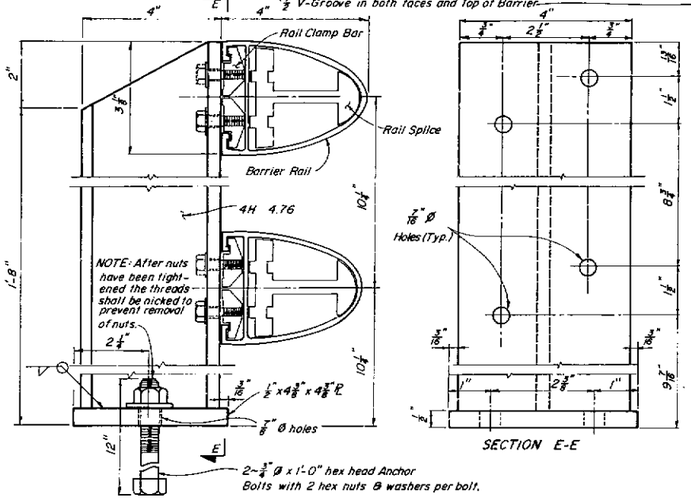
CONCRETE: Class II Concrete shall be used in Barrier.

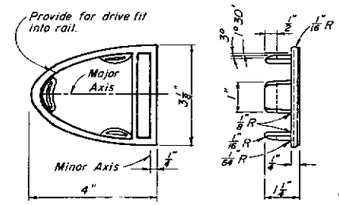
REINFORCING STEEL: Reinforcing Steel shall be Grade 60.

PAYMENT: Barrier shall be paid for per linear foot, which shall include all Rail, Concrete and Reinforcing Steel. Barrier shall be measured along the centerline of the top surface of the Barrier.

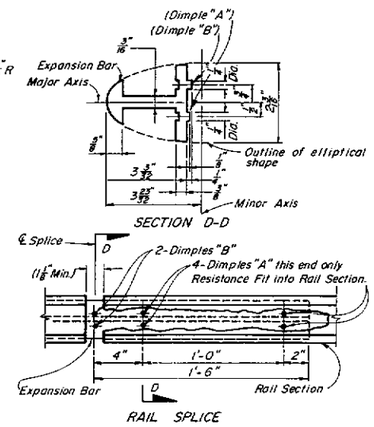
CYLINDER STRENGTH: The Cylinder Strength of the Concrete shall be 3,400 p.s.i. minimum at 28 days.

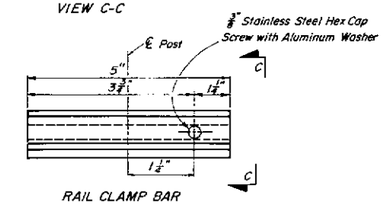
MARKERS: Markers recording the Elevation shall be placed on top of the barrier at End Bents. On Bridges longer than 100 ft. one marker shall be placed at each end of the Bridge. On Bridges less than 100 ft. long, one marker shall be placed at one end of the Bridge only. Markers are to be furnished by the Department of Transportation and installed by the Contractor. The Cost of installing the markers shall be included in the Contract Unit Price for Concrete Barrier.





NOTE: At the option of the Contractor, the bottom nut shown in "Section Thru Rail" may be used in conjunction with top nut to secure Anchor Bolt to form work during pour.





SPECIFICATIONS FOR BRIDGE RAIL

POST: Fabricated wrought aluminum A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5 with welding using filler wire 4043.

RAIL & RAIL SPLICE: Aluminum; A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5

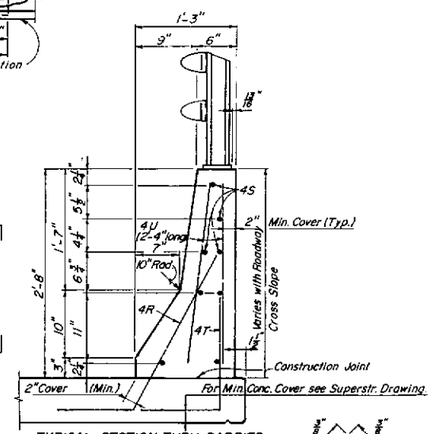
RAIL CLAMP BAR: Aluminum; A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5.

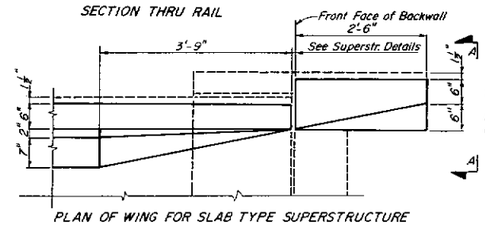
ANCHOR BOLTS: Anchor Bolts shall be in accordance with A.S.T.M. A-36 or A-307. Anchor Bolts, nuts and washers shall be hot-dip galvanized in accordance with A.S.T.M. Designation A-153.

RAIL END CAP: A.S.T.M. B 26 sand cast aluminum alloy, S G 70A-F (Alum. Assoc. alloy designation A-356-F).

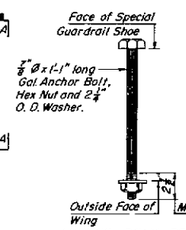
RAIL INSTALLATION: Rail Post shall be normal to Profile Grade. Posts shall be seated on $\frac{1}{8}$" thick resilient pads in accordance with Article 932-2.1. The dimension shall be the same as the post base. Rail expansion joints shall occur in the panel between posts on either side of Bridge expansion joints. Rail expansion joints shall be similar to rail splices with provision for movement equal to 1.5 times the bridge joint opening.

SHOP DRAWINGS: Complete details and description of materials of the proposed bridge rail shall be submitted by the contractor for the Engineers approval prior to fabrication.

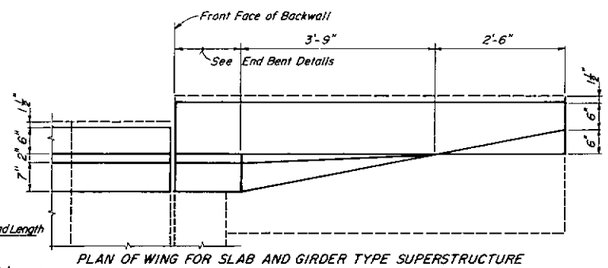


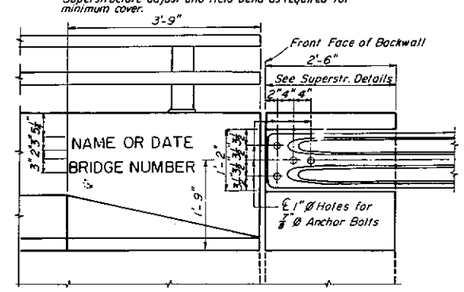


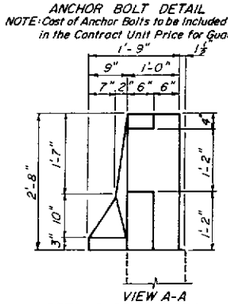
NOTE: For Reinforcing Steel in Transition Area on Slab Type Superstructure adjust and field bend as required for minimum cover.



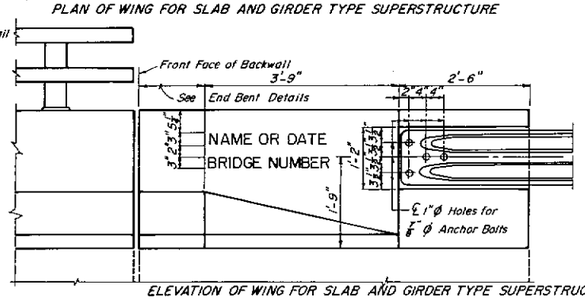
NOTE: Cost of Anchor Bolts to be included in the Contract Unit Price for Guardrail



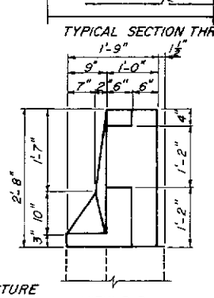


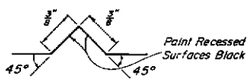


DETAILS OF GUARDRAIL ATTACHMENT AT WING POSTS



NOTE: For Guardrail Shoe see Road Design Standards Booklet.





SECTION THRU RECESSED "V" GROOVE TO FORM INSCRIBED LETTERS AND FIGURES

Black Plastic Letters and Figures 3" in height as approved by the Engineer may be used in lieu of Letters and Figures formed by $\frac{1}{8}$" "V" Grooves. "V" Grooves shall be formed by preformed Letters and Figures.

The Name and Bridge Number to be placed on the Barrier shall be seen on the drivers right when approaching Bridge. The date to be placed on the drivers left when approaching Bridge. The date shall be the Year the Bridge is constructed.

REVISIONS	
Dates	Descriptions

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

BICYCLE BARRIER

ROAD NO.	COUNTY	PROJECT NO.

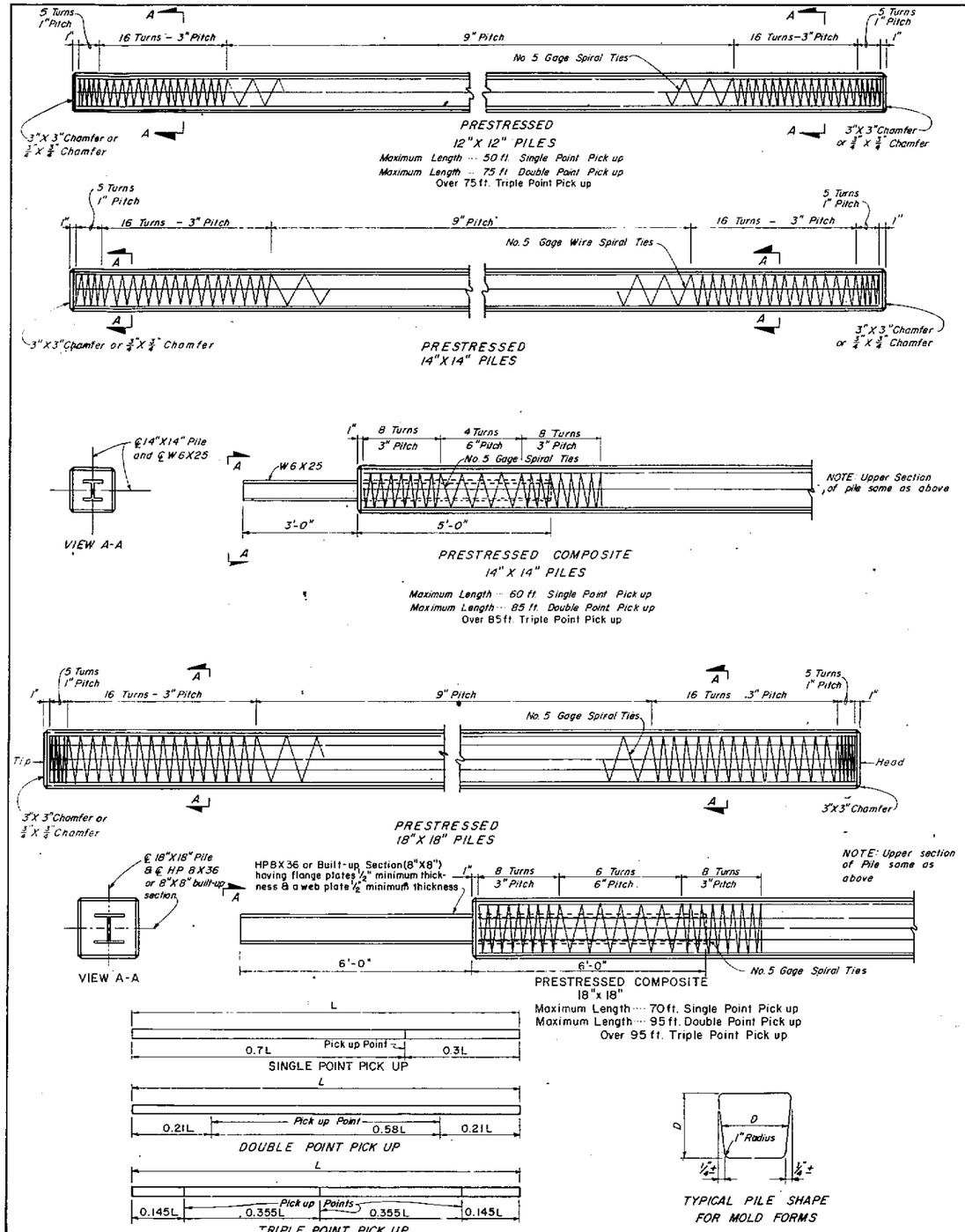
	Names	Dates
Designed by	CAC	1-79
Checked by	DEK	1-79
Quantities by		
Checked by		
Supervised by	SHN	

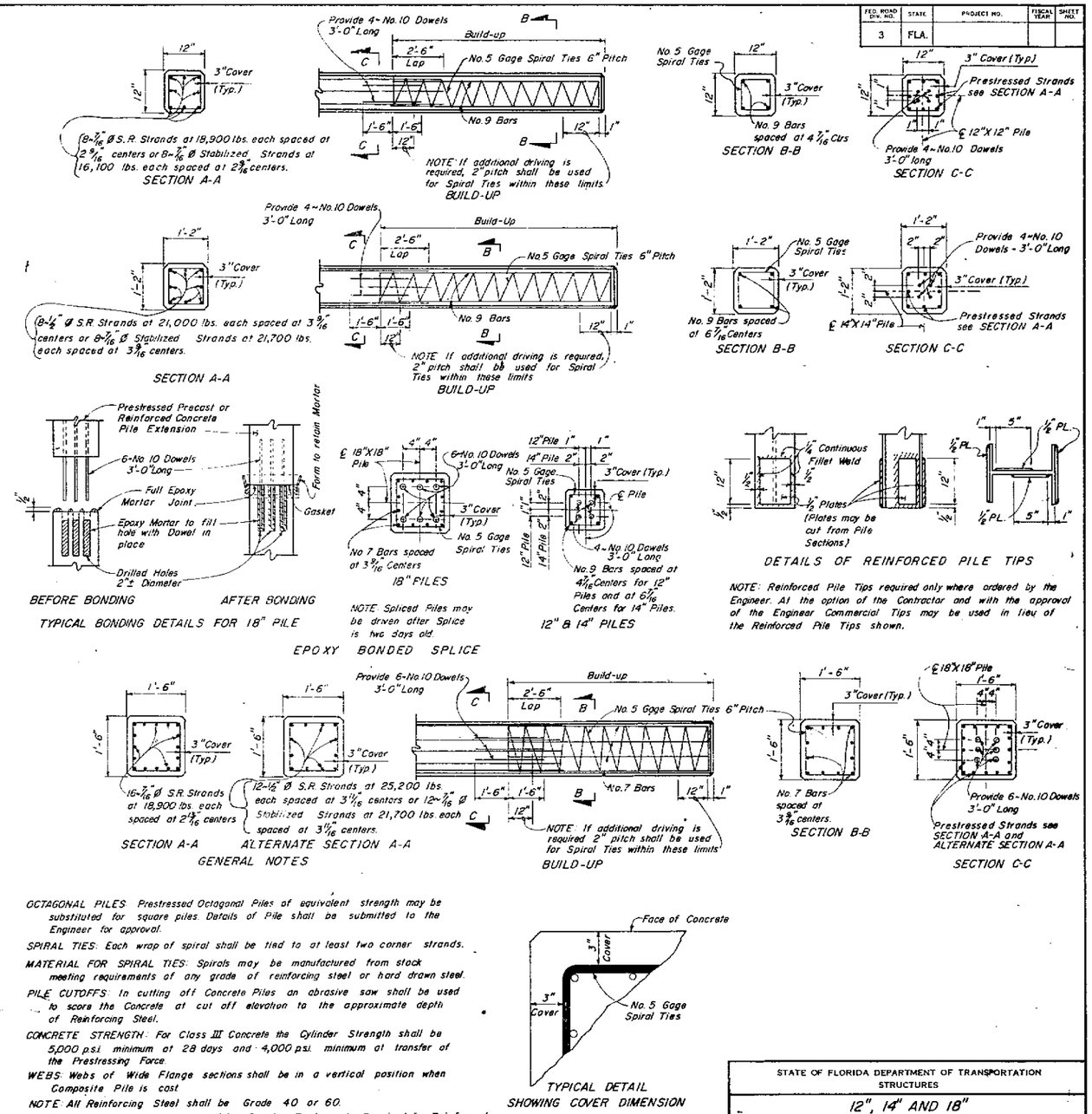
APPROVED BY

Deputy Design Engineer, Structures

Drawing No.	Index No.
1 of 1	12931

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			





OCTAGONAL PILES: Prestressed Octagonal Piles of equivalent strength may be substituted for square piles. Details of Pile shall be submitted to the Engineer for approval.

SPIRAL TIES: Each wrap of spiral shall be tied to at least two corner strands.

MATERIAL FOR SPIRAL TIES: Spirals may be manufactured from stock meeting requirements of any grade of reinforcing steel or hard drawn steel.

PILE CUTOFFS: In cutting off Concrete Piles an abrasive saw shall be used to score the Concrete at cut off elevation to the approximate depth of Reinforcing Steel.

CONCRETE STRENGTH: For Class III Concrete the Cylinder Strength shall be 5,000 p.s.i. minimum at 28 days and 4,000 p.s.i. minimum at transfer of the Prestressing Force.

WEBS: Webs of Wide Flange sections shall be in a vertical position when Composite Pile is cast.

NOTE: All Reinforcing Steel shall be Grade 40 or 60.

APPROVAL: Prior Approval in Writing By the Engineer is Required for Reinforced Concrete Build-Up in Excess of 2'-0". This will not be approved for piles in a coastal environment.

DUNNAGE: Place Dunnage under pick up points shown for double pick up. Where Pile Length exceeds that requiring double point pick up, place dunnage at pickup points called for in Triple Point Pick up.

TYPICAL DETAIL SHOWING COVER DIMENSION

REVISIONS	
Dates	Descriptions
5-5-75	Retraced
7-22-75	Change Chamfer
7-28-75	Change Approval Note
10-8-75	ADD TRIPLE POINT PICK UP
9-21-78	Change Lab. Strets Strands to Stabilized Strands
9-21-78	Head & Tip removed from 12" & 14" Pile. Chamfer added.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

12", 14" AND 18" PRESTRESSED CONCRETE PILES

ROAD NO.	COUNTY	PROJECT NO.

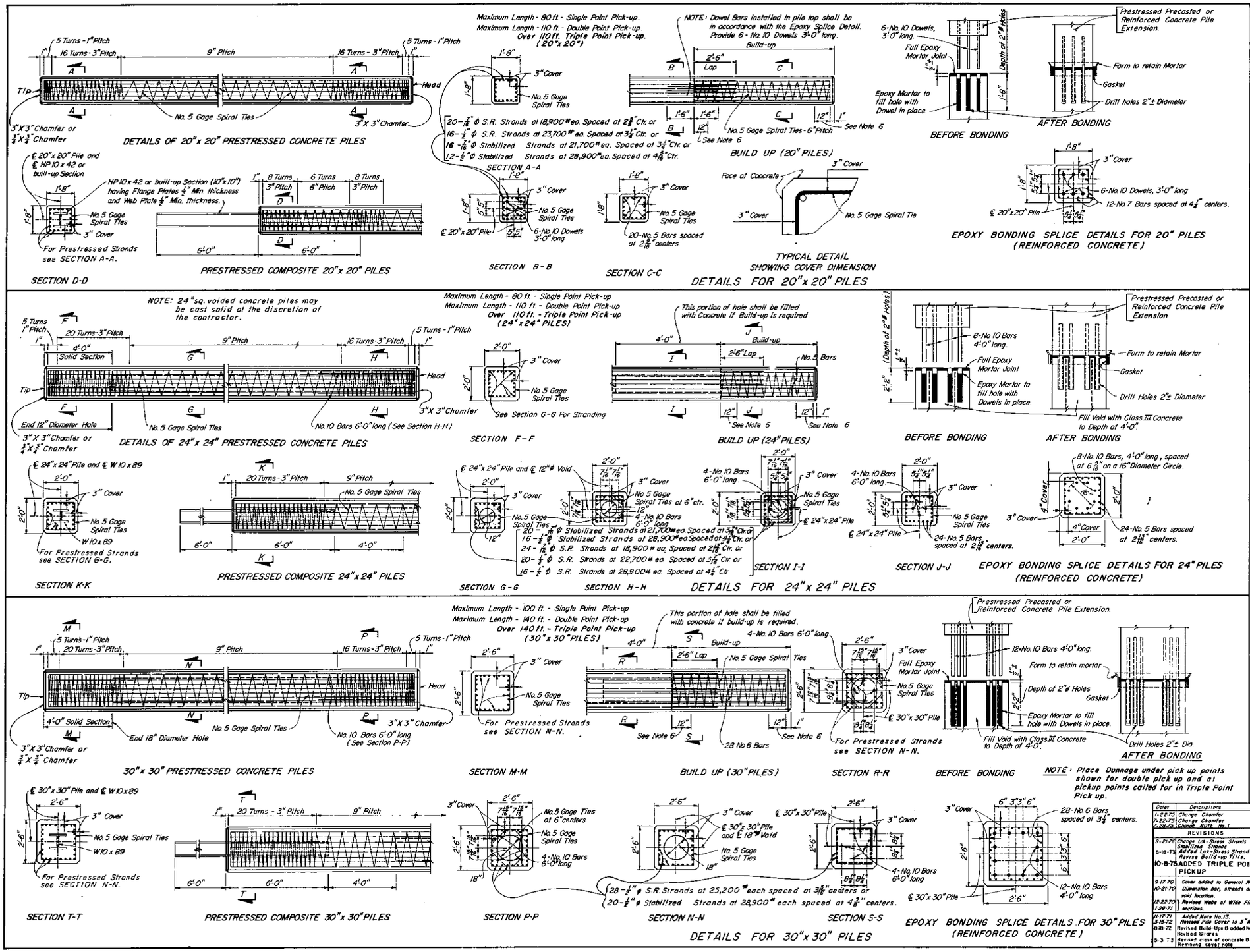
	Names	Dates
Designed by	S.A.B.	5-75
Checked by	L.A.L.	5-75
Quantities by		
Checked by		
Supervised by		

APPROVED BY T. Ali
Deputy Design Engineer/Structures

Drawing No.	Index No.
1 of 1	3400

Original

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			



GENERAL NOTES

1. Prior Approval in Writing By the Engineer is Required for Reinforced Concrete Build-Ups in Excess of 2'-0". This will not be approved for piles in a coastal environment.
2. SPIRAL TIES: Each wrap of spirals shall be tied to at least two corner strands.
3. MATERIAL FOR SPIRAL TIES: Spirals may be manufactured from stock meeting requirements of any grade of reinforcing steel, or hard drawn steel.
4. PILE CUT OFF: In cutting off concrete piles an abrasive saw shall be used to score the concrete at the cut off elevation to the approximate depth of the reinforcing steel.
5. CONCRETE STRENGTH: For Class III Concrete the Cylinder Strength shall be 5,000 p.s.i. minimum at 28 days and 4000 p.s.i. minimum at transfer of the Prestressing Force.
6. ADDITIONAL DRIVING: If additional driving is required, 2" Pitch shall be used for spiral ties within these limits.
7. SPLICED PILES: Spliced piles may be driven after splice is two days old.
8. BUILD-UPS: All build-ups shall be made with Class III Concrete.
9. PICK-UP POINTS: Piles shall be marked at Pick-up Points to indicate proper points for attaching handling lines.
10. REINFORCED STEEL PILE TIPS: Reinforced Pile Tips required only where ordered by the Engineer. At the option of the Contractor and with the approval of the Engineer, Commercial Tips may be used in lieu of the Reinforced Pile Tips shown.
11. VOIDS: Form material used to form the hollow cores may be left in place at the option of the Contractor. The form material shall be neutral with respect to the generation of products harmful to the physical and structural properties of the piles. The contractor shall retain responsibility for any detrimental effects resulting from the presence of the form material within the pile.
12. WEBS: Webs of Wide Flange sections shall be in a vertical position when Composite Pile is cast.
13. REINFORCING STEEL: All Reinforcing Steel shall be Grade 40 or 60

Dates	Descriptions
1-22-73	Change Chamfer
7-22-73	Change Chamfer
2-28-75	Change NOTE No. 1

REVISIONS

Dates	Descriptions
9-21-76	Change Lift-Stress Strands to Stabilized Strands
5-18-73	Added Lift-Stress Strands & Revise Build-up Title.
10-8-75	ADDED TRIPLE POINT PICKUP
9-17-70	Cover added to General Notes.
10-21-70	Dimension bar, strands and void location.
12-22-70	Revised Webs of Wide Flange sections.
1-29-71	
11-17-71	Added Note No. 13.
3-15-72	Revised Pile Cover to 3" Min.
8-18-72	Revised Build-Ups & added Note 9 Revised Strands.
5-3-73	Revised class of concrete & Removed cast note.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

20", 24" AND 30" PRESTRESSED CONCRETE PILES

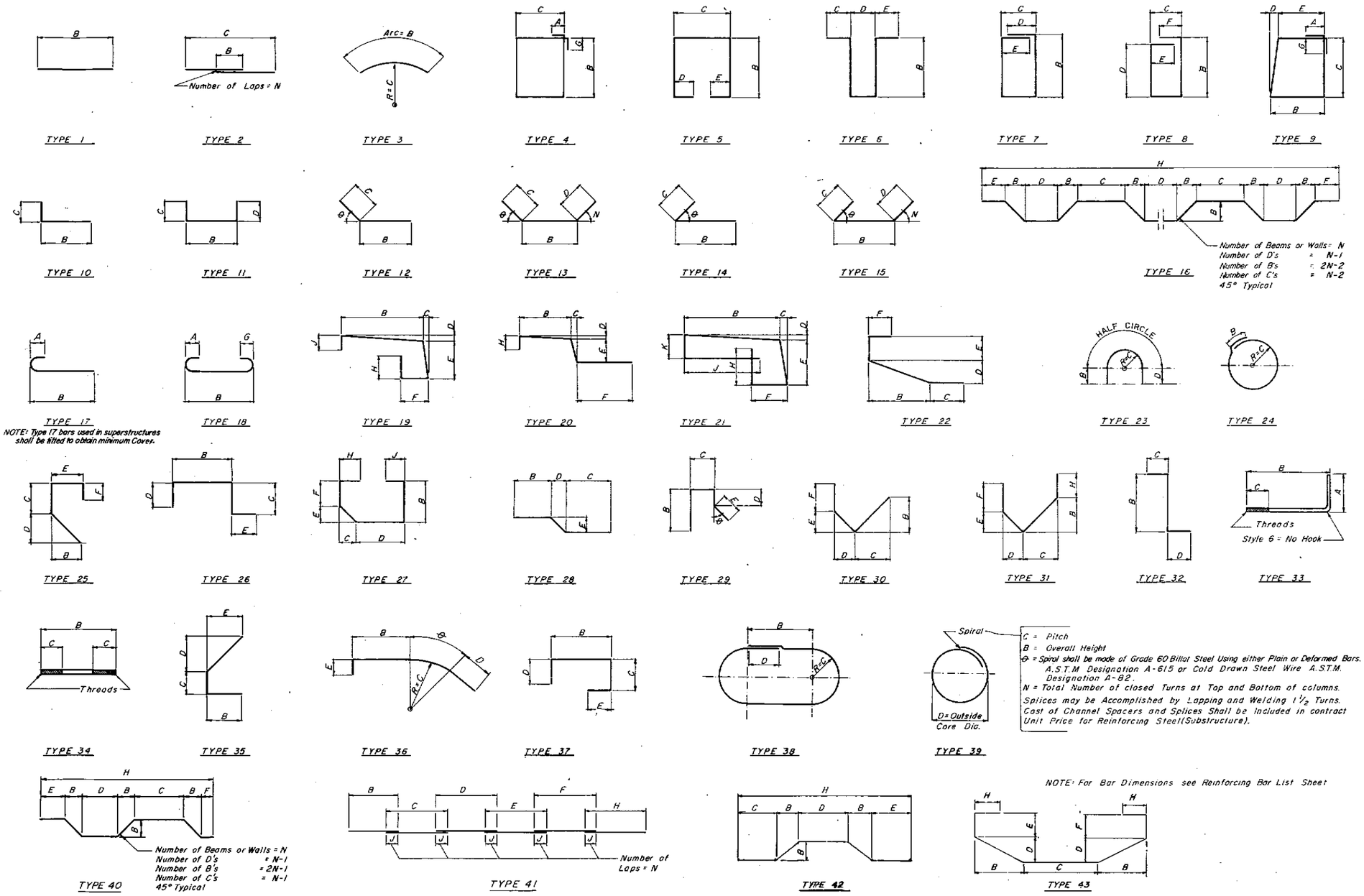
ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	HHJ	12-69
Checked by	PB	12-69
Quantities by		
Checked by		
Supervised by		

APPROVED BY F. Alb
Deputy Design Engineer, Structures

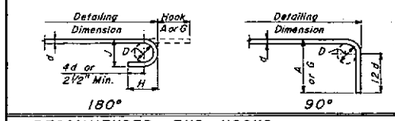
Drawing No.	Index No.
1 of 1	10289 F

FEDERAL AID



FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			

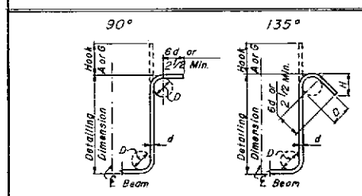
HOOK DETAILS



RECOMMENDED END HOOKS

All Grades
D = 6d for #3 through #8
D = 8d for #9, #10, and #11
D = 10d for #14 and #18

Bar Size	180° HOOKS		90° HOOKS
	A or G	J	A or G
#3	5	3	6
#4	6	4	8
#5	7	5	10
#6	8	6	1-0
#7	10	7	1-2
#8	11	8	1-4
#9	1-3	11 1/4	1-7
#10	1-5	1-0 3/4	1-10
#11	1-7	1-2 1/4	2-0
#14	2-2	1-8 1/2	2-7
#18	2-11	2-3	3-5
STYLE	1		3



STIRRUPS
(TIES SIMILAR)

RECOMMENDED STIRRUP & TIE HOOK DIMENSIONS

Bar Size	D (in.)	90° HOOK HOOK A or G	135° HOOK HOOK A or G	135° HOOK Approx. H
#3	1 1/2	4	4	2 1/2
#4	2	4 1/2	4 1/2	3
#5	2 1/2	6	5 1/2	3 3/4
#6	3	6 1/2	6 1/2	4 1/2
STYLE		4	5	

STYLE 6 = NO HOOK

Hook Styles Detailed on this Sheet are for illustration Only Actual Hook Style for any Particular Bar will be Shown Under A or G Heading on Reinforcing Bar List Sheet.
All Dimensions are Out To Out.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

STANDARD BAR BENDING DETAILS

REVISIONS	
Dates	Descriptions
6-71, 12-71	Hook Dimensions from CRSI Second Printing
6-72, 4-77	Note added to Type 17 Bar Spiral Bar Note.

ROAD NO.	COUNTY	PROJECT NO.

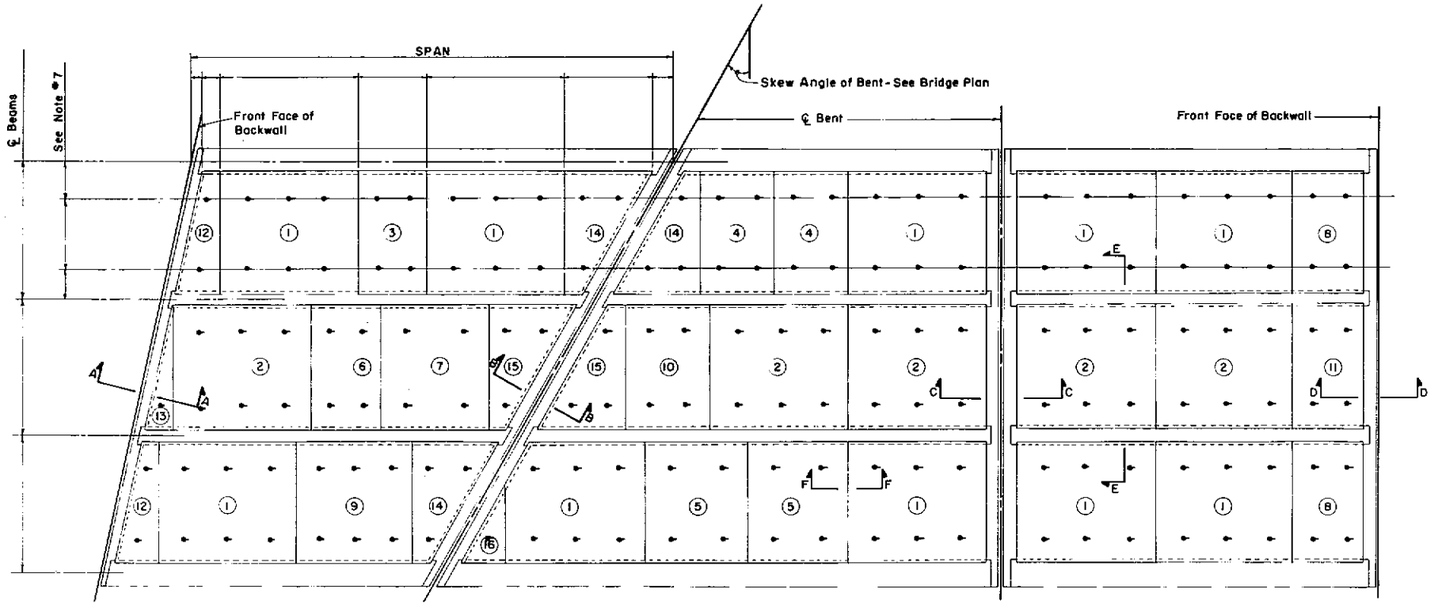
	Names	Dates
Designed by	M.D.	9-70
Checked by	C.M.B.	10-70
Quantities by		
Checked by		
Supervised by	L.B. Allen	

APPROVED BY T. Allen Deputy Design Engineer, Structures

Drawing No.	Index No.
1 of 1	10587

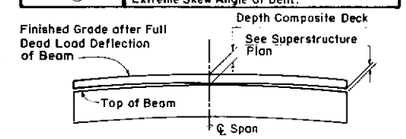
ORIGINAL

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			



PLAN OF DECK PANELS
(SEE TABLE "A")

TABLE "A"	
PANEL NO.	REMARKS
1 2	Fabricators Standard Width Panel
3	Filler Panel, 2'-0" Minimum Width
4 5	Filler Panels of Equal Width Both 2'-0" or Wider
6 7	Filler Panels - One 2'-0" (Min. Width) Unit, Other Panel Width as Required.
8 9 10 11	Filler Panels - Width as Required > 2'-0"
12 14 13 15	End Panels at Skewed Bents Saw Cut from Rectangular Panel Bear Skewed Edge 1" on Support
16	Permissable Only Where Required by Extreme Skew Angle of Bent.



SKETCH SHOWING RELATIONSHIP OF BEAM AND DECK SLAB

GENERAL NOTES

1- All Changes in the Contract Drawing Deck Slab Design to Accommodate the Use of Precast Prestressed Panels shall be the Responsibility of the Contractor, Who shall Submit Complete Detailed Plans of the Redesigned Deck Slab for the Approval of the Engineer. The Top Reinforcing shall be the same as Shown on the Contract Drawings. When Truss Bars are Required in the Contract Drawings, Full Length Straight Bars Equal in Cross Sectional Area shall be Substituted in Their Place.

Also, Shop Drawings Showing Precast Panel Details, Sizes and Installation Details are to be Submitted for Approval.

2- End Diaphragms Shown in Sections are not Dimensioned in Width, See Bridge Plan for Sizes. Add One (1) Inch to Width of Diaphragms at Skewed Bents to Provide Bearing for Precast Panels. Reinforcing Steel in End Diaphragms will not Change.

3- The Erected Precast Panels shall Bear Uniformly on Continuous Layers of an Approved Material Such as Mastic, Felt, Fiberboard and/or Grout that will Provide a Mortar Tight Uniform Bearing. The Bearing Material [$\frac{1}{2}$" Min. Width, 1" Max. Width and $\frac{1}{2}$" Min. Thickness] Shall be Placed Along the Outer Edges of Each Beam and the Inside Edge of the End Diaphragms at Skewed Bents.

4- Precast Panels in their Final Position shall be Mortar Tight at Both the Outer Edges and the Mating Surfaces. The Top Surface of the Precast Panels Must be Free of Any Foreign Material to Insure Full Bond with the Cast-In-Place Concrete. Immediately Prior to Placing the Cast-In-Place Concrete the Precast Panels shall be Saturated with Fresh Water.

5- When Precast Prestressed Panels are Substituted, Payment shall be made at the Contract Unit Prices for Concrete and Steel. The Quantities to be Paid for will be those Quantities which would be Paid for if Conventional Construction was Utilized. The Contract Unit Price for Concrete shall Include the Cost of All Bearing Materials.

6- Producers of Concrete Beams shall Provide a 3" Wide Smooth Finish at the Outside Edges of the Top Flange for Precast Panel Bearing and Grout Seal.

7- The Transverse Spacing of The Mechanical Interlock Reinforcing Shall Clear the Longitudinal Distribution Steel of the Poured in Place Concrete and the Transverse Spacing Shall Be Constant Thru-Out Spans of Equal Beam Spacing.

8- When Precast Prestressed Panels are Used on a Bridge Structure at the Option of the Contractor, It shall be the Sole Responsibility of the Contractor to Increase the Finished Grade Elevations $1\frac{1}{4}$" and to make all Adjustments Required by this Increase.

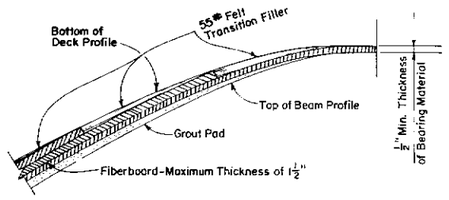
9- Before Any Precast Prestressed Panels are Placed in Position in Any Span, the Contractor shall Establish the Finished Grade Elevations and make the Required Camber Adjustments in a minimum of Two Spans Ahead of the Span To be Set.

10- Panels With Longitudinal Cracks (Parallel To Strands) Can be Accepted Providing Cracks are 2" from the Center Line of A Prestressing Strand.

11- The Bearing Width on Type V and Type VI Precast Prestressed Beams shall be $2\frac{1}{2}$" ($-\frac{1}{2}$", +0") Past the End of Transverse Reinforcing Steel in the Top Flange of the Beam.

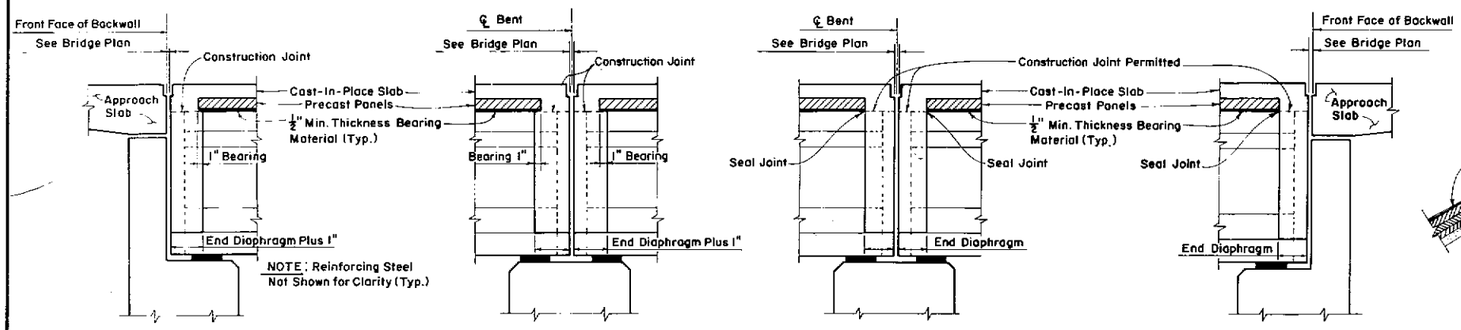
PROFILE — DECK AND SUPPORT

Where beam camber differs from that shown in the Plans, adjust thickness of bearing material. Maximum thickness of fiberboard to be $1\frac{1}{2}$". When necessary to achieve a thickness greater than $1\frac{1}{2}$", fiberboard may be set on an approved grout pad so that the Deck thickness conforms to the Plan dimension. Transitions in bearing thickness shall be accomplished by using layers of 55# roofing felt, fiberboard and grout pads so placed as to control the bottom of the Panel Profile so that it is Parallel to the finished grade profile, and the Plan Deck Thickness is Maintained. Adequate measures shall be taken to ensure the sealing of all contact surfaces between Precast, Prestressed Panels and Supporting Units. (See Enlarged Schematic)



SCHEMATIC - CAMBER ADJUSTMENT

NOTE "B"
After the precast prestressed panels have been set to proper grade on Fiber Bearing Material, The remaining space between the end of the panels and the fiber bearing material [1" Mi ith] shall be filled with cement mortar. The mortar shall consis. of one part portland cement to two parts clean sand with enough water to make a thick paste mixture. The mortar paste shall be placed by Trowel on moisture saturated surfaces and allowed to set before placing cast-in-place concrete. The mortar shall be placed in a manner which will produce a leakproof seal.

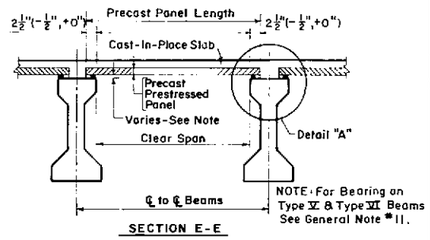


SECTION A-A (AT SKEWED END BENT)

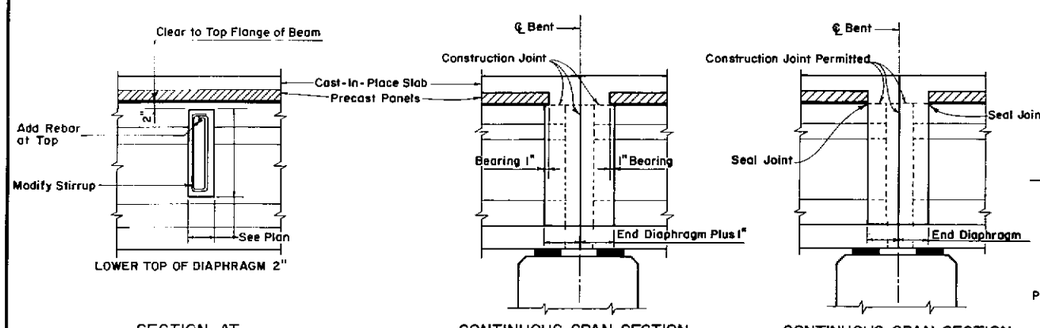
SECTION B-B (AT SKEWED BENT)

SECTION C-C (BENT PERPENDICULAR TO ROADWAY)

SECTION D-D (END BENT PERPENDICULAR TO ROADWAY)



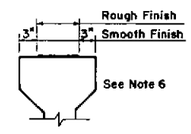
SECTION E-E



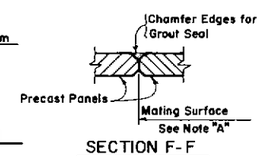
SECTION AT INTERMEDIATE DIAPHRAGMS

CONTINUOUS SPAN SECTION AT SKEWED BENT

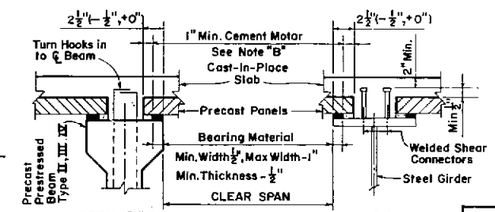
CONTINUOUS SPAN SECTION AT PERPENDICULAR BENT



REQUIRED FINISH OF TOP FLANGE OF CONCRETE BEAM



SECTION F-F



DETAIL "A" FOR CONCRETE BEAMS

DETAIL "A" FOR STEEL GIRDERS

NOTE "A": A Crack up to $\frac{3}{8}$" Wide Can be Sealed With Grout From Above. Any Crack Over $\frac{3}{8}$" to $1\frac{1}{2}$" Max. Shall Be Sealed With Tape on the Bottom Side of the Precast Panel and the Entire Crack Filled With Grout.

REVISIONS	
Dates	Descriptions
9-79	Added Tolerances & Revised Design
6-80	Increased Min. Bearing Added Note "B"
8-80	Changed Bearing Material Tolerances & Added Gen. Note #11

FHWA APPROVED: 10-2-80

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

PRECAST PRESTRESSED PANELS
FOR COMPOSITE CONCRETE DECK

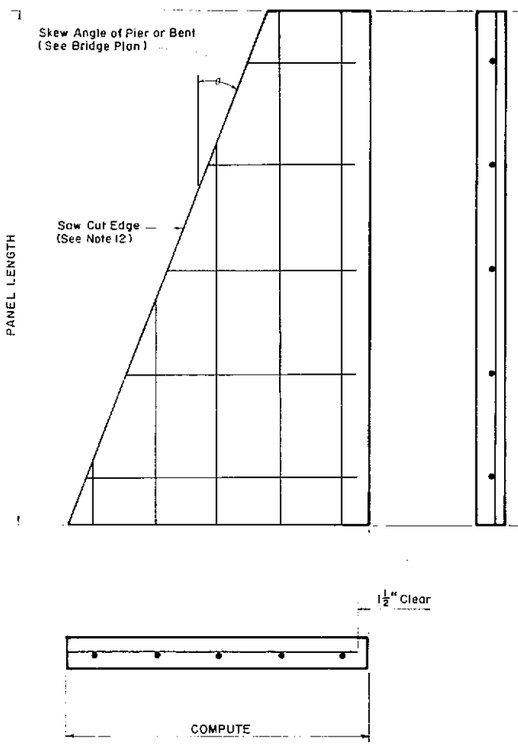
ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	CK	5-78
Checked by	CWB	5-78
Quantities by		
Checked by		
Supervised by	AJH	

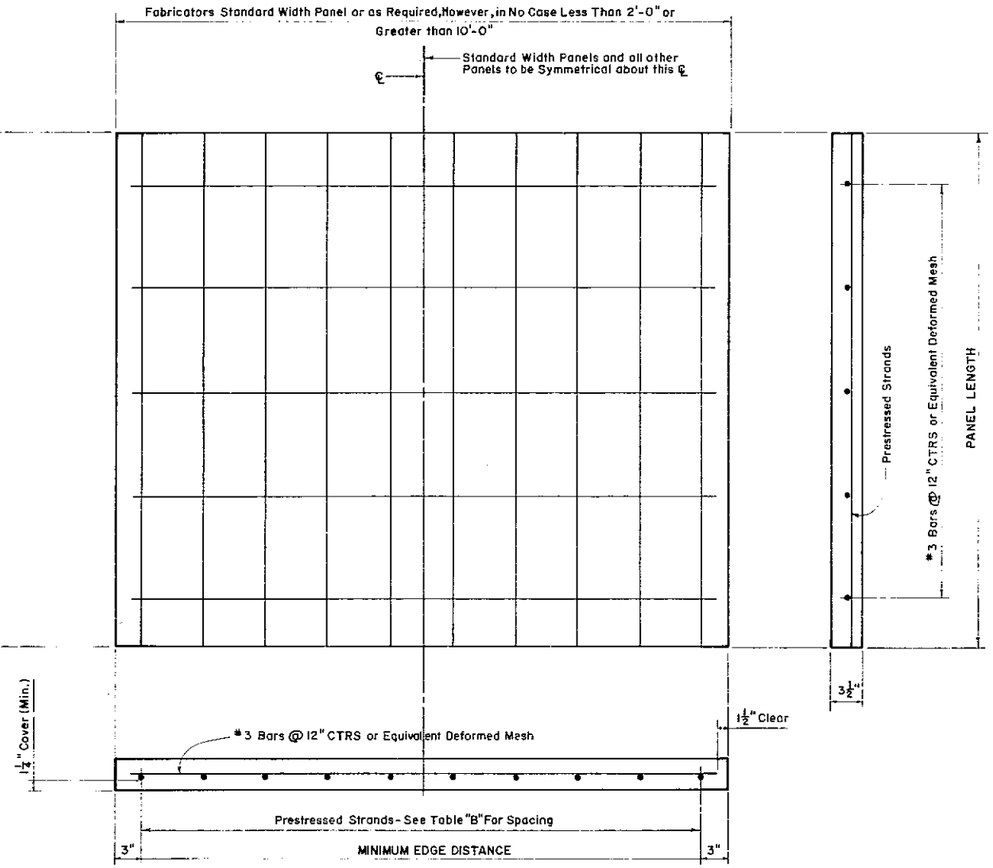
APPROVED BY: F. W. A. H. — Deputy Design Engineer, Structures

Drawing No. 1 of 3 — Index No. 12641

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			



DETAIL-TRAPEZOIDAL SHAPED PANELS AT SKEWED BENT
(SAW CUT FROM PRECAST PRESTRESSED RECTANGULAR PANEL)



DETAIL-PRECAST PRESTRESSED PANELS-RECTANGULAR

GENERAL NOTES FOR PRECAST PANELS

1- Shop Drawings shall be Submitted, Showing Complete Shop Details for the Precast Prestressed Panels. Details shall Include Mechanical Interlock Reinforcing, Lifting Devices, Panel Dimensions, Clearances, Reinforcing Steel, Prestress Strand Size, Type and Pull, Material Specifications and a Detensioning Schedule that will be Symmetrical about the Vertical Centerline of the Panel. Method of Placement and Method of Consolidation of Concrete Around Mechanical Interlock Reinforcing.

2- MATERIALS:

a-Concrete shall be Class III (f'c=5,000 p.s.i.) No Prestressing Strand shall be Released Until the Concrete has Reached a Minimum Compressive Strength of 4,000 p.s.i. Concrete shall meet the Requirements of Standard Specification Section 345.

b-Prestressing Strands shall be $\frac{3}{8}$"ø or $\frac{7}{16}$"ø 250K Seven Wire Stress Relieved Strands that Conform to the Requirements of A.S.T.M. A416. See Table.

c-All Other Metal Reinforcement shall Conform to the Requirements of Section 931. All Reinforcing Steel shall be Grade 40 or Grade 60.

d-Coarse Aggregate for Precast Panel Concrete shall be Grade 89, 7 and 57 and shall meet all other Requirements of Section 901.

e-The Prestressing Strands shall be Supported as Required by Either Reinforcing Steel Bar Supports (Stainless Steel-Class E) or Mortar Blocks, in Accordance with Section 415, Paragraph 415-5.10 and 415-5.13.

3- Precast Prestressed Panels shall be Constructed Meeting all Applicable Requirements of Section 400 and Section 450.

4- Mechanical Interlock Reinforcing of 0.60 Square Inches of Reinforcing Steel Per Ten (10) Sq. Ft. of Panel Surface shall be Provided. Alternate Designs will be Premitted, Subject to the Approval of the Engineer. Shop Drawings shall show Location of all Mechanical Interlock Reinforcing.

5- Lifting Hooks or Devices will be Permitted But will be the Sole Responsibility of the Contractor. Any Hook or Device that Pulls Out of the Panel During Handling will be Cause for Rejection of the Panel. Lifting Devices shall not be Attached to or Hooked Under the Panel Reinforcing Steel or Prestressing Strands. Lifting Devices shall be shown on the Shop Drawings for the Approval of the Engineer.

6- Prestressing Strands shall be Symmetrical and Uniformly Spaced about the Vertical Center Line of the Rectangular Panels.

7- The Top Surface of the Precast Panels shall be Roughened at the Approximate time of Initial Set by Brushing, Brooming, Burlap Drag or Other Approved Method. This Surface shall be Kept Free of all Contaminants Such as Oil. (Particularly Bond-Breaking Substances)

8- Membrane Curing Compound Will Not be Used on the Top of the Precast Panels.

9- Precast Prestressed Concrete Panels shall be Produced within the Following Tolerances.
Depth (Thickness of Panels) $+\frac{1}{4}$" to $-\frac{1}{8}$"✱; Length of Panel ±1"
Position of Strands $+\frac{1}{8}$", -0" Vertically ✱
±½" Horizontally
✱Measured from Bottom of Panel.

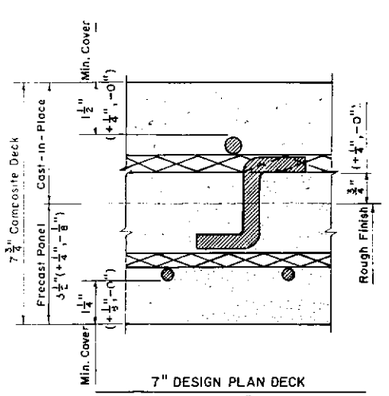
10- Precast Panel Lengths May be Set and Achieved by Using Headers in the Form or by Sawing to Length.

11- Precast Panels shall be Properly Handled and Stored to Prevent Breakage. Any Damage Due to Handling and Shipping Will Be Cause For Rejection.

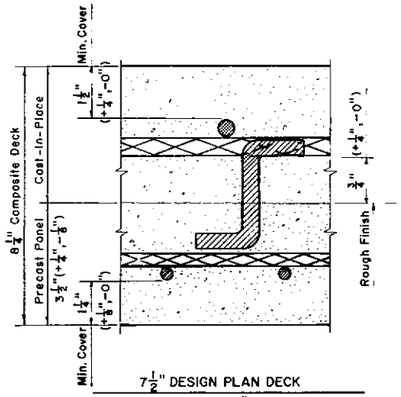
12- Saw Cut Edges, With Exposed Distribution Steel, Must Be Placed In Bearing On Top of the End Diaphragm In The Span. At No Other Place Within The Span Will A Saw Cut Edge With Exposed Distribution Steel Be Permitted.

13- To Allow for all Tolerances In Fabricating the Precast Panels and Placing the Reinforcing Steel In The Cast-In-Place Portion, This 7" Design Plan Deck will be Poured $7\frac{3}{4}$" Thick in all cases in the field at No Additional Increase In Contract Price.

14- To Allow for all Tolerances In Fabricating the Precast Panels and Placing the Reinforcing Steel in The Cast-In-Place Portion, This $7\frac{1}{2}$" Design Plan Deck will be Poured $8\frac{1}{4}$" Thick in all cases in the field at No Additional Increase In Contract Price.



7" DESIGN PLAN DECK
(SEE GENERAL NOTE ✱13-THIS SHEET)



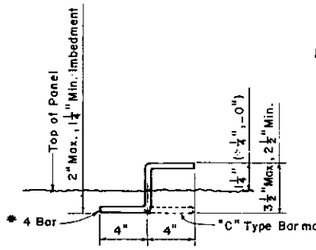
7½" DESIGN PLAN DECK
(SEE GENERAL NOTE ✱14-THIS SHEET)

MINIMUM COVERAGE DETAILS

DESIGN TABLE "B"-3½" FLAT PANELS

CLEAR SPAN		DESIGN DECK THICKNESS	STRANDS	STRAND SPACING	STRANDS	STRAND SPACING
MINIMUM LENGTH	40"	7"	⅜"ø 250K	9.5"	7/16"ø 250K	13"
UP TO AND INCLUDING	50"			9"		12"
	60"			8"		11"
	70"			7"		10"
	80"			6"		9"
	90"			5.5"		8"
	100"			5"		7"
	110"			4.5"		6"
	60"	7½"		9"		12"
	70"			8"		10"
	80"			7"		9"
	90"			6"		8"
	100"			5.5"		7"
	110"			4.75"		6"
	120"			4"		5"

Prestressing Pull for ⅜"ø 250K Strands = 14,000 lbs. Each.
Prestressing Pull for 7/16"ø 250K Strands = 18,900 lbs. Each.



MECHANICAL INTERLOCK REINFORCING

(NOTE: Bottom Leg of ✱4 Bar shall have a Minimum Imbedment of 1¼" in Precast Panel and shall have a Minimum Cover of 1¼" (+⅛", -0") from the Bottom of the Panel. However the Top of the Bar shall not be Higher than 1½" (1¼", +¼", -0") Above the Top of the Panel.

FHWA APPROVED: 10-2-80

FLAT PRECAST PANELS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

PRECAST PANELS FOR 7" AND 7½" COMPOSITE DECK
1¼" CLEAR AT BOTTOM-1½" CLEAR AT TOP

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions			
6-79	Added Tolerances & Revised Design			
6-80	Design Table Expanded			

	Names	Dates
Designed by	CK	5-78
Checked by	CWB	6-78
Quantities by		
Checked by		
Supervised by	AJH	

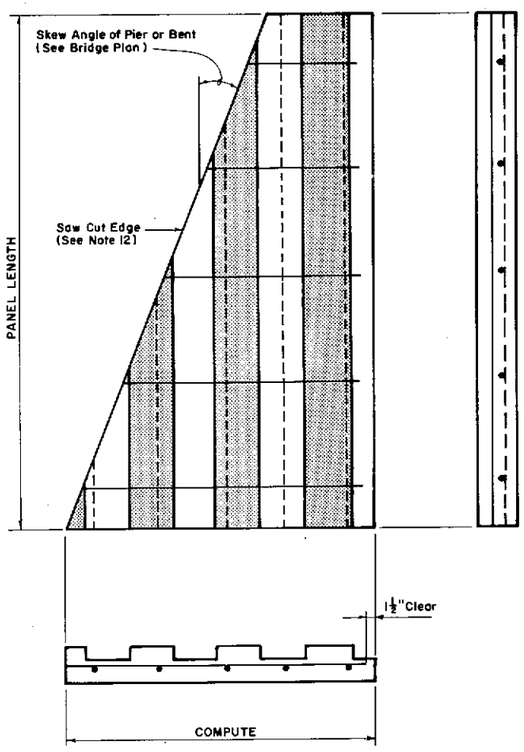
APPROVED BY
County Design Engineer, Structures

Drawing No. 2 of 3
Index No. 12641

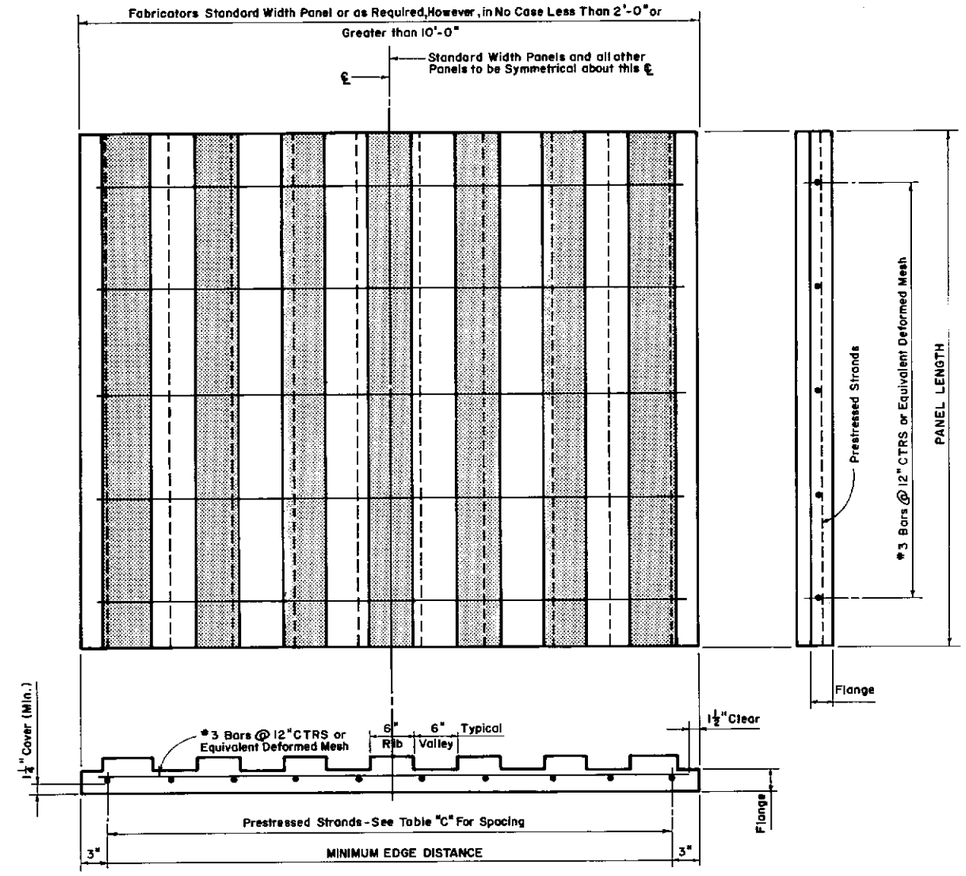
FRES

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			

NOTE: Prestressing Strands Shown as Heavy Dashed Line in Plan and Side View for Clarity Prestressing Strands May Be Placed Under Ribs Only In A Symmetrical Pattern About The Center Line.



DETAIL-TRAPEZOIDAL SHAPED PANELS AT SKEWED BENT
(SAW CUT FROM PRECAST PRESTRESSED RECTANGULAR PANEL)



DETAIL RIBBED-PRECAST PRESTRESSED PANELS - RECTANGULAR

GENERAL NOTES FOR PRECAST PANELS

1- Shop Drawings shall be Submitted, Showing Complete Shop Details for the Precast Prestressed Panels. Details shall Include Mechanical Interlock Reinforcing, Lifting Devices, Panel Dimensions, Clearances, Reinforcing Steel, Prestress Strand Size, Type and Pull, Material Specifications and a Detensioning Schedule that will be Symmetrical about the Vertical Centerline of the Panel. Method of Placement and Method of Consolidation of Concrete Around Mechanical Interlock Reinforcing.

2- MATERIALS:

a- Concrete shall be Class III ($f'c$=5,000 p.s.i.) No Prestressing Strand shall be Released Until the Concrete has Reached a Minimum Compressive Strength of 4,000 p.s.i. Concrete shall meet the Requirements of Standard Specification Section 345.

b- Prestressing Strands shall be $\frac{3}{8}$" ø or $\frac{7}{16}$" ø 250 K Seven Wire Stress Relieved Strands that Conform to the Requirements of A.S.T.M. A 416. See Table.

c- All Other Metal Reinforcement shall Conform to the Requirements of Section 931. All Reinforcing Steel shall be Grade 40 or Grade 60.

d- Coarse Aggregate for Precast Panel Concrete shall be Grade 89, 7 and 57 and shall meet all other Requirements of Section 901.

e- The Prestressing Strands shall be Supported as Required by Either Reinforcing Steel Bar Supports (Stainless Steel - Class E) or Mortar Blocks, In Accordance with Section 415, Paragraph 415-5.10 and 415-5.13.

3- Precast Prestressed Panels shall be Constructed Meeting all Applicable Requirements of Section 400 and Section 450.

4- Mechanical Interlock Reinforcing of 0.60 Square Inches of Reinforcing Steel Per Ten (10) Sq. Ft. of Panel Surface shall be Provided. Alternate Designs will be Premitted, Subject to the Approval of the Engineer. Shop Drawings shall show Location of all Mechanical Interlock Reinforcing.

5- Lifting Hooks or Devices will be Permitted But will be the Sole Responsibility of the Contractor. Any Hook or Device that Pulls Out of the Panel During Handling will be Cause for Rejection of the Panel. Lifting Devices shall not be Attached to or Hooked Under the Panel Reinforcing Steel or Prestressing Strands. Lifting Devices shall be shown on the Shop Drawings for the Approval of the Engineer.

6- Prestressing Strands shall be Symmetrical and Uniformly Spaced about the Vertical Center Line of the Rectangular Panels.

7- The Top Surface of the Precast Panels shall be Roughened at the Approximate time of Initial Set by Brushing, Brooming, Burlap Drag or Other Approved Method. This Surface shall be Kept Free of all Contaminants Such as Oil. (Particularly Bond - Breaking Substances)

8- Membrane Curing Compound Will Not be Used on the Top of the Precast Panels.

9- Precast Prestressed Concrete Panels shall be Produced within the Following Tolerances.
Depth (Thickness of Panels) $+\frac{1}{4}$" to $-\frac{1}{8}$" ✱; Length of Panel ± 1"
Position of Strands $+\frac{1}{8}$", -0" Vertically ✱
$\pm\frac{1}{2}$" Horizontally
✱ Measured from Bottom of Panel.

10- Precast Panel Lengths May be Set and Achieved by Using Headers in the Form or by Sawing to Length.

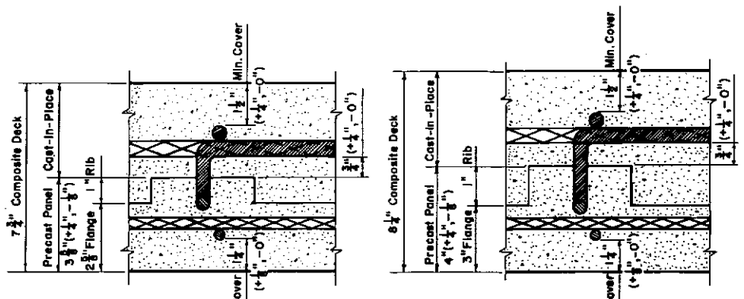
11- Precast Panels shall be Properly Handled and Stored to Prevent Breakage. Any Damage Due to Handling and Shipping Will Be Cause For Rejection.

12- Saw Cut Edges, With Exposed Distribution Steel, Must Be Placed In Bearing On Top of the End Diaphragm In The Span. At No Other Place Within The Span Will A Saw Cut Edge With Exposed Distribution Steel Be Permitted.

13- To Allow for all Tolerances In Fabricating the Precast Panels and Placing the Reinforcing Steel In The Cast-In-Place Portion, This 7" Design Plan Deck will be Poured $7\frac{3}{4}$" Thick in all cases in the field at No Additional Increase In Contract Price.

14- To Allow for all Tolerances In Fabricating the Precast Panels and Placing the Reinforcing Steel in The Cast-In-Place Portion, This $7\frac{1}{2}$" Design Plan Deck will be Poured $8\frac{1}{4}$" Thick in all cases in the field at No Additional Increase In Contract Price.

15- The Fabricator May Elect to Fill One Valley on Each Side of the Center Line Symmetrically to Provide Coverage so that He Can Use A "Z", "C" or other Type of Mechanical Interlock Bar. See Sheet 2 of 3 for Details.



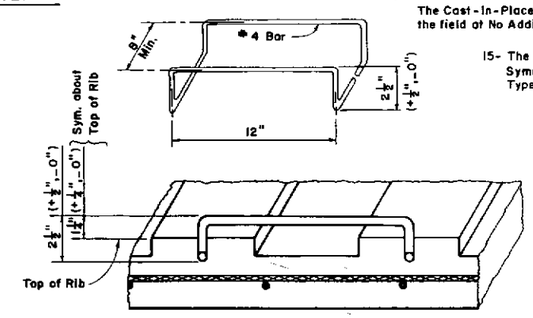
7" DESIGN PLAN DECK
(SEE GENERAL NOTE ✱13-THIS SHEET)

7½" DESIGN PLAN DECK
(SEE GENERAL NOTE ✱14-THIS SHEET)

MINIMUM COVERAGE DETAILS

DESIGN TABLE "C"-RIBBED PANELS						
CLEAR SPAN	DESIGN DECK THICKNESS	STRANDS	STRAND SPACING	STRANDS	STRAND SPACING
MINIMUM LENGTH UP TO AND INCLUDING 40"	7"	$\frac{3}{8}$"ø 250K	9.5"	$\frac{7}{16}$"ø 250K	13"
50"			9"		12"
60"			8"		11"
70"			7"		10"
80"			6"		9"
90"			5.5"		8"
100"			5"		7"
110"			4.5"		6"
60"	7½"		9"		12"
70"			8"		10"
80"			7"		9"
90"			6"		8"
100"			5.5"		7"
110"			4.75"		6"
120"			4"		5"

Prestressing Pull for $\frac{3}{8}$"ø 250K Strands = 14,000 lbs. Each.
Prestressing Pull for $\frac{7}{16}$"ø 250K Strands = 18,900 lbs. Each.



MECHANICAL INTERLOCK REINFORCING

(NOTE: Bottom Leg of #4 Bar shall have a Minimum Imbedment of $1\frac{1}{4}$" in Precast Panel and shall have a Minimum Cover of $1\frac{1}{4}$" ($+\frac{1}{8}$", -0") from the Bottom of the Panel. However the Top of the Bar shall not be Higher than $1\frac{1}{2}$" ($1\frac{1}{4}$", $+\frac{1}{4}$", -0") Above the Top of the Panel.

FHWA APPROVED: 10-2-80

RIBBED PRECAST PANELS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

PRECAST PANELS FOR 7" AND $7\frac{1}{2}$" COMPOSITE DECK
$1\frac{1}{4}$" CLEAR AT BOTTOM $1\frac{1}{2}$" CLEAR AT TOP

REVISIONS	
Dates	Descriptions
6-79	Added Tolerances & Revised Design
8-80	Design Table Expanded

ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	JMG	5-78
Checked by	CK	6-78
Quantities by		
Checked by		
Supervised by	AJH	

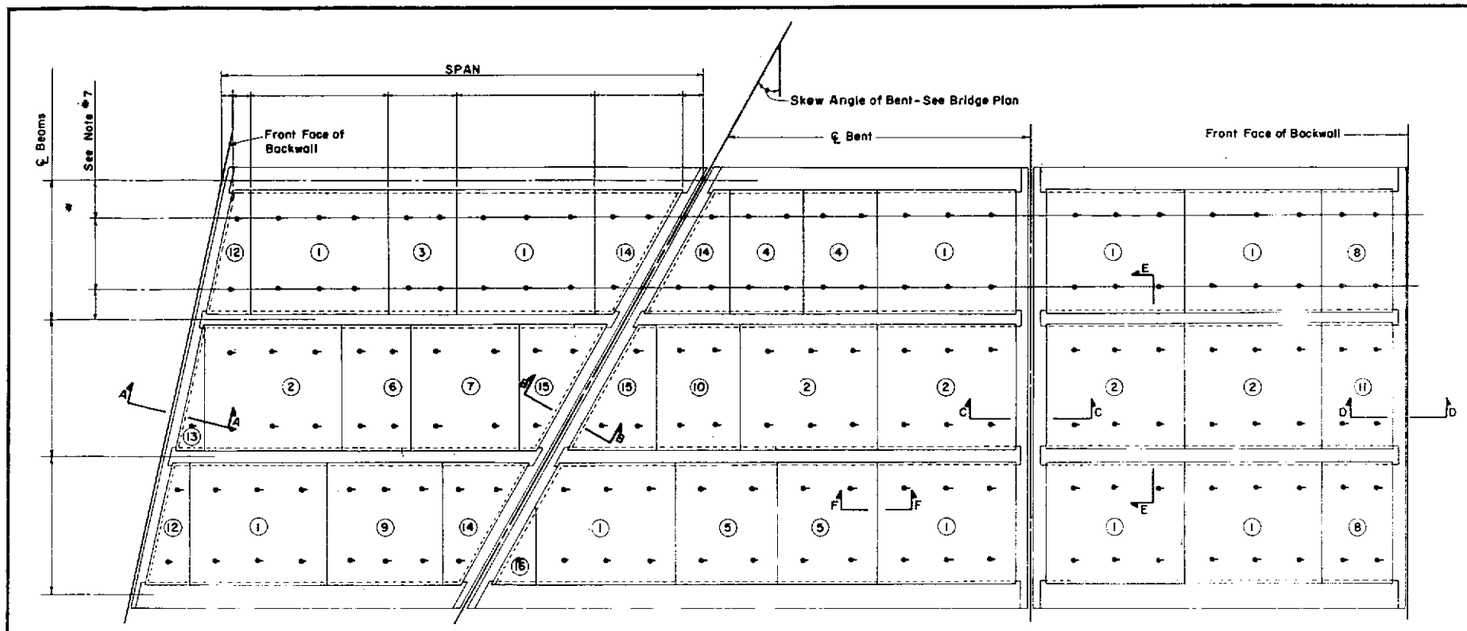
APPROVED BY
Deputy Design Engineer, Structures

Drawing No.	Index No.
3 of 3	12641

FRESH

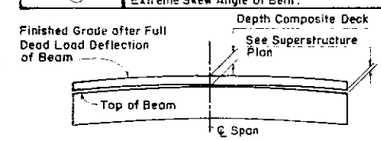
DIETZGEN CORP. 138-R3

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			



PLAN OF DECK PANELS
(SEE TABLE "A")

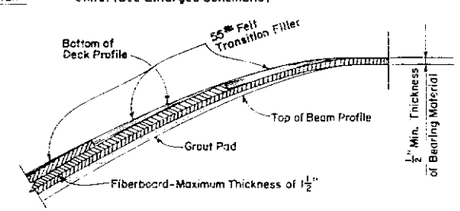
TABLE "A"	
PANEL NO.	REMARKS
1 2	Fabricators Standard Width Panel
3	Filler Panel, 2'-0" Minimum Width
4 5	Filler Panels of Equal Width Both 2'-0" or Wider
6 7	Filler Panels - One 2'-0" (Min. Width) Unit, Other Panel Width as Required.
8 9 10 11	Filler Panels - Width as Required > 2'-0"
12 14	End Panels at Skewed Bents
13 15	Saw Cut from Rectangular Panel Bear Skewed Edge 1" on Support
16	Permissable Only Where Required by Extreme Skew Angle of Bent.



SKETCH SHOWING RELATIONSHIP OF BEAM AND DECK SLAB

PROFILE – DECK AND SUPPORT

Where beam camber differs from that shown in the Plans, adjust thickness of bearing material. Maximum thickness of fiberboard to be $1\frac{1}{2}$". When necessary to achieve a thickness greater than $1\frac{1}{2}$", fiberboard may be set on an approved grout pad so that the Deck thickness conforms to the Plan dimension. Transitions in bearing thickness shall be accomplished by using layers of 55# roofing felt, fiberboard and grout pads so placed as to control the bottom of the Panel Profile so that it is Parallel to the finished grade profile, and the Plan Deck Thickness is Maintained. Adequate measures shall be taken to ensure the sealing of all contact surfaces between Precast, Prestressed Panels and Supporting Units. (See Enlarged Schematic)



SCHEMATIC - CAMBER ADJUSTMENT

NOTE "B"
After the precast prestressed panels have been set to proper grade on Fiber Bearing Material, The remaining space between the end of the panels and the fiber bearing material [1" Min. Width] shall be filled with cement mortar. The mortar shall consist of one part portland cement to two parts clean sand with enough water to make a thick paste mixture. The mortar paste shall be placed by Trowel on moisture saturated surfaces and allowed to set before placing cast-in-place concrete. The mortar shall be placed in a manner which will produce a leakproof seal.

GENERAL NOTES

1- All Changes in the Contract Drawing Deck Slab Design to Accommodate the Use of Precast Prestressed Panels shall be the Responsibility of the Contractor, Who shall Submit Complete Detailed Plans of the Redesigned Deck Slab for the Approval of the Engineer. The Top Reinforcing shall be the same as Shown on the Contract Drawings. When Truss Bars are Required in the Contract Drawings, Full Length Straight Bars Equal in Cross Sectional Area shall be Substituted in Their Place.

Also, Shop Drawings Showing Precast Panel Details, Sizes and Installation Details are to be Submitted for Approval.

2- End Diaphragms Shown in Sections are not Dimensioned in Width, See Bridge Plan for Sizes. Add One (1) Inch to Width of Diaphragms at Skewed Bents to Provide Bearing for Precast Panels. Reinforcing Steel in End Diaphragms will not Change.

3- The Erected Precast Panels shall Bear Uniformly on Continuous Layers of an Approved Material Such as Mastic, Felt, Fiberboard and/or Grout that will Provide a Mortar Tight Uniform Bearing. The Bearing Material [$\frac{1}{2}$" Min. Width, 1" Max. Width and $\frac{1}{2}$" Min. Thickness] Shall be Placed Along the Outer Edges of Each Beam and the Inside Edge of the End Diaphragms at Skewed Bents.

4- Precast Panels in their Final Position shall be Mortar Tight at Both the Outer Edges and the Mating Surfaces. The Top Surface of the Precast Panels Must be Free of Any Foreign Material to Insure Full Bond with the Cast-In-Place Concrete. Immediately Prior to Placing the Cast-In-Place Concrete the Precast Panels shall be Saturated with Fresh Water.

5- When Precast Prestressed Panels are Substituted, Payment shall be made at the Contract Unit Prices for Concrete and Steel. The Quantities to be Paid for will be those Quantities which would be Paid for if Conventional Construction was Utilized. The Contract Unit Price for Concrete shall Include the Cost of All Bearing Materials.

6- Producers of Concrete Beams shall Provide a 3" Wide Smooth Finish at the Outside Edges of the Top Flange for Precast Panel Bearing and Grout Seal.

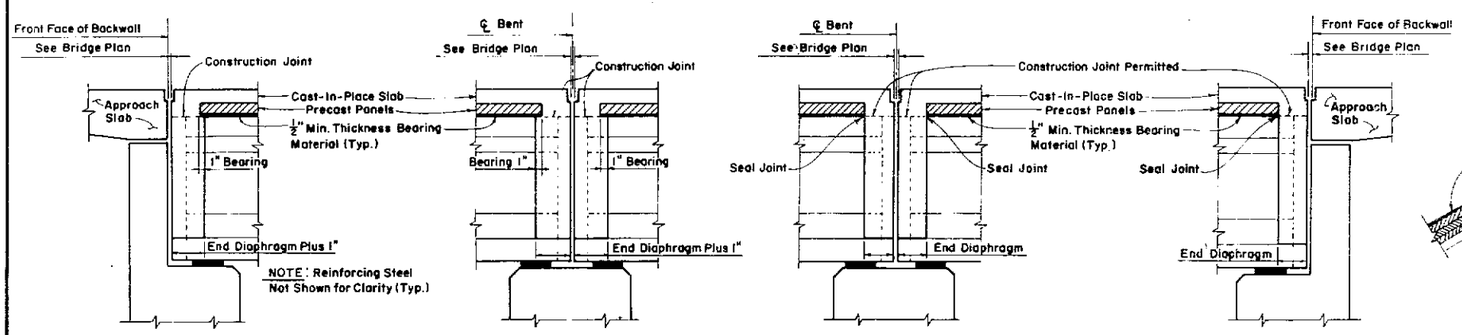
7- The Transverse Spacing of The Mechanical Interlock Reinforcing Shall Clear the Longitudinal Distribution Steel at the Poured in Place Concrete and the Transverse Spacing Shall Be Constant Thru-Out Spans of Equal Beam Spacing.

8- When Precast Prestressed Panels are Used on a Bridge Structure at the Option of the Contractor, It shall be the Sole Responsibility of the Contractor to Increase the Finished Grade Elevations $1\frac{1}{4}$" and to make all Adjustments Required by this Increase.

9- Before Any Precast Prestressed Panels are Placed in Position in Any Span, the Contractor shall Establish the Finished Grade Elevations and make the Required Camber Adjustments in a minimum of Two Spans Ahead of the Span To be Set.

10- Panels With Longitudinal Cracks (Parallel To Strands) Can be Accepted Providing Cracks are 2" from the Center Line of A Prestressing Strand

11- The Bearing Width on Type V and Type VI Precast Prestressed Beams shall be $2\frac{1}{2}$" ($-\frac{1}{2}$", +0") Past the End of Transverse Reinforcing Steel in the Top Flange of the Beam.

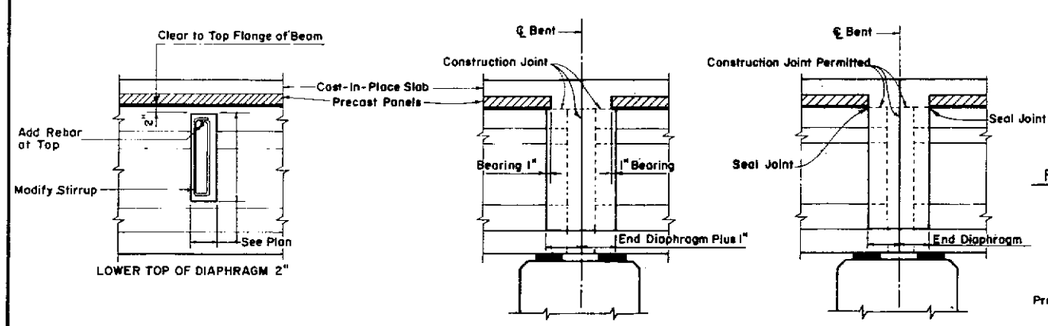


SECTION A-A (AT SKEWED END BENT)

SECTION B-B (AT SKEWED BENT)

SECTION C-C (BENT PERPENDICULAR TO ROADWAY)

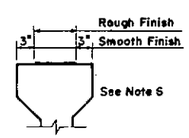
SECTION D-D (END BENT PERPENDICULAR TO ROADWAY)



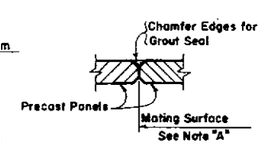
SECTION AT INTERMEDIATE DIAPHRAGMS

CONTINUOUS SPAN SECTION AT SKEWED BENT

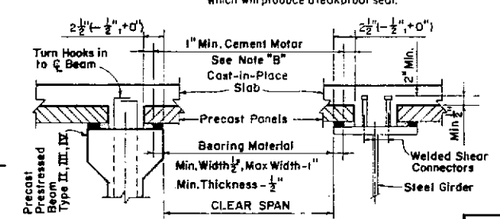
CONTINUOUS SPAN SECTION AT PERPENDICULAR BENT



REQUIRED FINISH OF TOP FLANGE OF CONCRETE BEAM



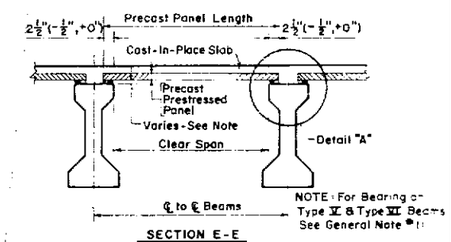
SECTION F-F



DETAIL "A" FOR CONCRETE BEAMS

DETAIL "A" FOR STEEL GIRDERS

NOTE "A": A Crack up to $\frac{3}{8}$" Wide Can be Sealed With Grout From Above. Any Crack Over $\frac{3}{8}$" to $1\frac{1}{2}$" Max. Shall Be Sealed With Tape on the Bottom Side of the Precast Panel and the Entire Crack Filled With Grout.



SECTION E-E

FHWA APPROVED: 10-2-80

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

PRECAST PRESTRESSED PANELS
FOR COMPOSITE CONCRETE DECK

REVISIONS	
Dates	Descriptions
8-79	Added Tolerances & Revised Design
6-80	Increased Min. Bearing Added Note "B"
8-80	Changed Bearing Material Tolerances & Added Gen. Note #11

ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	CK	5-78
Checked by	CWB	5-78
Quantities by		
Checked by		
Supervised by	AJH	

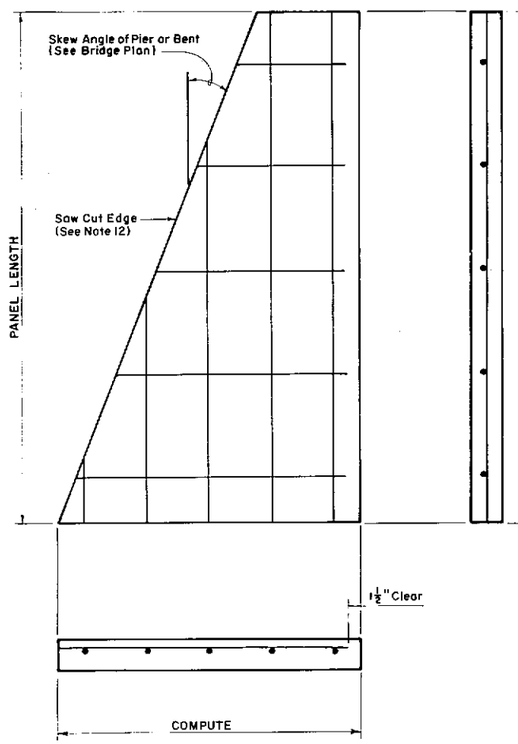
APPROVED BY: State Bridge Engineer - Structures

Drawing No. 1 of 3

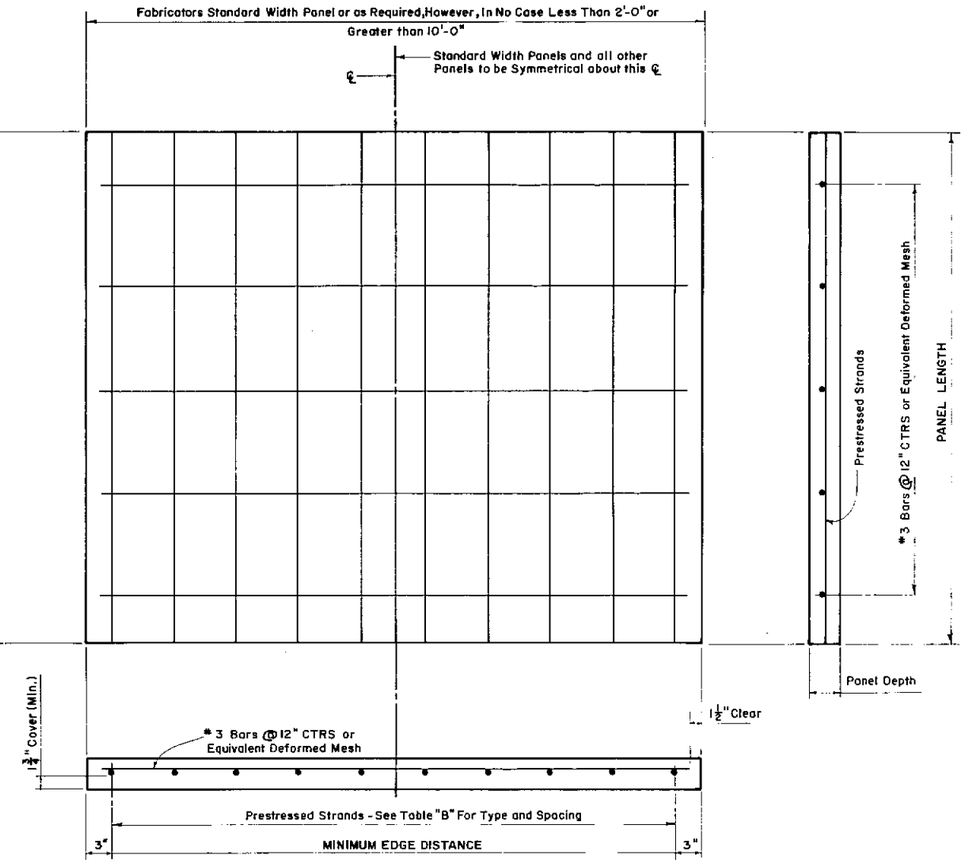
Index No. 12642

SHT

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			



DETAIL-TRAPEZOIDAL SHAPED PANELS AT SKEWED BENT
(SAW CUT FROM PRECAST PRESTRESSED RECTANGULAR PANEL)



DETAIL-PRECAST PRESTRESSED PANELS-RECTANGULAR

GENERAL NOTES FOR PRECAST PANELS

1- Shop Drawings shall be Submitted, Showing Complete Shop Details for the Precast Prestressed Panels. Details shall Include Mechanical Interlock Reinforcing, Lifting Devices, Panel Dimensions, Clearances, Reinforcing Steel, Prestress Strand Size, Type and Pull, Material Specifications and a Detensioning Schedule that will be Symmetrical about the Vertical Centerline of the Panel. Method of Placement and Method of Consolidation of Concrete Around Mechanical Interlock Reinforcing.

2- MATERIALS:

a-Concrete shall be Class IV ($f'c$=5,000 p.s.i.) No Prestressing Strand shall be Released Until the Concrete has Reached a Minimum Compressive Strength of 4,000 p.s.i. Concrete shall meet the Requirements of Standard Specification Section 345.

b-Prestressing Strands shall be $\frac{3}{8}$" ø or $\frac{7}{16}$" ø 250 K or 270 K Seven Wire Stress Relieved Strands that Conform to the Requirements of A.S.T.M. A416. See Table.

c-All Other Metal Reinforcement shall Conform to the Requirements of Section 931. All Reinforcing Steel shall be Grade 40 or Grade 60.

d-Coarse Aggregate for Precast Panel Concrete shall be Grade 89, 7 and 57 and shall meet all other Requirements of Section 901.

e-The Prestressing Strands shall be Supported as Required by Either Reinforcing Steel Bar Supports (Stainless Steel-Class E) or Mortar Blocks, In Accordance with Section 415, Paragraph 415-5.10 and 415-5.13.

3- Precast Prestressed Panels shall be Constructed Meeting all Applicable Requirements of Section 400 and Section 450.

4- Mechanical Interlock Reinforcing of 0.60 Square Inches of Reinforcing Steel Per Ten (10) Sq. Ft. of Panel Surface shall be Provided. Alternate Designs will be Premitted, Subject to the Approval of the Engineer. Shop Drawings shall show Location of all Mechanical Interlock Reinforcing.

5- Lifting Hooks or Devices will be Permitted But will be the Sole Responsibility of the Contractor. Any Hook or Device that Pulls Out of the Panel During Handling will be Cause for Rejection of the Panel. Lifting Devices shall not be Attached to or Hooked Under the Panel Reinforcing Steel or Prestressing Strands. Lifting Devices shall be shown on the Shop Drawings for the Approval of the Engineer.

6- Prestressing Strands shall be Symmetrical and Uniformly Spaced about the Vertical Center Line of the Rectangular Panels.

7- The Top Surface of the Precast Panels shall be Roughened at the Approximate time of Initial Set by Brushing, Brooming, Burlap Drag or Other Approved Method. This Surface shall be Kept Free of all Contaminants Such as Oil. (Particularly Bond-Breaking Substances)

8- Membrane Curing Compound Will Not be Used on the Top of the Precast Panels.

9- Precast Prestressed Concrete Panels shall be Produced within the Following Tolerances.
Depth (Thickness of Panels) $+\frac{1}{4}$" to $-\frac{1}{8}$" ✱, Length of Panel ± 1"
Position of Strands $+\frac{1}{8}$", - 0" Vertically ✱
± $\frac{1}{2}$" Horizontally
✱ Measured from Bottom of Panel.

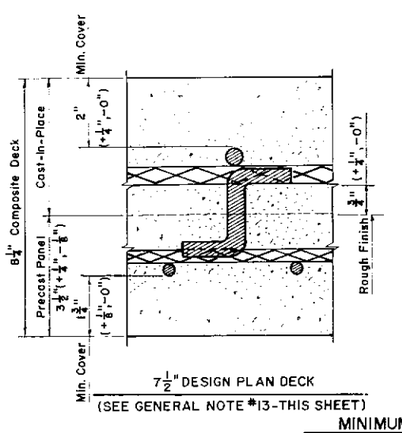
10- Precast Panel Lengths May be Set and Achieved by Using Headers in the Form or by Sawing to Length.

11- Precast Panels shall be Properly Handled and Stored to Prevent Breakage. Any Damage Due to Handling and Shipping Will Be Cause For Rejection.

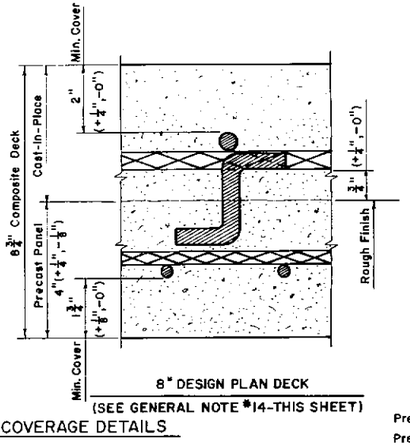
12- Saw Cut Edges, With Exposed Distribution Steel, Must be Placed In Bearing On Top of the End Diaphragm In The Span. At No Other Place Within The Span Will A Saw Cut Edge With Exposed Distribution Steel Be Permitted.

13- To Allow for all Tolerances In Fabricating the Precast Panels and Placing the Reinforcing Steel In The Cast-In-Place Portion, This 7½" Design Plan Deck will be Poured 8¼" Thick in all cases in the f[illegible] No Additional Increase In Contract Price.

14- To Allow for all Tolerances In Fabricating the Precast Panels and Placing the Reinforcing Steel in The Cast-In-Place Portion, This 8" Design Plan Deck will be Poured 8¾" Thick in all cases in the field at No Additional Increase In Contract Price.



7½" DESIGN PLAN DECK
(SEE GENERAL NOTE ✱13-THIS SHEET)

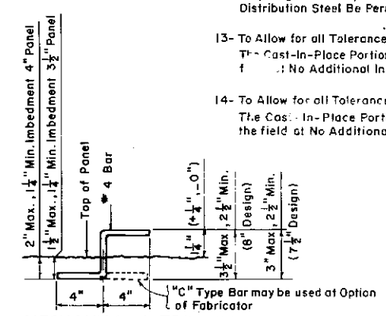


8" DESIGN PLAN DECK
(SEE GENERAL NOTE ✱14-THIS SHEET)

MINIMUM COVERAGE DETAILS

DESIGN TABLE "B"-3½" AND 4" FLAT PANELS						
CLEAR SPAN		DESIGN DECK THICKNESS	STRANDS	STRAND SPACING	STRANDS	STRAND SPACING
MINIMUM LENGTH	40"	7½"	⅜" ø 250K	9.5"	7/16" ø 250K	13"
UP TO AND INCLUDING	50"		⅜" ø 270K	8.75"		10"
	60"			6"		7.5"
	70"			5"		5.5"
	80"			4"		4.5"
	90"			3"		3.75"
	100"			2.5"		3"
	70"	8"		7"		8.25"
	80"			6"		7"
	90"			5"		5.75"
	100"			4.5"		5.25"
	110"			4"		4.5"
	120"			3.5"		4"
	130"			3"		3.5"

Prestressing Pull for ⅜" ø 250K Strands = 14,000 lbs. Each; Prestressing Pull for 7/16" ø 250K Strands = 18,900 lbs. Each, Prestressing Pull for ⅜" ø 270K Strands = 16,100 lbs. Each.



MECHANICAL INTERLOCK REINFORCING

(NOTE: Bottom Leg of ✱4 Bar shall have a Minimum Imbedment of 1¼" in Precast Panel and shall have a Minimum Cover of 1¾" (+⅛", -0") from the Bottom of the Panel. However the Top of the Bar shall not be Higher than 1½" (1¼", +¼", -0") above the Top of the Panel.

FHWA APPROVED: 10-2-80

FLAT PRECAST PANELS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

PRECAST PANELS FOR 7½" AND 8" COMPOSITE DECK
1¾" CLEAR AT BOTTOM - 2" CLEAR AT TOP

REVISIONS	
Dates	Descriptions
8-79	Added Tolerances & Revised Design
8-80	Design Table Expanded

ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	CK	5-78
Checked by	CWB	6-78
Quantities by		
Checked by		
Supervised by	AJH	

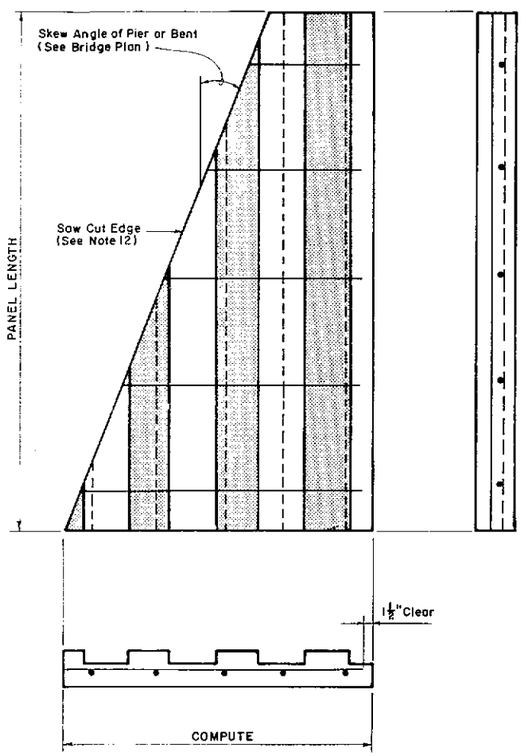
APPROVED BY
Deputy Design Engineer, Structures

Drawing No.	Index No.
2 of 3	12642

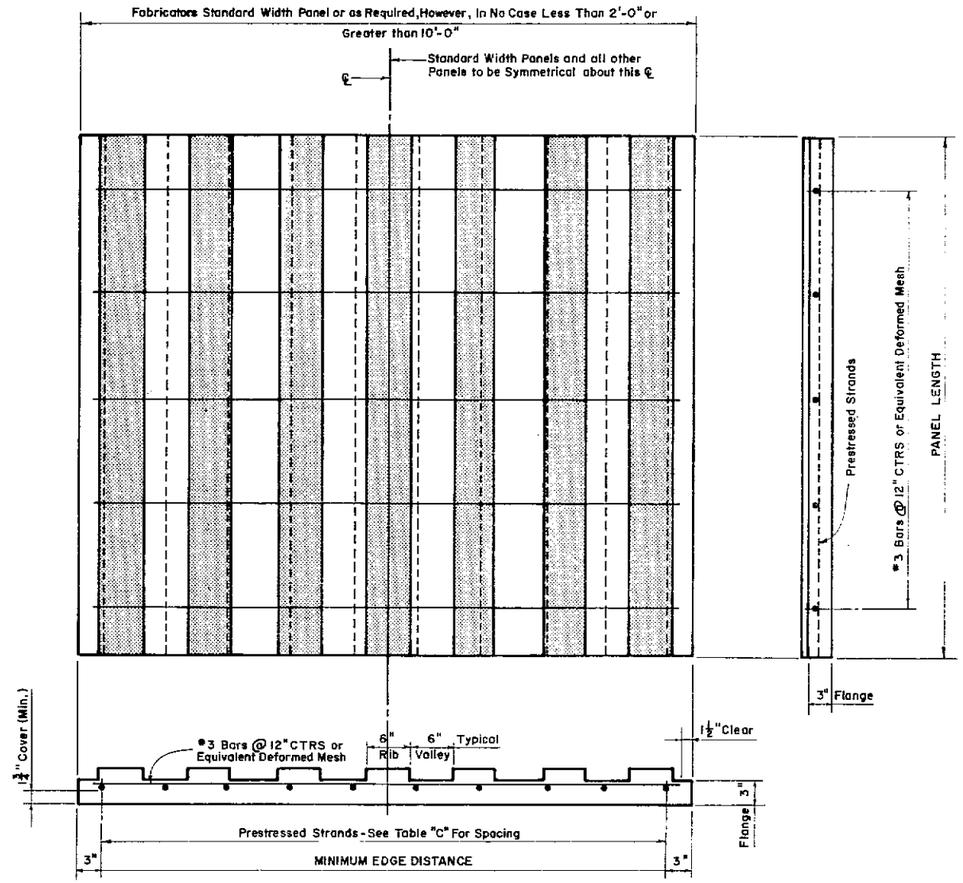
SALT

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			

NOTE: Prestressing Strands Shown as Heavy Dashed Line in Plan and Side View for Clarity Prestressing Strands May Be Placed Under Ribs Only In A Symmetrical Pattern About The Center Line.



DETAIL-TRAPEZOIDAL SHAPED PANELS AT SKEWED BENT
(SAW CUT FROM PRECAST PRESTRESSED RECTANGULAR PANEL)



DETAIL RIBBED-PRECAST PRESTRESSED PANELS-RECTANGULAR

GENERAL NOTES FOR PRECAST PANELS

1- Shop Drawings shall be Submitted, Showing Complete Shop Details for the Precast Prestressed Panels. Details shall Include Mechanical Interlock Reinforcing, Lifting Devices, Panel Dimensions, Clearances, Reinforcing Steel, Prestress Strand Size, Type and Pull, Material Specifications and a Detensioning Schedule that will be Symmetrical about the Vertical Centerline of the Panel. Method of Placement and Method of Consolidation of Concrete Around Mechanical Interlock Reinforcing.

2- MATERIALS:

a-Concrete shall be Class IV (f'c=5,000 p.s.i.) No Prestressing Strand shall be Released Until the Concrete has Reached a Minimum Compressive Strength of 4,000 p.s.i. Concrete shall meet the Requirements of Standard Specification Section 345.

b-Prestressing Strands shall be $\frac{3}{8}$"ø or $\frac{7}{16}$"ø 250 K or 270 K Seven Wire Stress Relieved Strands that Conform to the Requirements of A.S.T.M. A 416. See Table.

c-All Other Metal Reinforcement shall Conform to the Requirements of Section 931. All Reinforcing Steel shall be Grade 40 or Grade 60.

d-Coarse Aggregate for Precast Panel Concrete shall be Grade 89, 7 and 57 and shall meet all other Requirements of Section 901.

e-The Prestressing Strands shall be Supported as Required by Either Reinforcing Steel Bar Supports (Stainless Steel-Class E) or Mortar Blocks, In Accordance with Section 415, Paragraph 415-5.10 and 415-5.13.

3- Precast Prestressed Panels shall be Constructed Meeting all Applicable Requirements of Section 400 and Section 450.

4- Mechanical Interlock Reinforcing of 0.60 Square inches of Reinforcing Steel Per Ten (10) Sq. Ft. of Panel Surface shall be Provided. Alternate Designs will be Premitted, Subject to the Approval of the Engineer. Shop Drawings shall show Location of all Mechanical Interlock Reinforcing.

5- Lifting Hooks or Devices will be Permitted But will be the Sole Responsibility of the Contractor. Any Hook or Device that Pulls Out of the Panel During Handling will be Cause for Rejection of the Panel. Lifting Devices shall not be Attached to or Hooked Under the Panel Reinforcing Steel or Prestressing Strands. Lifting Devices shall be shown on the Shop Drawings for the Approval of the Engineer.

6- Prestressing Strands shall be Symmetrical and Uniformly Spaced about the Vertical Center Line of the Rectangular Panels.

7- The Top Surface of the Precast Panels shall be Roughened at the Approximate time of Initial Set by Brushing, Brooming, Burlap Drag or Other Approved Method. This Surface shall be Kept Free of all Contaminants Such as Oil. (Particularly Bond-Breaking Substances)

8- Membrane Curing Compound Will Not be Used on the Top of the Precast Panels.

9- Precast Prestressed Concrete Panels shall be Produced within the Following Tolerances.
Depth (Thickness of Panels) $+\frac{1}{4}$" to $-\frac{1}{8}$" ✱; Length of Panel ± 1"
Position of Strands $+\frac{1}{8}$", -0" Vertically ✱
± $\frac{1}{2}$" Horizontally
✱ Measured from Bottom of Panel.

10- Precast Panel Lengths May be Set and Achieved by Using Headers in the Form or by Sawing to Length.

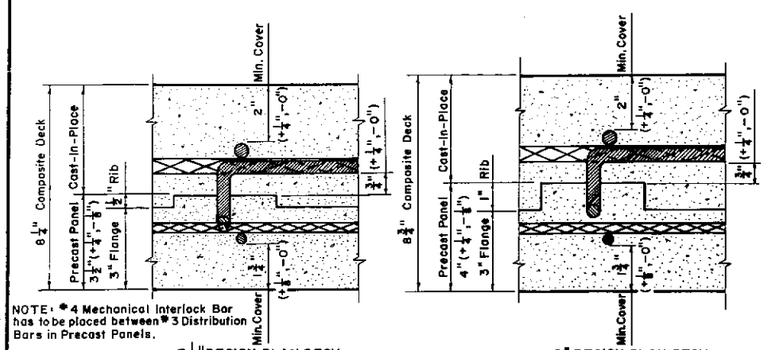
11- Precast Panels shall be Properly Handled and Stored to Prevent Breakage. Any Damage Due to Handling and Shipping Will Be Cause For Rejection.

12- Saw Cut Edges, With Exposed Distribution Steel, Must be Placed In Bearing On Top of the End Diaphragm In The Span. At No Other Place Within The Span Will A Saw Cut Edge With Exposed Distribution Steel Be Permitted.

13- To Allow for all Tolerances In Fabricating the Precast Panels and Placing the Reinforcing Steel in The Cast-In-Place Portion, This $7\frac{1}{2}$" Design Plan Deck will be Poured $8\frac{1}{4}$" Thick in all cases in the field at No Additional Increase In Contract Price.

14- To Allow for all Tolerances In Fabricating the Precast Panels and Placing the Reinforcing Steel in The Cast-In-Place Portion, This 8" Design Plan Deck will be Poured $8\frac{3}{4}$" Thick in all cases in the field at No Additional Increase In Contract Price.

15- The Fabricator May Elect to Fill One Valley on Each Side of the Center Line Symmetrically to Provide Coverage so that He Can Use A "Z", "C" or other Type of Mechanical Interlock Bar. See Sheet 2 of 3 for Details.



NOTE: ✱4 Mechanical Interlock Bar has to be placed between ✱3 Distribution Bars in Precast Panels.

$7\frac{1}{2}$"DESIGN PLAN DECK
(SEE GENERAL NOTE ✱13-THIS SHEET)

8" DESIGN PLAN DECK
(SEE GENERAL NOTE ✱14-THIS SHEET)

MINIMUM COVERAGE DETAILS

DESIGN TABLE "C"- RIBBED PANELS							
CLEAR SPAN		DESIGN DECK THICKNESS	STRANDS	STRAND SPACING	STRANDS	STRAND SPACING
MINIMUM LENGTH	40"	$7\frac{1}{2}$"	$\frac{3}{8}$"ø 250K	9.5"	$\frac{7}{16}$"ø 250K	13"
UP TO AND INCLUDING	50"		$\frac{3}{8}$"ø 270K	8.75"		10"
	60"			6"		7.5"
	70"			5"		5.5"
	80"			4"		4.5"
	90"			3"		3.75"
	100"			2.5"		3"
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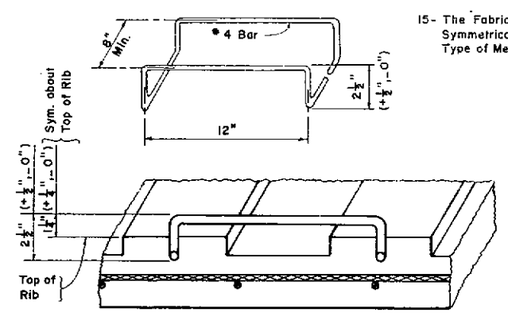
	80"			6"		7"
	90"			5"		5.75"
	100"			4.5"		5.25"
	110"			4"		4.5"
	120"			3.5"		4"
	130"			3"		3.5"

Prestressing Pull for $\frac{3}{8}$"ø 250K Strands=14,000lbs.Each; Prestressing Pull for $\frac{7}{16}$"ø 250K Strands=18,900lbs.Each, Prestressing Pull for $\frac{3}{8}$"ø 270K Strands=16,100lbs.Each.



MECHANICAL INTERLOCK REINFORCING

(NOTE: Bottom Leg of ✱4 Bar shall have a Minimum Imbedment of $1\frac{1}{4}$" in Precast Panel and shall have a Minimum Cover of $1\frac{3}{4}$"($+\frac{1}{8}$", -0") from the Bottom of the Panel. However the Top of the Bar shall not be Higher than $1\frac{1}{2}$"($1\frac{1}{4}$", $+\frac{1}{4}$", -0") Above the Top of the Panel.

FHWA APPROVED: 10-2-80

RIBBED PRECAST PANELS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

PRECAST PANELS FOR $7\frac{1}{2}$" AND 8" COMPOSITE DECK
$1\frac{3}{4}$" CLEAR AT BOTTOM - 2" CLEAR AT TOP

REVISIONS	
Date:	Descriptions
8-79	Added Tolerances & Revised Design
8-80	Design Table Expanded

ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	JMG	5-78
Checked by	CK	6-78
Quantities by		
Checked by		
Supervised by	AJH	

APPROVED BY: T. Allen Hit
Deputy Design Engineer, Structures

Drawing No.	Index No.
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SALT