Florida Department of Transportation

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SECRETARY

December 2, 2008

TO: District Design Engineers and District Structures Design Engineers

FROM: Robert Robertson, State Structures Design Engineer

COPIES: Lora Hollingsworth, Timothy Lattner, David Sadler, Jeffrey Ger (FHWA)

SUBJECT: Temporary Design Bulletin C08-06
Design Standards and Structures Manual Changes for Prestressed Slab Units

This Design Bulletin outlines the requirements for implementation of Prestressed Slab Unit Design Standards.

REQUIREMENTS

1) **January 2008 Structures Manual**
   a) Volume 1 – Structures Design Guidelines
      Section 4.4 A, delete the last sentence.
   b) Volume 3 - Instructions for Design Standards
      Add the Design Instructions and example included in Attachment A.
2) **Design Standards**
   New Prestressed Slab Unit Design Standards will be released as of January 2009 Interim Design Standard effective for lettings beginning July 2009. Preliminary copies of Index Nos. 20350, 20353, 20354, 20355, 20363, 20364, 20365 and 20399 are attached as Attachment B.

COMMENTARY

The Prestressed Slab Units with cast-in-place reinforced concrete overlay can be used as an alternate to cast-in-place flat slab and should be considered in the Bridge Development Report (BDR). Until additional experience is gained by the Department, this system shall be restricted to off system bridges only.

BACKGROUND

The Prestressed Slab Unit Design Standards were developed based on the results of a Department Research Project titled "Crack Control in Topping for Precast Flat Slab Bridge Deck Construction."

IMPLEMENTATION

The Prestressed Slab Unit Design Standards is effective for project lettings beginning July 2009. Related changes to other specifications and procedures are as follows:

1) **Construction Specifications**
   Changes to Specification 346 will be included in the July 2009 FDOT Specifications Workbook. The changes include provisions for steel or polymeric fiber for slightly and moderately aggressive environments and extremely aggressive environment respectively; plus shrinkage reducing admixtures to be included into the reinforced concrete overlay.
2) **Basis of Estimates**
   Pay Item 450-3-AB Prestressed Slab Units, LF will be effective with the July 2009 letting.
3) **Plans Preparation Manual**
   No changes required.
4) **CADD**
   New Tables will be provided to the Cadpilot Menu in May 2009. MicroStation CADD cells for these tables will be available on the Structures Design Office website in January 2009.
5) **Design and Analysis Software**
   Prestressed Slab Units can be designed using currently available software; no additional software is required.

CONTACT

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RR/AVP/b
Attachment

Attachment A

Structures Manual – Volume 3
Instruction for Design Standards Index No. 20300 Series

INSTRUCTIONAL NOTES TO DESIGNERS

GENERAL INSTRUCTIONS:

The Standard Drawings for Prestressed Slab units depict details and notes that are fully developed. For Prestressed Slab Units with skewed end conditions not greater than 30°. These drawings are included in the contract documents by reference to the Index No. in the plans.

Companion MicroStation CADD cells are located on the FDOT Structures Cadpilot Menu which contain generic details and notes that require the completion of the Prestressed Slab Units -Table of Variables, the Strand Pattern Details and the Strand Debonding Legend. Complete the CADD cells and include the completed drawing in the Plans.

Standard Drawings and properly completed CADD cells provide sufficient information to permit Prestressed Slab Unit fabrication without the necessary of a shop drawings submittal.

When the actual number of Prestressed Slab Units or strand patterns exceeds those that can be accommodated on a single plan sheet with the "PRESTRESSED SLAB UNITS - TABLE OF VARIABLES", use additional sheets. If special conditions require dimensions, details or notes not shown in the standard CADD cells, modifications are permitted, however the "PRESTRESSED SLAB UNITS -TABLE OF VARIABLES" should not be modified.

The drawings shall be matched as follows:

Design Standards Index No.	FDOT Structures Cadpilot Menu CADD Cell	Typical Details & Notes
20350	All Prestressed Slab Units	
	20350a	Custom Width Table of Variables
	20350b	Std. Width Table of Variables
	20350c	Traffic Railing reinforcement located on horizontal curves
20353	20350a	12" Custom Width Prest. Slab Unit
20354	20350b	12"x48" Prestressed Slab Unit
20355	20350b	12"x60" Prestressed Slab Unit
20363	20350a	15" Custom Width Prest. Slab Unit
20364	20350b	15"x48" Prestressed Slab Unit
20365	20350b	15"x48" Prestressed Slab Unit
20399	20399	Build-up and Deflection Data

The Angle Ø, for the ends of each Prestressed Slab Unit, shall be rounded to the nearest degree. The shear stirrup spacings V1, V2 and V3 should be be specified to the nearest inch.

OTHER CONSIDERATIONS:

Section No. 1 represents a symmetrical crowned bridge section.

Section No.2 represents a bridge section with constant cross slope.

Section No.3 represents an un-symmetrical bridge section with crowned and sidewalk. The exterior and first interior slabs require additional detailing for parapet and traffic railing.

Section No. 4 represents a variation of Section No. 3. In this case, the sidewalk is raised above the riding surface. The exterior slab requires additional detailing for vertical shape of traffic railing.

Provide three (3) bearing pads per Prestressed Slab Unit: one (1) bearing locates at one end and two (2) smaller bearings locate at other end alternate the bearings for the next Prestressed Slab Unit as shown in "PARTIAL PLAN SHOWING TYPICAL BEARING PAD LAYOUT".

EXAMPLE PROBLEM

The following example shows the data required for completion of a Prestressed Standard Slab Units - Table of Variables CADD cell, in this case a Prestressed Slab Unit (Index No. 20350). The example assumes a single span bridge designed for the following conditions:

Live Load: HL-93
Future Wearing Surface: Design includes allowance for 15 PSF.
Environment (Superstructure): Slightly Aggressive Environment.
Bridge Characteristics:
- Length: 35'-4"
- Width: 43'-1" (coping to coping)
- Clear Roadway: 40'-0" with two - 32" F shape traffic railing

Superstructure:
One simple span of prestressed slab unit with 6-inch minimum composite concrete overlay with constant cross slope of 0.02 ft/ft.
Span:
Sidewalk: None
Horizontal Alignment: Straight
Vertical Alignment: 0.00% Grade
Skew Angle: 0°
Prestressed Slab Unit Design:
Prestressed Slab Units: 12"x48" Prestressed Slab Unit (exterior)
12"x60" Prestressed Slab Unit (interior)

Design Span Length: 33'-4" (℄ Bearing to ℄ Bearing)
Composite Dead Load: 94 PLF
Non-Composite Dead Load: 300 PLF (48" Section)
375 PLF (60" Section)
Bonded Strand Development Multiplier: 1.60
Tension Stress Limits of Release as per Structures Manual Volume 1: Structures Design Guidelines
Live Load Distribution Factors per AASHTO LRFD

	Exterior Prestressed Slab Unit	Interior Prestressed Slab Unit
Shear:	0.394	0.368
Moment:	0.325	0.600

SAMPLE DRAWING USING CADD CELL 20350b

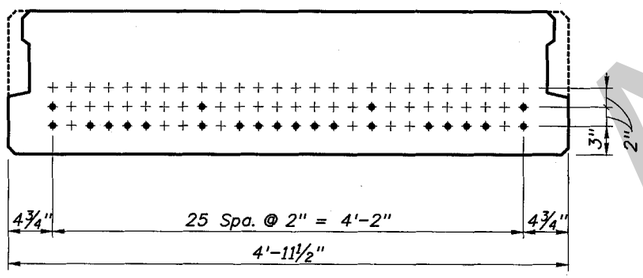
PRESTRESSED STANDARD SLAB UNITS - TABLE OF VARIABLES

Table Date 1-01-09

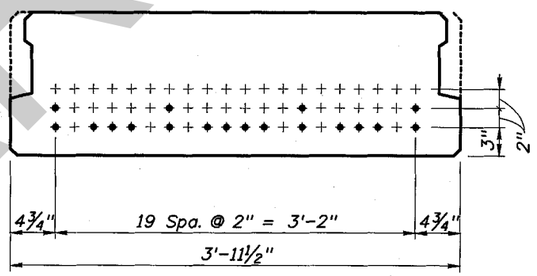
LOCATION		CONCRETE PROPERTIES			STND.	PLAN VIEW		END OF UNIT **					UNIT DIMENSIONS *		REINFORCING STEEL															
SPAN	SLAB UNIT	CLASS	STRENGTHS (psi)		PTRN.	CASE		ANGLE Ø		DIM J	DIM K1	DIM K2			D1	D2			Y		4K	NO. OF BAR SPACES			BAR SPACING *			RAILING REINF. ***		
NO.	NO. / TYPE		28 Day	Release	TYPE	END 1	END 2	END 1	END 2				DIM L	DIM R	NO.	NO.	DIM C	Length	DIM B	Length	NO.	S1	S2	S3	V1	V2	V3	INDEX NO.	CASE	DIM X_L
1	1/12"x48"	IV	5500	4500	3	1	1	90°	90°	6"	1'-0"	1'-0"	34'-4"	-	116	-	-	-	3'-4½"	7'-5"	140	18	-	16	9"	-	1'-0"	420	Lt.	1'-2¾"
1	2Ⓐ/12"x60"	IV	5500	4500	1	1	1	90°	90°	6"	1'-0"	1'-0"	34'-4"	-	116	-	-	-	4'-4½"	8'-5"	140	18	-	16	9"	-	1'-0"	-	-	-
1	9/12"x48"	IV	5500	4500	3	1	1	90°	90°	6"	1'-0"	1'-0"	34'-4"	-	116	-	-	-	3'-4½"	7'-5"	140	18	-	16	9"	-	1'-0"	420	Rt.	2'-8"

Ⓐ 2-8 Interior Prestressed Slab Units

NOTE: Work this sheet with Design Standards Index Nos. 20350, 20354 and 20355.



TYPE ① 22 STRANDS



TYPE ③ 18 STRANDS

STRAND DESCRIPTION: Use 0.5" Diameter, Grade 270 Low Relaxation Strands stressed at 31.0 kips each. Area per strand equals 0.153 sq. in.

STRAND PATTERNS

STRAND DEBONDING LEGEND

- • - fully bonded strands.
- ⊙ - strands debonded _'-__" from end of beam.
- ⊡ - strands debonded _'-__" from end of beam.
- △ - strands debonded _'-__" from end of beam.
- ◇ - strands debonded _'-__" from end of beam.

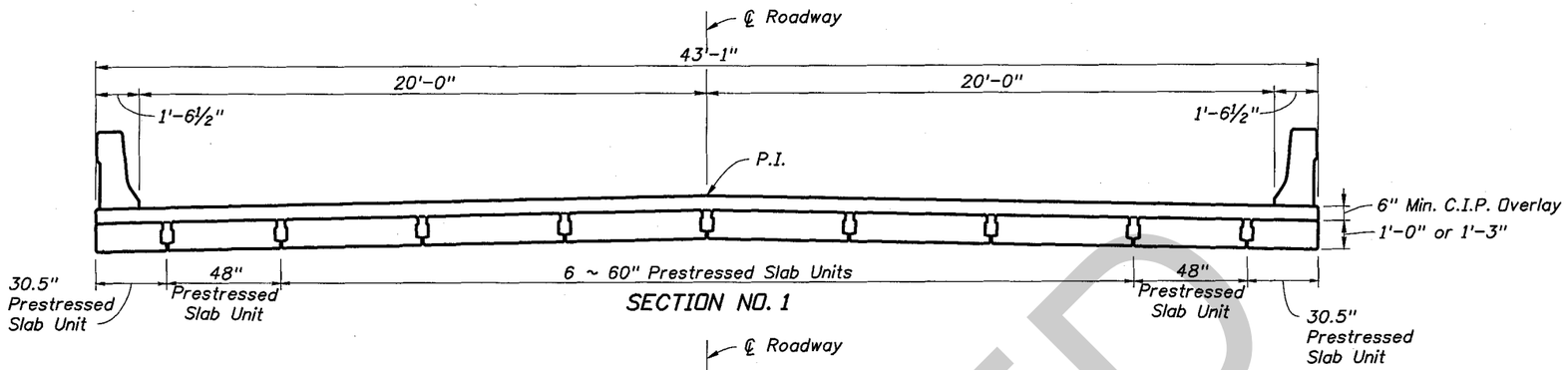
NOTE: On slab units with skewed ends the debonded length shall be measured along the debonded strand.

DIMENSION NOTES

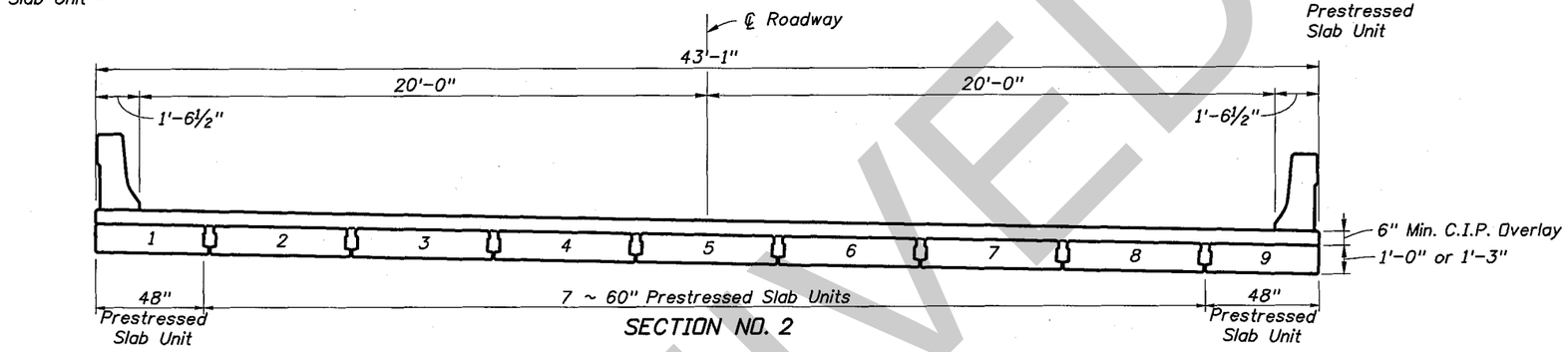
* All longitudinal slab unit dimensions shown on this sheet with a single asterisk (*) are measured along the top of unit at the centerline of slab unit.

** End of slab unit bearing dimensions "J" and "K" are measured along the bottom of the slab unit.

*** See Index No. 20350 for modified reinforcement. See "Prestressed Slab Units - Traffic Railing Reinforcing Layout Table" for railing placement on horizontal curves.



SECTION NO. 1



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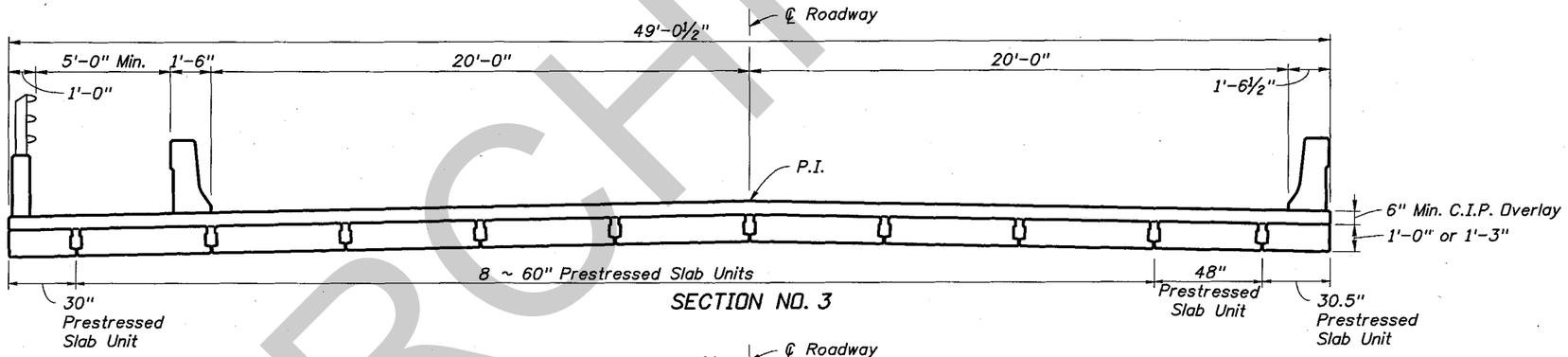

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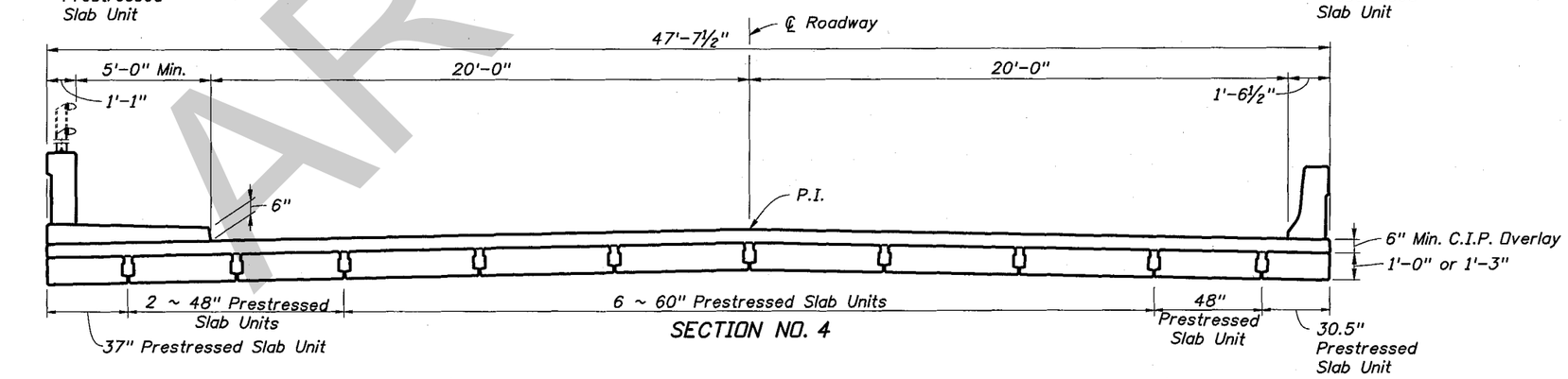


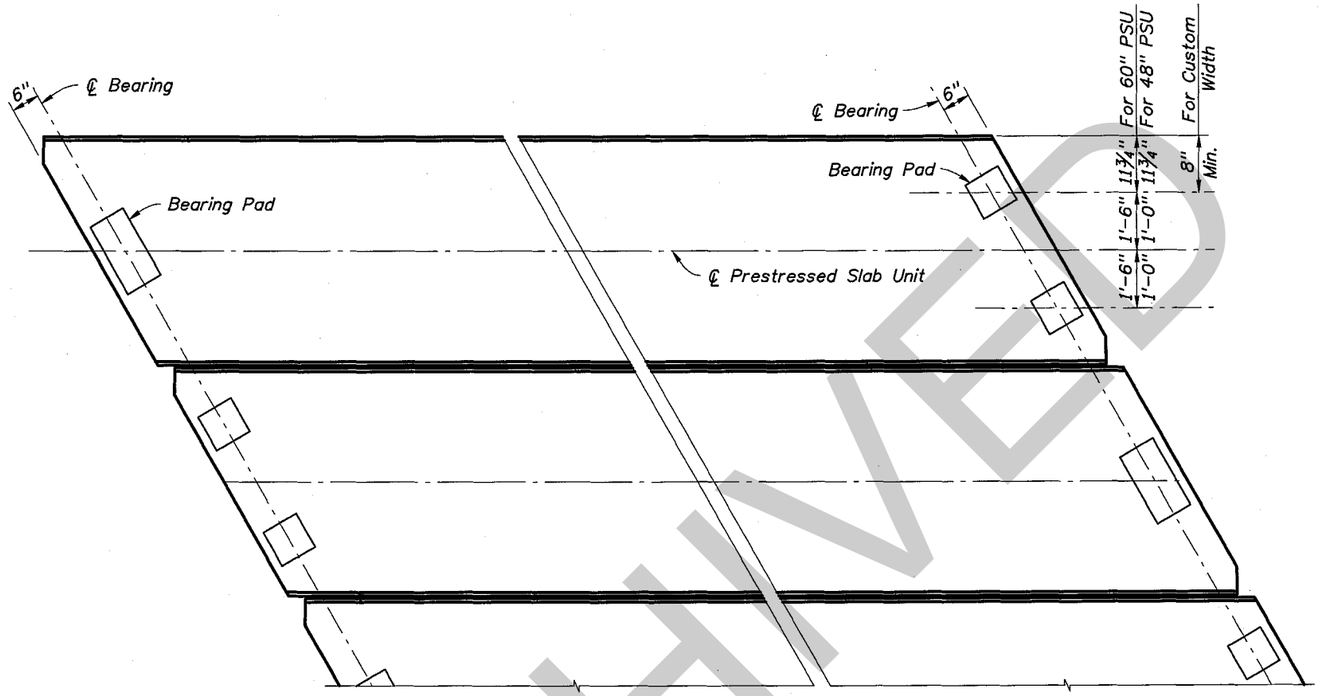
SECTION NO. 4

Design Instructions & Information For FDOT Design Standards

EXAMPLE PRESTRESSED SLAB UNITS TYPICAL SECTIONS

Last Revision	Sheet No.
01/01/09	2 of 3

Index No.(s)
20300 Series

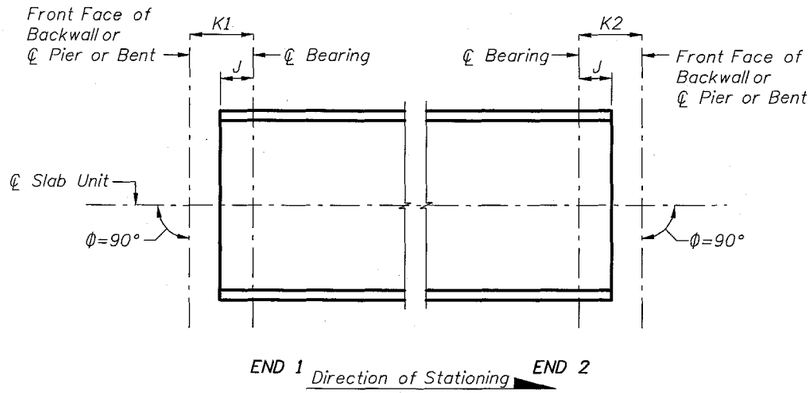


PARTIAL PLAN SHOWING TYPICAL BEARING PAD LAYOUT

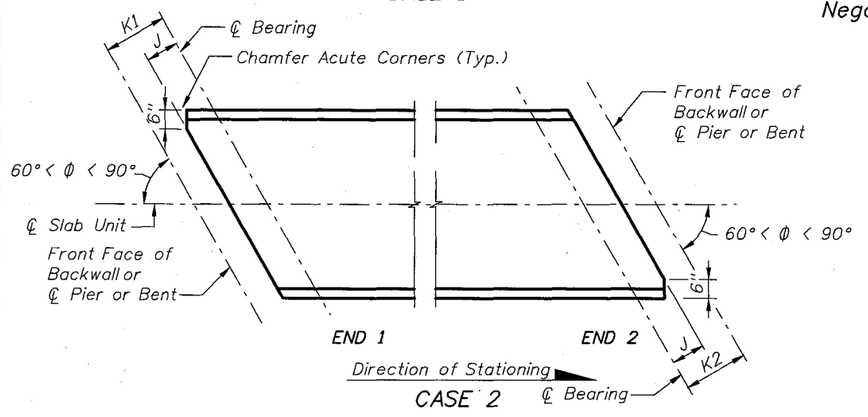
	Design Instructions & Information For FDOT Design Standards	Last Revision 01/01/09	Sheet No. 3 of 3
	PRESTRESSED SLAB UNITS BEARING PAD DETAILS		Index No.(s) 20300 Series

Attachment B

Design Standards Index Nos. 20350, 20353, 20354, 20355, 20363, 20364, 20365 and 20399



CASE 1



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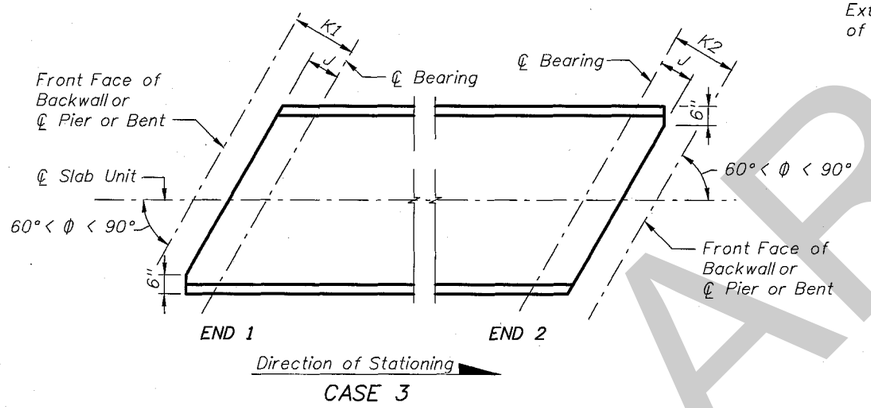
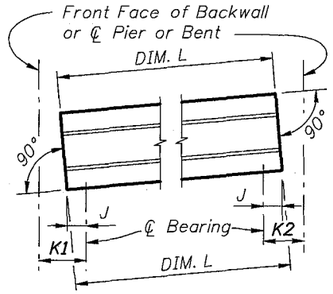
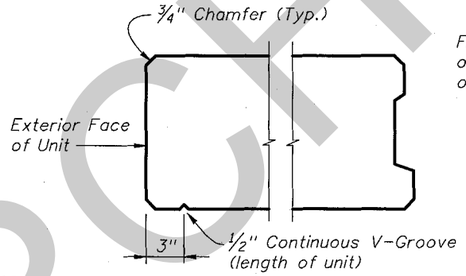


CASE 3

SCHEMATIC PLAN VIEWS AT SLAB ENDS



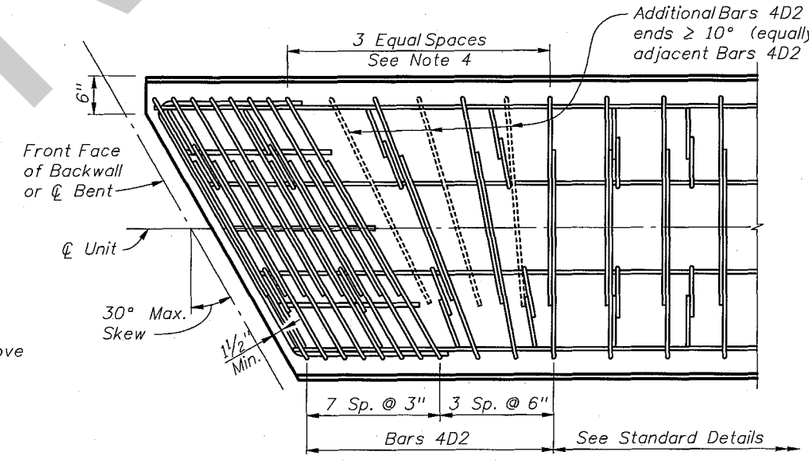
SCHEMATIC SIDE ELEVATION OF SLAB UNITS
(Positve Grade shown, Negative Grade or Horizontal Grade similar)



V-GROOVE DETAIL
(Exterior Units)

GENERAL NOTES

1. All bar dimensions are out-to-out.
2. Strands N shall be ASTM A416, Grade 250 or 270, ⅜" ϕ or larger, stressed to 10,000 lbs. each.
3. Unless otherwise noted, the minimum concrete cover for reinforcing steel shall be 2".
4. For slab units with skewed end conditions, the end reinforcement, defined as Bars 4D2 and Y within the limits of the first 2'-0", shall be placed parallel to the skewed ends of the slab unit. The next three - Bars 4D2 & 4K shall be fanned to perpendicular to the longitudinal axis of the slab unit. Provide additional Bars 4D2 for end skews ≥ 10°. (See "SKEWED END TREATMENT DETAIL")
5. Bars 4D1, 4D2 & 4K shall be placed and tied to Strands N and a fully bonded strand in the bottom row. (See "STRAND PATTERNS")
6. At the option of the Contractor deformed welded wire reinforcement (ASTM A497) may be used in lieu of Bars 4D and 4K. Submit details to the Engineer for approval.
7. For referenced Dimensions, Angles and Case Numbers see Table of Variables in Structures Plans.
8. Top surface of the slab units shall be raked transversely to provide a roughened surface with ¼" amplitude. For proper bonding of the deck overlay, clean the top surface of the Prestressed Slab Units and thoroughly soak with potable water for a minimum of 4 hrs. then remove all excess surface water immediately prior to placement of the overlay.
9. Cut strands 1" beyond the face of the slab unit.
10. Use the same thickness of slab units within each span.
11. Provide reinforced concrete keeper blocks on the low side of Prestressed Slab Units (PSU) when the cross slope or grade exceeds 3%.



SKEWED END TREATMENT DETAIL

INSTRUCTIONS TO DESIGNER:

To limit Bursting Forces the maximum prestress force at the slab unit ends from fully bonded strands must be limited to the following:

Slab Unit Type	Max. Bonded Prestress Force	Index No.	Last Revision Date
12" or 15" X 48"	1110 Kips	20354 & 20364	01/01/09
12" or 15" X 60"	1310 Kips	20355 & 20365	01/01/09

No losses shall be applied when calculating the Bonded Prestress Force. The reinforcing in the ends of the beams must not be modified without the approval of the State Structures Design Engineer.

Avoid placing slab units within the limits of superelevation transitions because the cross slope for individual and adjacent slab units must be constant from begin span to end span. Slight superelevation transitions may be accommodated by increasing the slab overlay thickness across the width of the span.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			

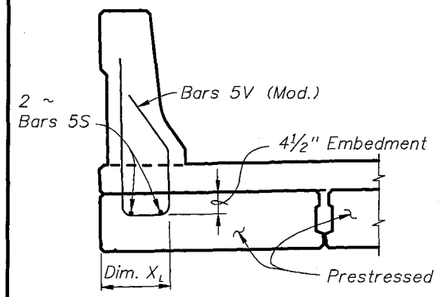
##STANDARD YEAR##

PRESTRESSED SLAB UNITS DETAILS AND NOTES

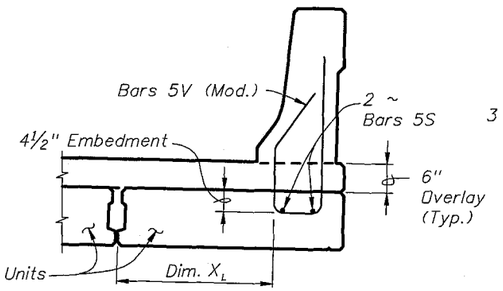
#Label1# #Label2# 01/01/09

Sheet No. 1 of 3

Index No. 20350



CASE "LEFT"



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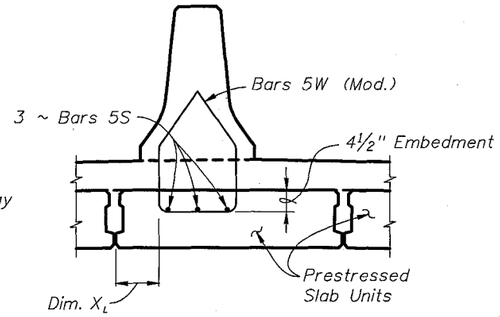


CASE "INTERIOR"

TRAFFIC RAILING (MEDIAN 32" F SHAPE)
(Index No. 421)

F SHAPE TRAFFIC RAILING (LOOKING AHEAD STATION)
(Index No. 420 - 32" F Shape shown)
(Index No. 425 - 42" F Shape similar)
(Railing on Exterior Units shown, Railing on Interior Units similar)

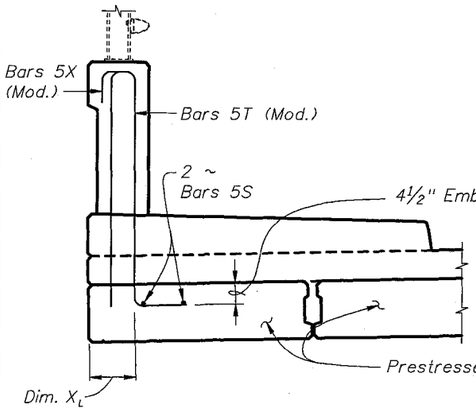
NOTES:

Work this sheet with the Prestressed Slab Unit - Table of Variables and Prestressed Slab Unit - Traffic Railing Reinforcement Layout Table (if required) in the Structures Plans.

Contractor should notify the Precaster how the Traffic Railing bars are to be placed either vertical (plumb) or perpendicular to the cross slope to allow proper placement of the modified railing bars.

Modified Bars 5T & 5X for Index Nos. 422 & 423 shall be place vertical (plumb) to the cross slope.

On skewed Prestressed Slab Units place the bottom leg of vertical railing bars parallel to transverse slab reinforcement bars at unit ends.



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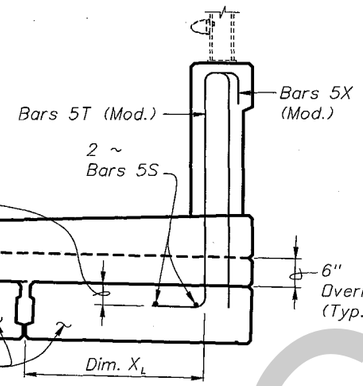
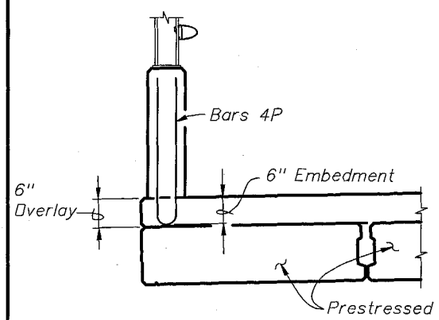
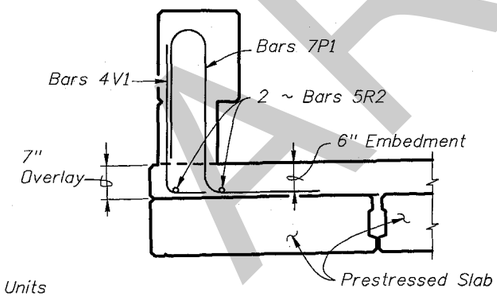


CASE "RIGHT"

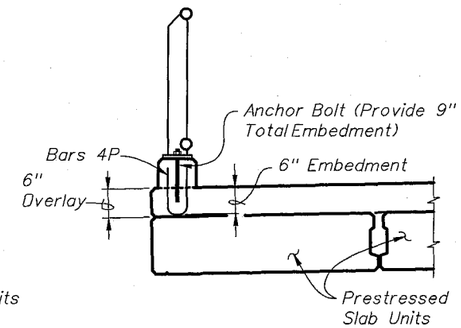
VERTICAL SHAPE TRAFFIC RAILING (LOOKING AHEAD STATION)
(Index No. 423 - 32" Vertical Shape shown)
(Index No. 422 - 42" Vertical Shape similar)



PEDESTRIAN/BICYCLE RAILING DETAIL
(Index No. 820)

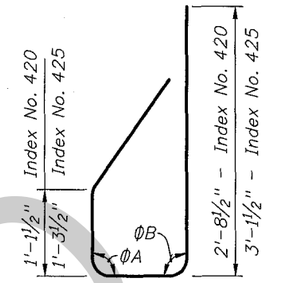


TRAFFIC RAILING - (CORRAL SHAPE)
(Index No. 424)

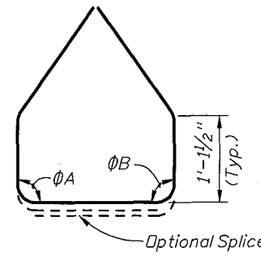


BRIDGE PEDESTRIAN/BICYCLE PICKET RAILING
(Index Nos. 851 & 861)

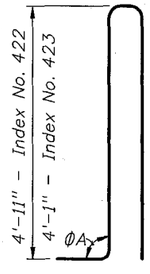
RAILING REINFORCING MODIFIED BAR LAYOUT



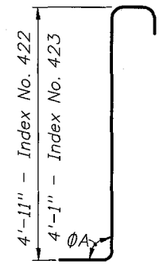
STIRRUP
BAR 5V (MOD.)
INDEX NOS. 420 OR 425



STIRRUP
BAR 5W (MOD.)
INDEX NO. 421



STIRRUP
BAR 5T (MOD.)
INDEX NOS. 422 OR 423



STIRRUP
BAR 5X (MOD.)
INDEX NOS. 422 OR 423

REINFORCING STEEL NOTES:

1. Bar dimensions shown are out to out.
2. For the other dimensions and angles ϕA and ϕB see the referenced Index.
3. Adjust the dimension shown for Bars 5V, 5T, 5W, 5X, 4V & 7P as required when the 6" Min. Overlay is thickened to accommodate superelevation transition.
4. The 4'-11" (Index No. 422), 4'-1" (Index No. 423) vertical dimension shown for Bars 5T and 5X is based on a 6" thick deck overlay with a 6" thick x 6' wide raised sidewalk on low side of the deck with a 2% deck cross slope and a counter 2% raised sidewalk cross slope. If the raised sidewalk thickness, width, or cross slope vary from the above amounts, adjust this dimension accordingly to achieve a 4½" embedment (± ½") into the slab units. See Structures Plans, Superstructure and Approach Slab Sheets.
5. All reinforcing steel at the open joints shall have a 2" minimum cover.
6. Bars 5S may be continuous or spliced at the mid point of the slab unit. Bar splices for Bars 5S shall be a minimum of 2'-0".
7. Welded Wire Reinforcement is not permitted for Bars 5W (Mod.) on precast slab units.
8. Strands N may be used in lieu of Bar 5S or 5R to anchor stirrup Bars 5T, 5V, 5W & 5X within 2" of the 90° corner bend.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			

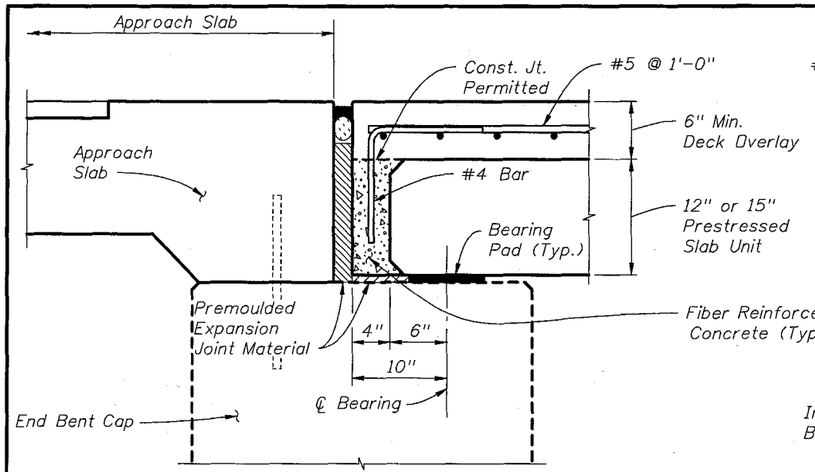
##STANDARD YEAR##

PRESTRESSED SLAB UNITS DETAILS AND NOTES

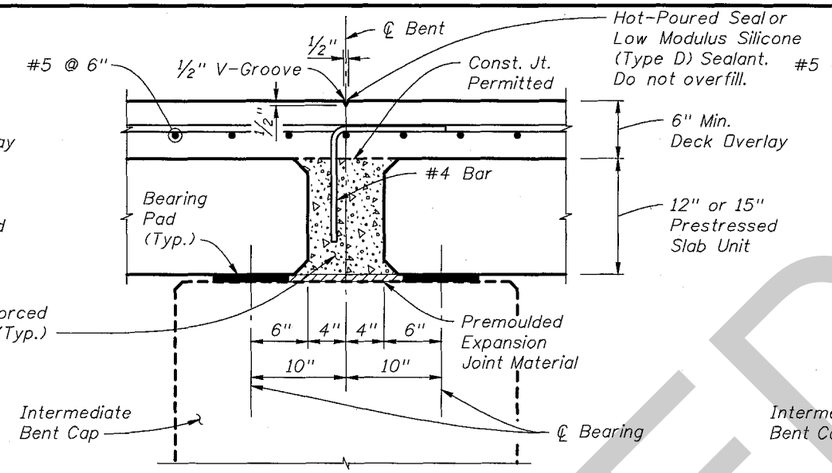
#Label1# #Label2# 01/01/09

Sheet No. 2 of 3

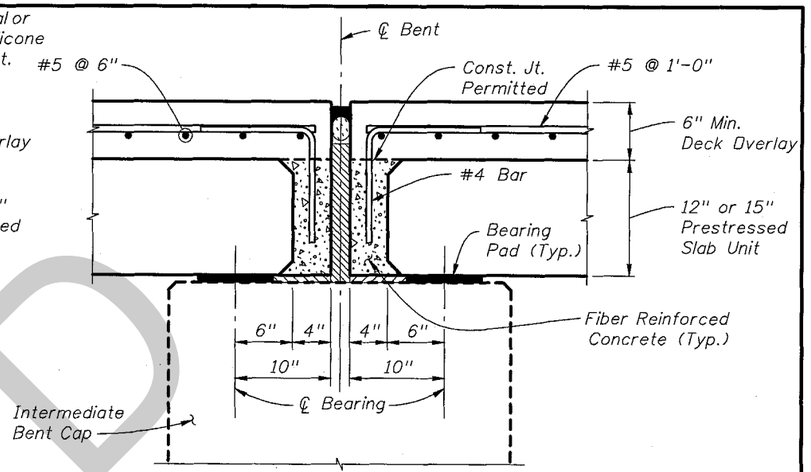
Index No. 20350



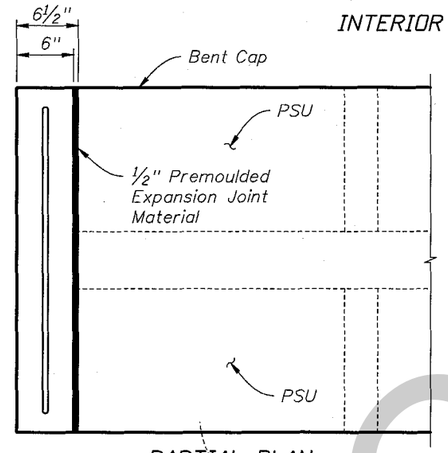
JOINT DETAIL AT BEGIN/END BRIDGE



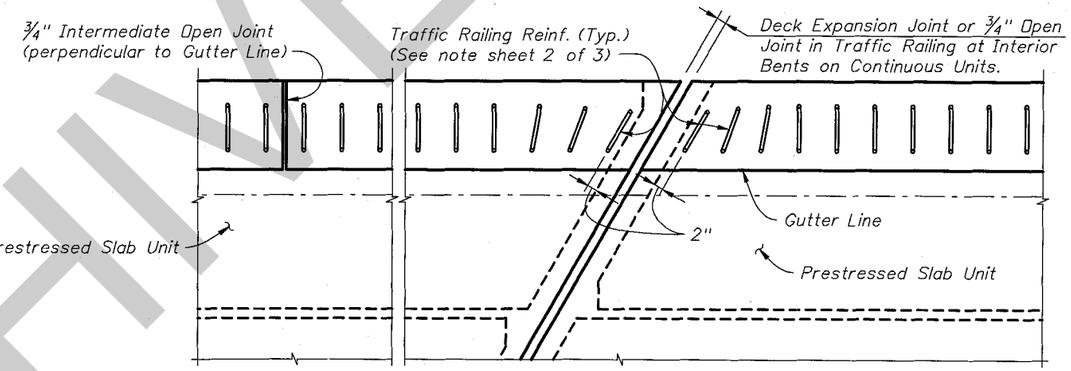
JOINT DETAIL AT INTERIOR BENTS ON CONTINUOUS UNITS



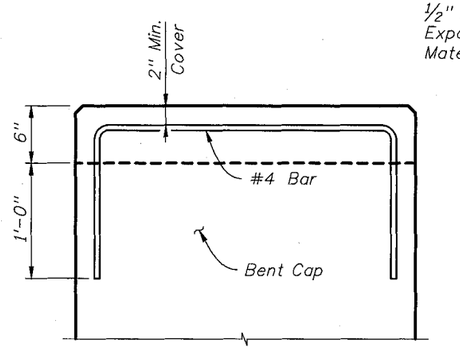
JOINT DETAIL AT EXPANSION INTERIOR BENTS



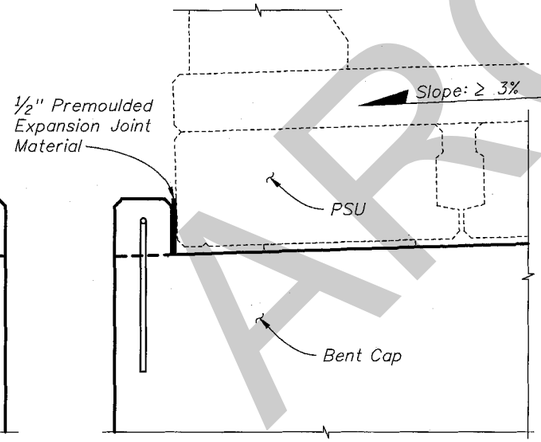
PARTIAL PLAN



PARTIAL PLAN VIEW OF DECK SHOWING EXPANSION JOINT TREATMENT ON SKEWED BRIDGE (INTERMEDIATE JOINT IS SIMILAR)



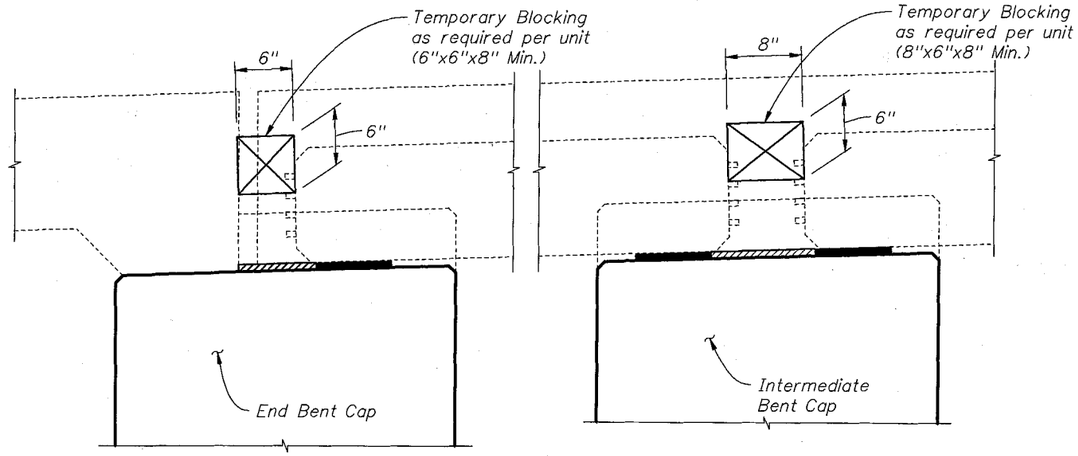
END VIEW



PARTIAL ELEVATION

KEEPER BLOCK DETAILS

Use keeper blocks on low end of bent caps when cross slope is ≥ 3%.



TEMPORARY BLOCKING

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard.			

##STANDARD YEAR##

PRESTRESSED SLAB UNITS
END & INTERMEDIATE BENT JOINT & BLOCK DETAILS

#Label1# #Label2# 01/01/09

Sheet No. 3 of 3

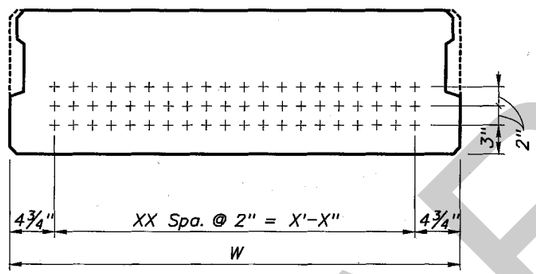
Index No. 20350

PRESTRESSED CUSTOM WIDTH SLAB UNITS - TABLE OF VARIABLES

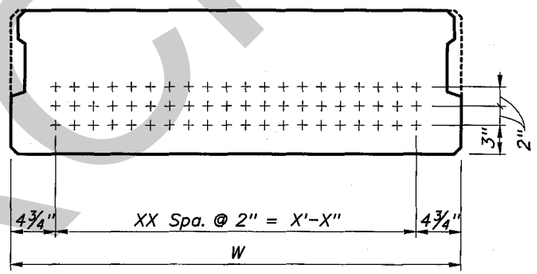
Table Date 1-01-09

LOCATION		CONCRETE PROPERTIES			STND.	PLAN VIEW CASE		END OF UNIT **					DIM	UNIT DIMENSIONS *		REINFORCING STEEL																	
SPAN NO.	SLAB UNIT NO. / TYPE	CLASS	STRENGTHS (psi) 28 Day	STRENGTHS (psi) Release	PTRN. TYPE	END 1	END 2	ANGLE Ø END 1	ANGLE Ø END 2	DIM J	DIM K1	DIM K2	W	DIM L	DIM R	D1 NO.	D1 DIM D	D1 Length	D2 NO.	D2 DIM C	D2 Length	Y DIM B	Y Length	4K NO.	NO. OF BAR SPACES S1	NO. OF BAR SPACES S2	NO. OF BAR SPACES S3	BAR SPACING V1	BAR SPACING V2	BAR SPACING V3	RAILING REINF. *** INDEX NO.	RAILING REINF. *** CASE	RAILING REINF. *** DIM X_L

NOTE: Work this sheet with Design Standard Index Nos. 20350, 20353 and 20363.



TYPE ① __ STRANDS



TYPE ② __ STRANDS

STRAND DESCRIPTION: Use ____ Diameter, Grade ___, ___ ___ Strands stressed at ___ kips each. Area per strand equals ___ sq. in.

STRAND PATTERNS

STRAND DEBONDING LEGEND

- • – fully bonded strands.
- ⊙ – strands debonded _'-__" from end of beam.
- ⊡ – strands debonded _'-__" from end of beam.
- ◬ – strands debonded _'-__" from end of beam.
- ◈ – strands debonded _'-__" from end of beam.

NOTE: On slab units with skewed ends the debonded length shall be measured along the debonded strand.

DIMENSION NOTES

* All longitudinal slab unit dimensions shown on this sheet with a single asterisk (*) are measured along the top of unit at the centerline of slab unit.

** End of slab unit bearing dimensions "J" and "K" are measured along the bottom of the slab unit.

*** See Index No. 20350 for modified reinforcement. See "Prestressed Slab Units - Traffic Railing Reinforcing Layout Table" for railing placement on horizontal curves.

INSTRUCTION TO DESIGNER

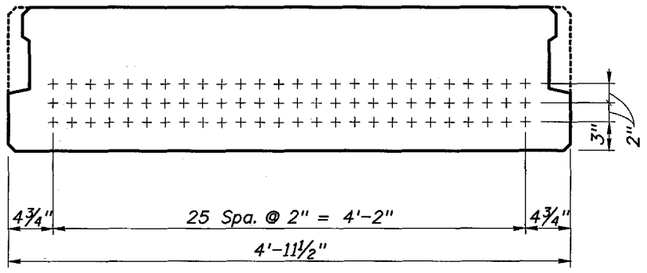
Dim. B, C & D should be calculated using the following equations: $B=(W-7")/\cos(90°-\phi)$, $C=B/2+1'-1"$, $D=W/2+9"$

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DETAIL

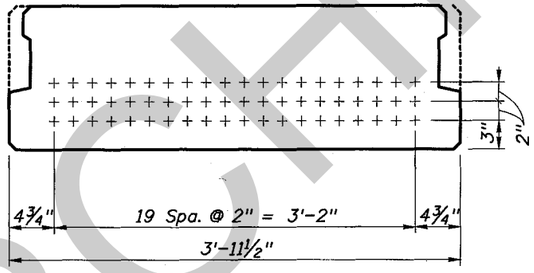
PRESTRESSED STANDARD SLAB UNITS - TABLE OF VARIABLES

Table Date 1-01-09

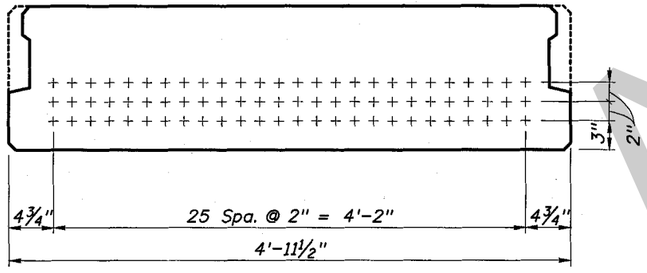
LOCATION		CONCRETE PROPERTIES			STND.	PLAN VIEW		END OF UNIT **					UNIT		REINFORCING STEEL															
SPAN	SLAB UNIT	CLASS	STRENGTHS (psi)		PTRN.	CASE		ANGLE ϕ		DIM J	DIM K1	DIM K2	DIMENSIONS *		D1	D2			Y		4K	NO. OF BAR SPACES			BAR SPACING *			RAILING REINF. ***		
NO.	NO. / TYPE		28 Day	Release	TYPE	END 1	END 2	END 1	END 2				DIM L	DIM R	NO.	NO.	DIM C	Length	DIM B	Length	NO.	S1	S2	S3	V1	V2	V3	INDEX NO.	CASE	DIM X_L



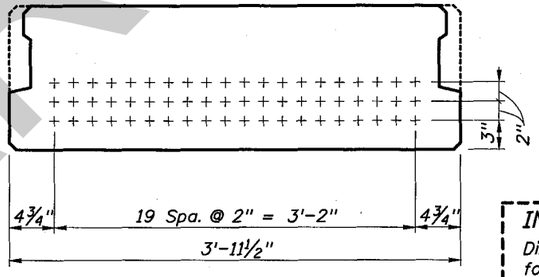
TYPE ① __ STRANDS



TYPE ③ __ STRANDS



TYPE ② __ STRANDS



TYPE ④ __ STRANDS

STRAND DESCRIPTION: Use ____ Diameter, Grade ___, ___ ___ Strands stressed at ___ kips each. Area per strand equals ___ sq. in.

STRAND PATTERNS

NOTE: Work this sheet with Design Standards Index Nos. 20350, XXXXX and XXXXX.

STRAND DEBONDING LEGEND

- • – fully bonded strands.
- ⊙ – strands debonded _'-__" from end of beam.
- ⊡ – strands debonded _'-__" from end of beam.
- ◬ – strands debonded _'-__" from end of beam.
- ◈ – strands debonded _'-__" from end of beam.

NOTE: On slab units with skewed ends the debonded length shall be measured along the debonded strand.

DIMENSION NOTES

* All longitudinal slab unit dimensions shown on this sheet with a single asterisk (*) are measured along the top of unit at the centerline of slab unit.

** End of slab unit bearing dimensions "J" and "K" are measured along the bottom of the slab unit.

*** See Index No. 20350 for modified reinforcement. See "Prestressed Slab Units - Traffic Railing Reinforcing Layout Table" for railing placement on horizontal curves.

INSTRUCTION TO DESIGNER

Dim. B & C should be calculated using the following equations: B=(W-7")/Cos(90°-ϕ), C=B/2+1'-1", Where W=Width of Unit.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DETAIL

PRESTRESSED SLAB UNITS – TRAFFIC RAILING REINFORCING LAYOUT TABLE							Table Date 1-01-09
Span No.							
Slab Unit No.							
Railing Index No.							
Bar Mark (Mod.)							
Dim. L_1							
Dim. X_L LOCATION (Left Edge Offset to Railing Reinforcement)							
Case (Orientation)							
0.00 L_1 (END 1)							
0.10 L_1							
0.20 L_1							
0.30 L_1							
0.40 L_1							
0.50 L_1							
0.60 L_1							
0.70 L_1							
0.80 L_1							
0.90 L_1							
1.00 L_1 (END 2)							

NOTES:

Work this Table with Index No. 20350, Sheet 2 and the Prestressed Slab Unit – Table of Variables in the Structures Plans.

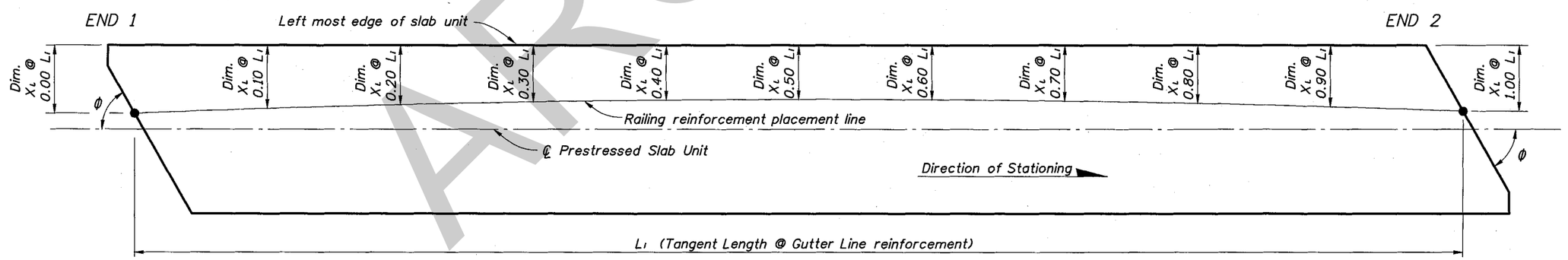
Dim. X_L is measured perpendicular from the left most edge of the slab unit (looking from END 1 towards END 2) to the vertical leg of the Traffic Railing reinforcement.

See Index No. 20350, Sheet 2 for treatment of the Railing and Parapet reinforcement and Case "Left" or "Right" placement orientation of the modified railing bars.

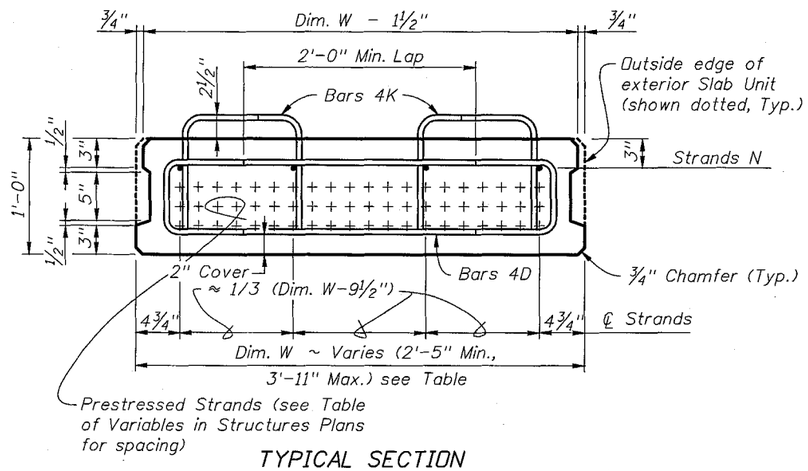
INSTRUCTION TO DESIGNER:

Include this Data Table in the Structures Plans for Traffic Railings on horizontal curves.

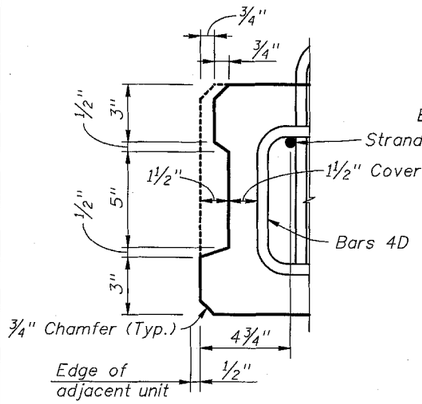
PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DETAIL



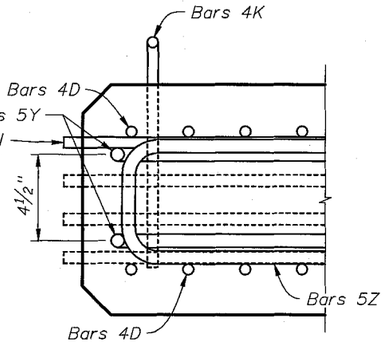
SCHEMATIC PLAN VIEW OF MODIFIED RAILING REINFORCEMENT PLACEMENT



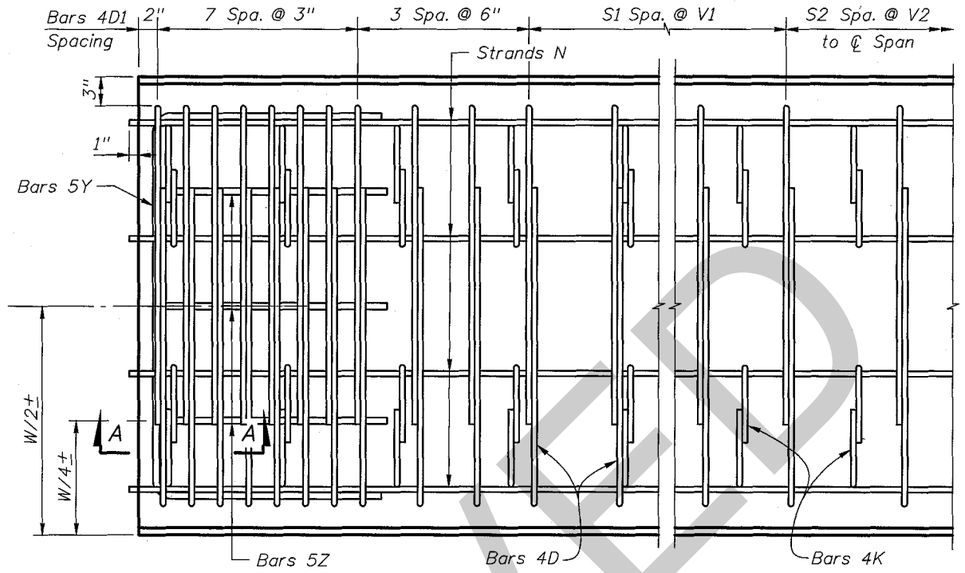
TYPICAL SECTION



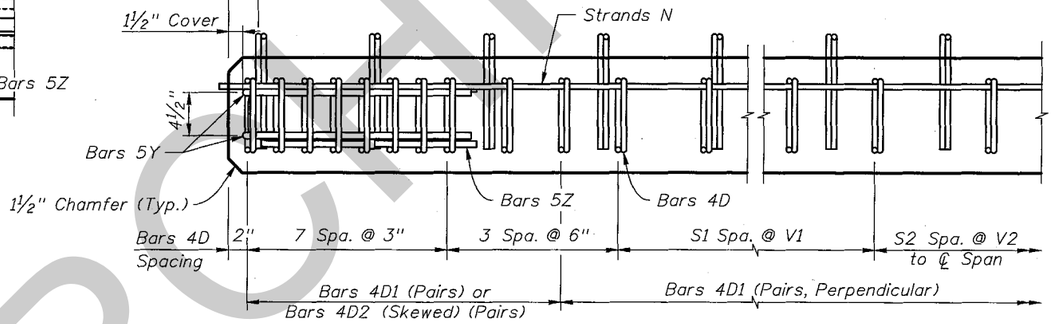
KEYWAY DETAIL



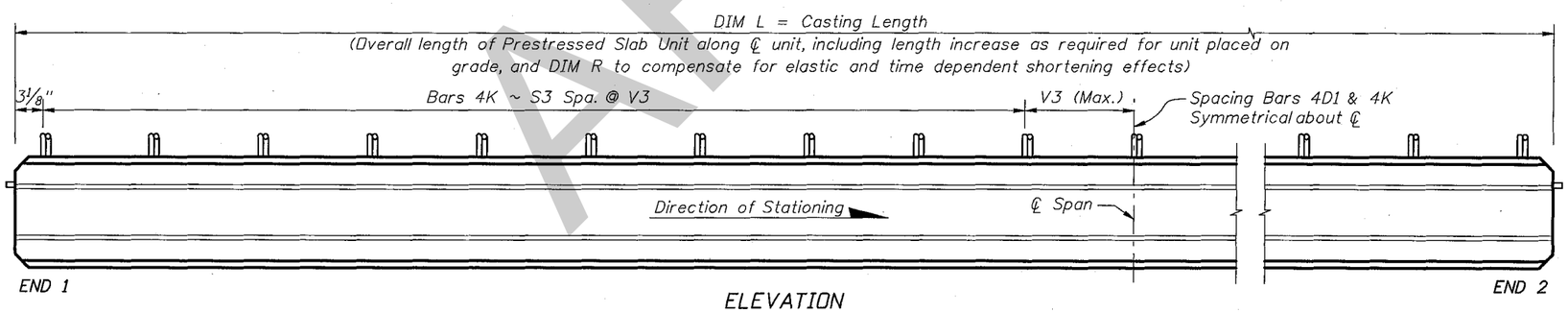
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

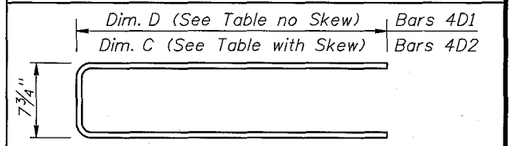


ELEVATION

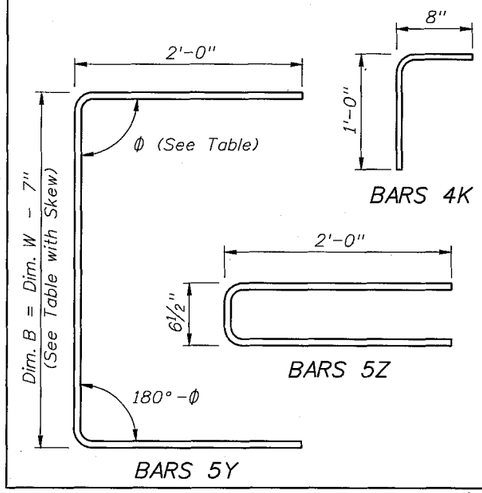
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	5	4	See Table	See Table
D2	4, 5	4	40 *	See Table
Y	4	5	4	See Table
K	4, 5	4	See Table	1'-8"
N	2, 8	⅜" ϕ Strands	4	Dim. L + 2"
Z	–	5	6	4'-7"

BENDING DIAGRAMS (See Note 1)



BARS 4D1 & 4D2



BARS 4K

BARS 5Z

BARS 5Y

NOTES:

Work this Index with Index No. 20350 and Prestressed Custom Width Slab Units – Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, C, D, L, R, W, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Slab Units – Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D2 for skewed units.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			

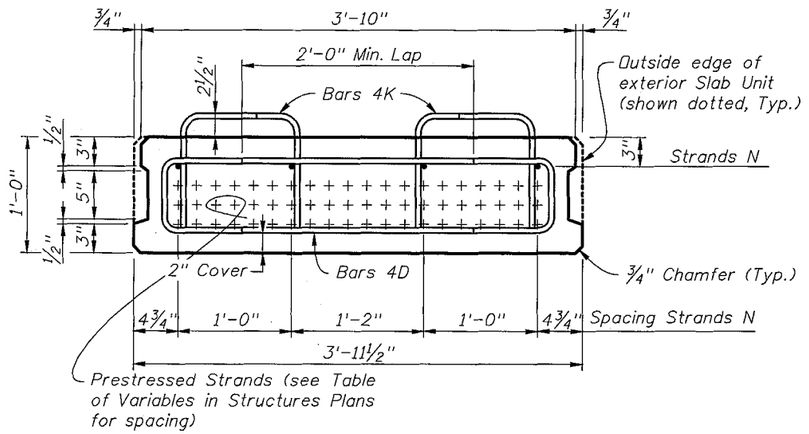
##STANDARD YEAR##

12" CUSTOM WIDTH PRESTRESSED SLAB UNIT STANDARD DETAILS

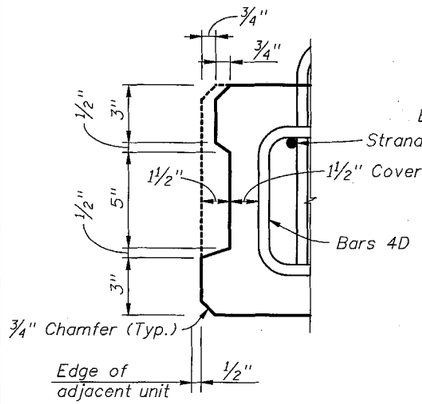
#Label1# #Label2# 01/01/09

Sheet No. 1 of 1

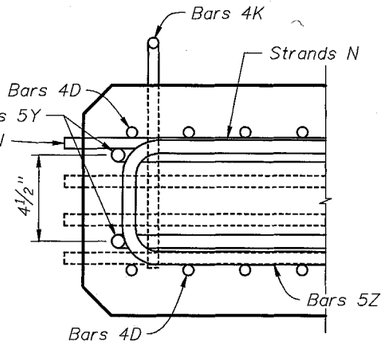
Index No. 20353



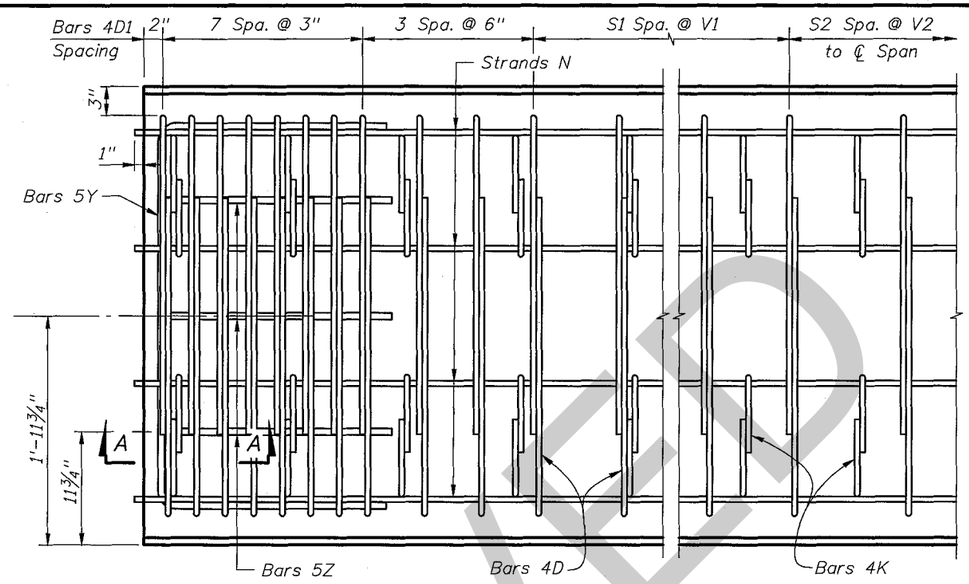
TYPICAL SECTION



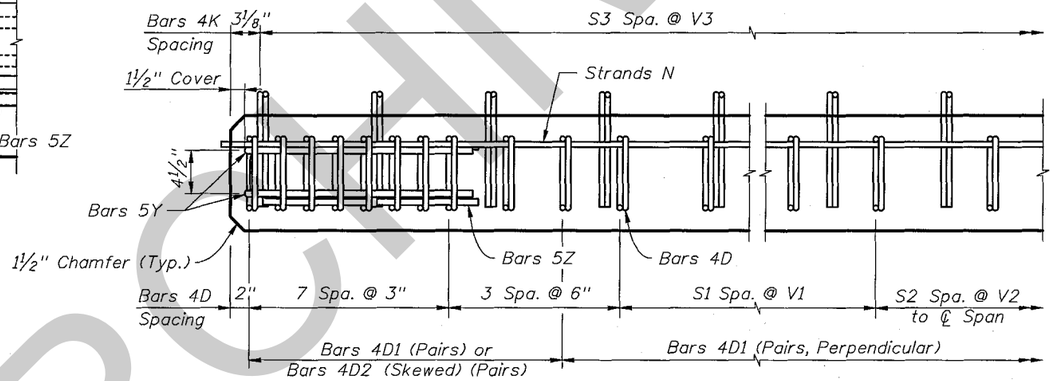
KEYWAY DETAIL



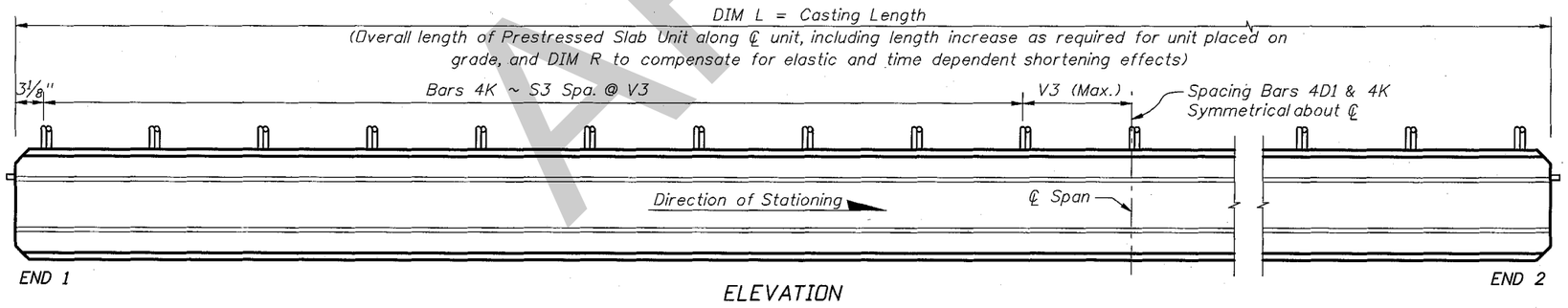
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

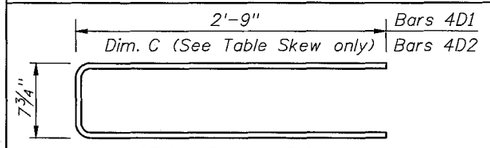


ELEVATION

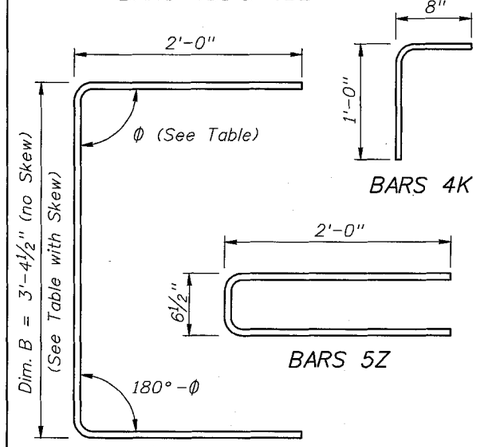
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	5	4	See Table	6'-2"
D2	4, 5	4	40 *	See Table
Y	4	5	4	See Table
K	4, 5	4	See Table	1'-8"
N	2, 8	⅜" ϕ Strands	4	Dim. L + 2"
Z	–	5	6	4'-7"

BENDING DIAGRAMS (See Note 1)



BARS 4D1 & 4D2



BARS 4K

BARS 5Z

BARS 5Y

NOTES:
Work this Index with Index No. 20350. and Prestressed Slab Units – Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, C, L, R, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Slab Units – Table of Variables in Structures Plans.

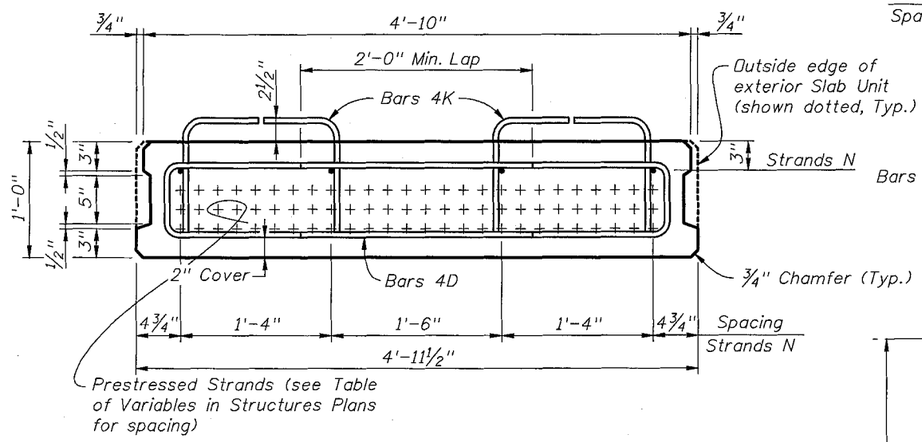
* See Note 4 for additional Bars 4D2 for skewed units

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			

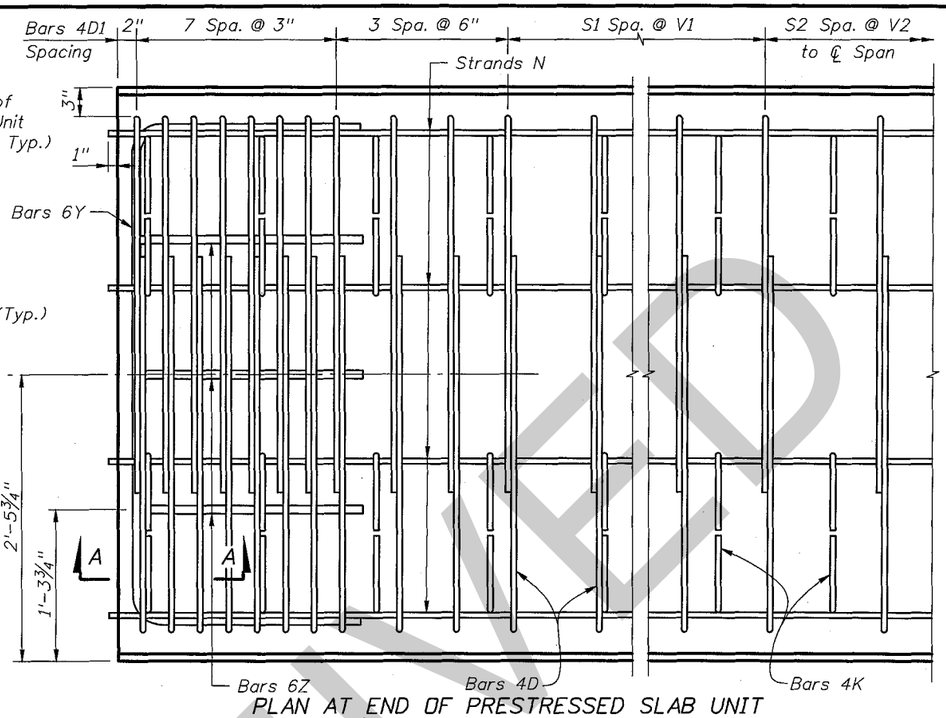
##STANDARD YEAR##

12"x48" PRESTRESSED SLAB UNIT STANDARD DETAILS

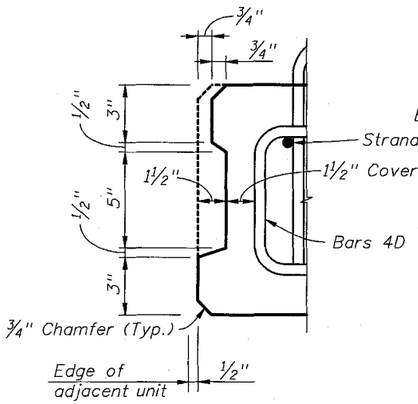
#Label1# #Label2#	Sheet No.
01/01/09	1 of 1
Index No.	20354



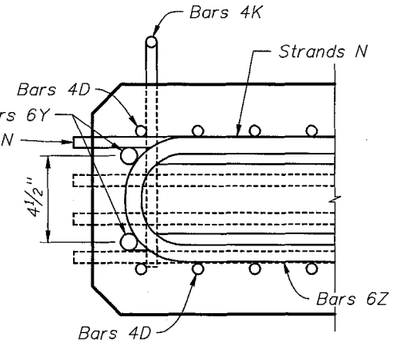
TYPICAL SECTION



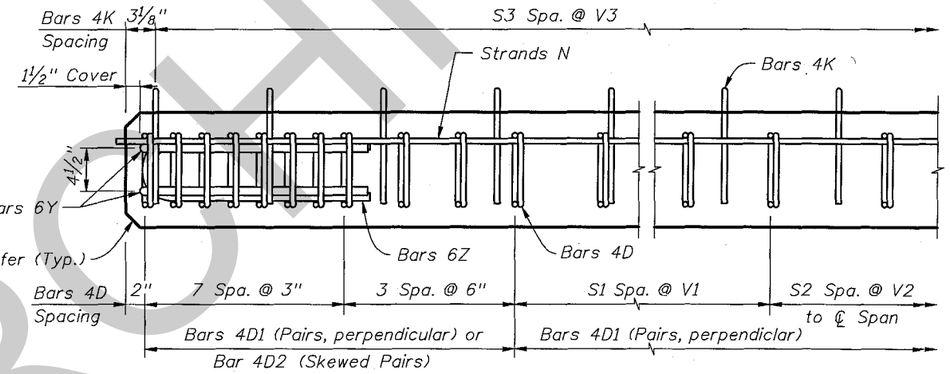
PLAN AT END OF PRESTRESSED SLAB UNIT



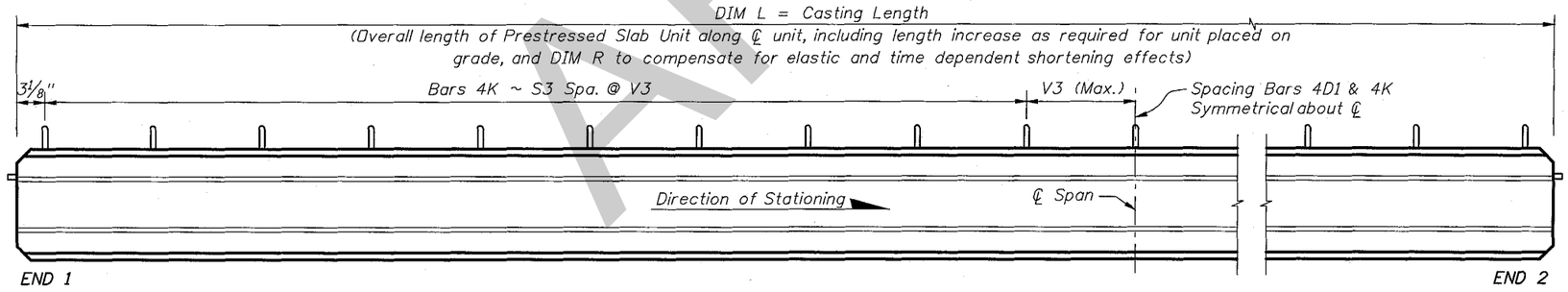
KEYWAY DETAIL



SECTION A-A



ELEVATION AT END OF PRESTRESSED SLAB UNIT

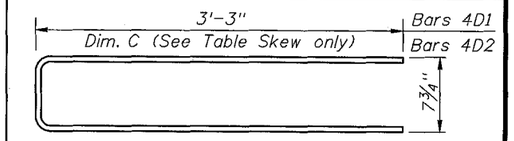


ELEVATION

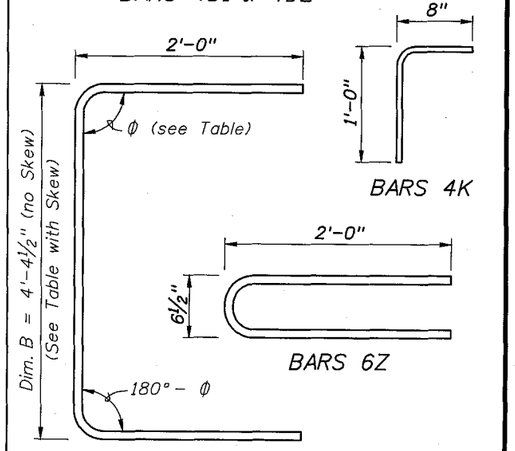
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	5	4	See Table	7'-2"
D2	4, 5	4	40*	See Table
Y	4	6	4	See Table
K	4, 5	4	See Table	1'-8"
N	2, 8	3/8" ϕ Strands	4	Dim. L + 2"
Z	-	6	6	4'-7"

BENDING DIAGRAMS (See Note 1)



BARS 4D1 & 4D2



BARS 4K

BARS 6Z

BARS 6Y

NOTES:

Work this Index with Index No. 20350 and Prestressed Slab Units - Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, C, L, R, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Slab Units - Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D2 for skewed units

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			

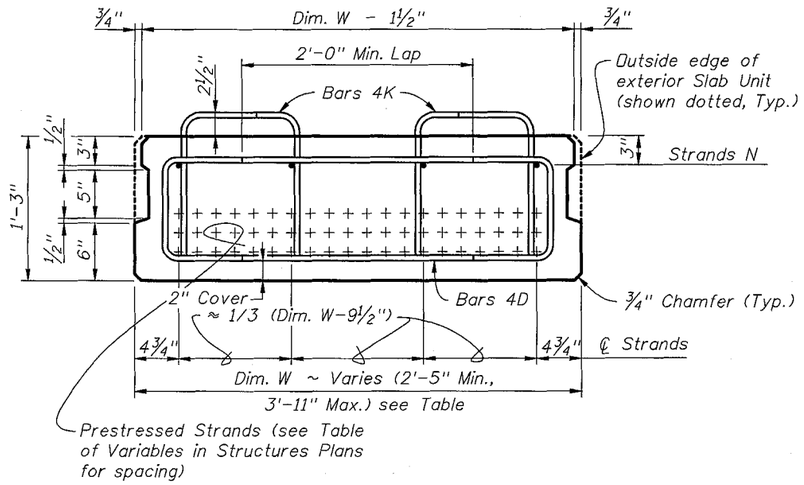
##STANDARD YEAR##

12"x60" PRESTRESSED SLAB UNIT STANDARD DETAILS

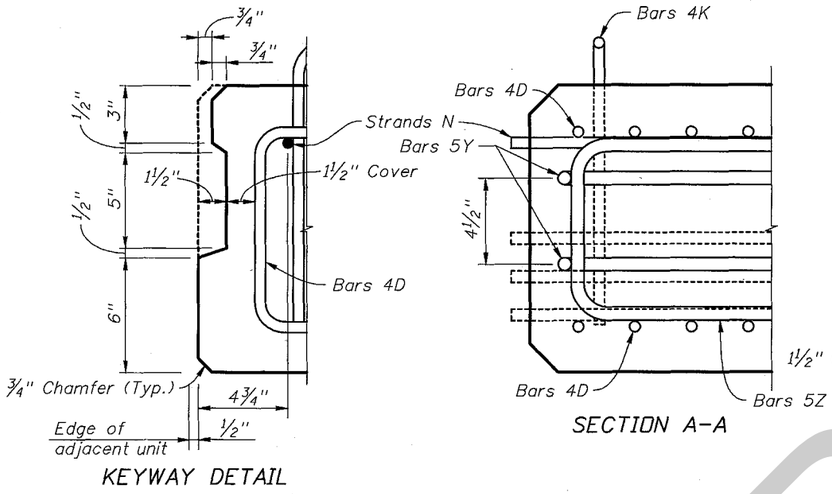
#Label1#
#Label2#
01/01/09

Sheet No. 1 of 1

Index No. 20355

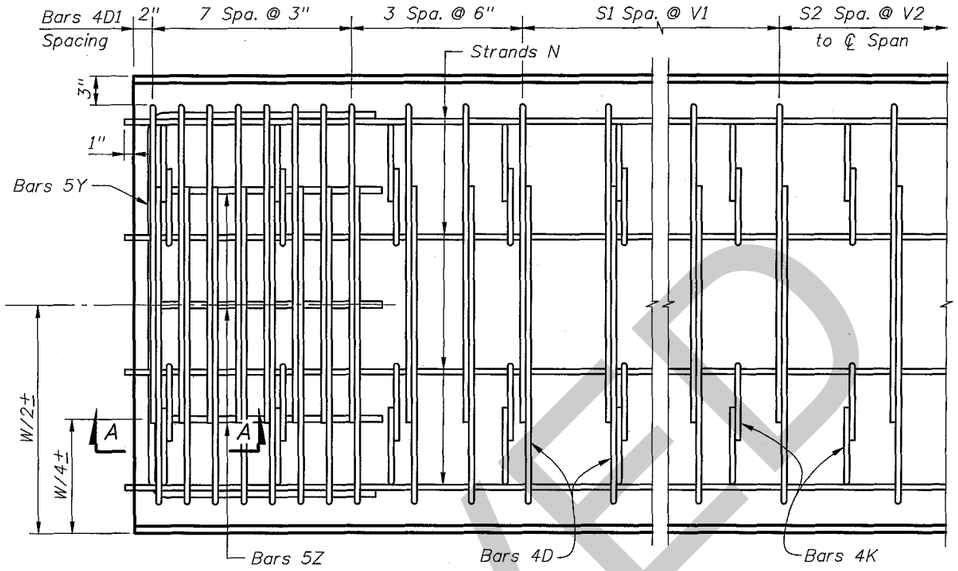


TYPICAL SECTION

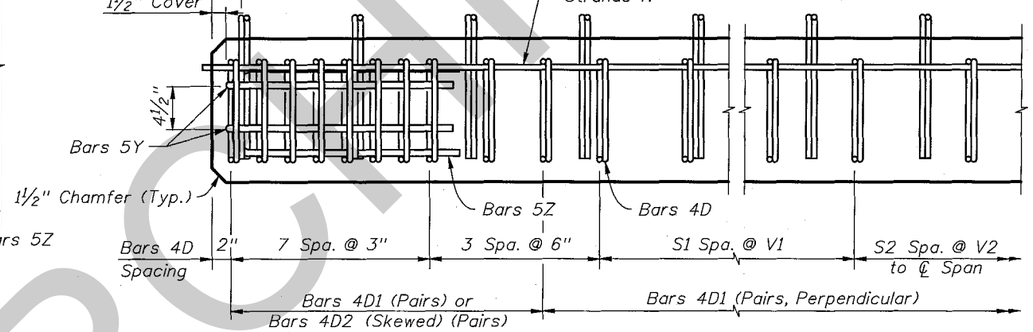


KEYWAY DETAIL

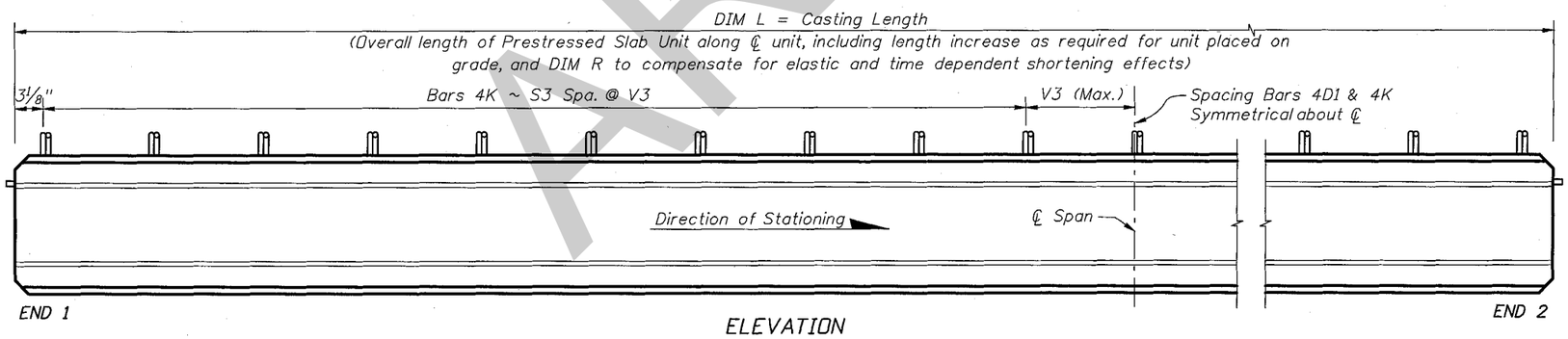
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

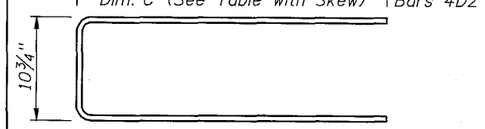


ELEVATION

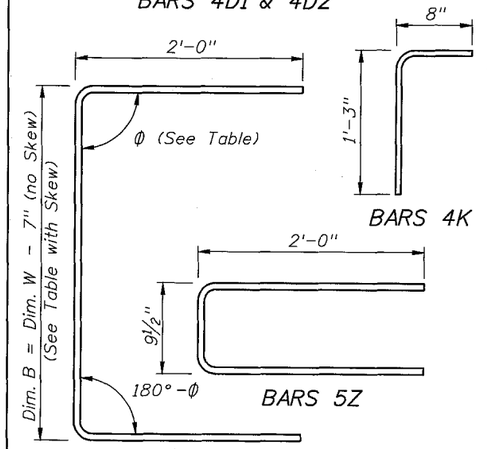
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	5	4	See Table	See Table
D2	4, 5	4	40 *	See Table
Y	4	5	4	See Table
K	4, 5	4	See Table	1'-11"
N	2, 8	⅜" ϕ Strands	4	Dim. L + 2"
Z	-	5	6	4'-10"

BENDING DIAGRAMS (See Note 1)



BARS 4D1 & 4D2



BARS 4K

BARS 5Z

BARS 5Y

NOTES:

Work this Index with Index No. 20350 and Prestressed Custom Width Slab Units - Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, C, D, L, R, W, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Slab Units - Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D2 for skewed units.

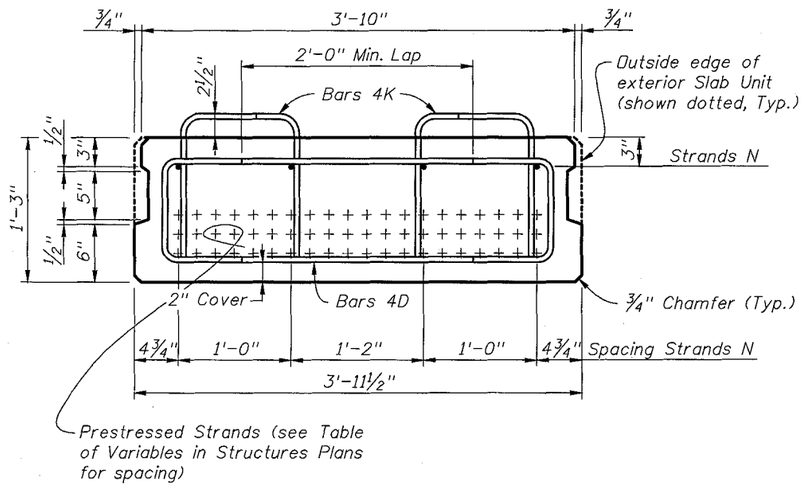
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			

##STANDARD YEAR##

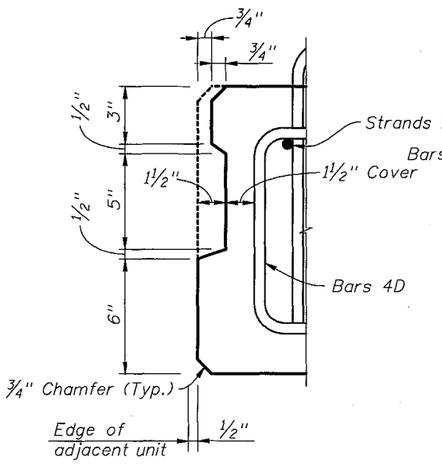
15" CUSTOM WIDTH PRESTRESSED SLAB UNIT STANDARD DETAILS

#Label1# #Label2# 01/01/09 | Sheet No. 1 of 1

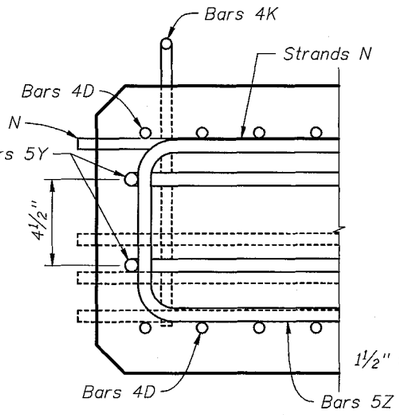
Index No. 20363



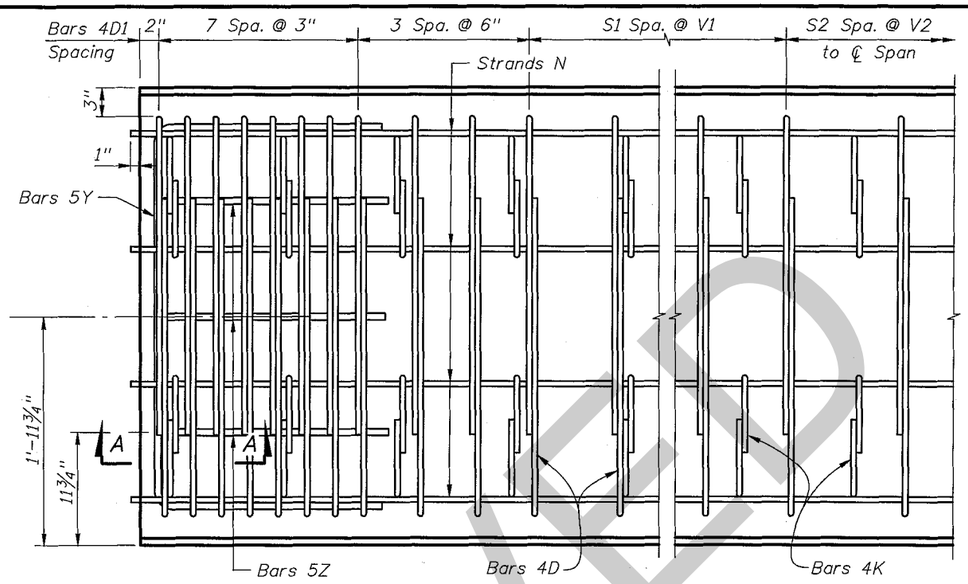
TYPICAL SECTION



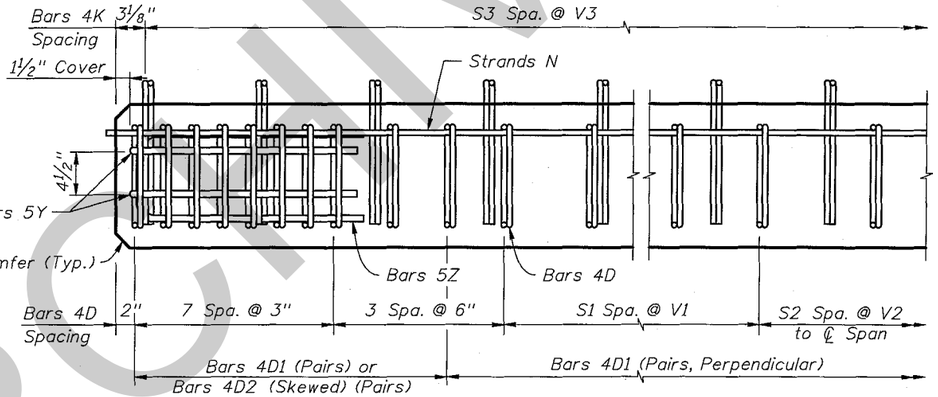
KEYWAY DETAIL



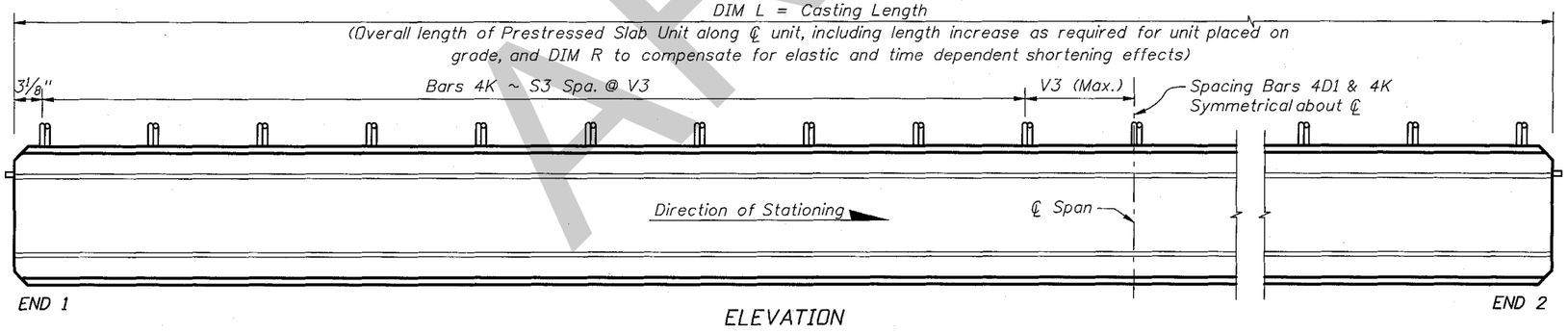
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

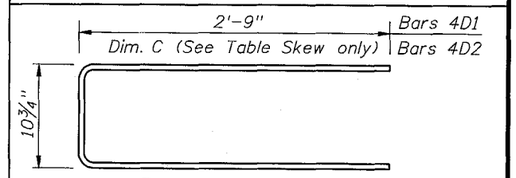


ELEVATION

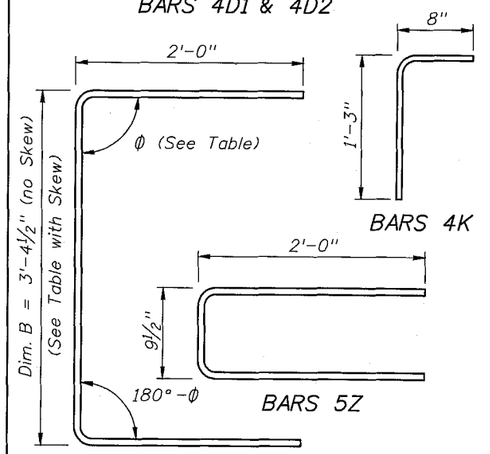
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	5	4	See Table	6'-5"
D2	4, 5	4	40 *	See Table
Y	4	5	4	See Table
K	4, 5	4	See Table	1'-11"
N	2, 8	3/8" ϕ Strands	4	Dim. L + 2"
Z	-	5	6	4'-10"

BENDING DIAGRAMS (See Note 1)



BARS 4D1 & 4D2



BARS 5Y

NOTES:

Work this Index with Index No. 20350. and Prestressed Slab Units - Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, C, L, R, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Slab Units - Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D2 for skewed units

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			

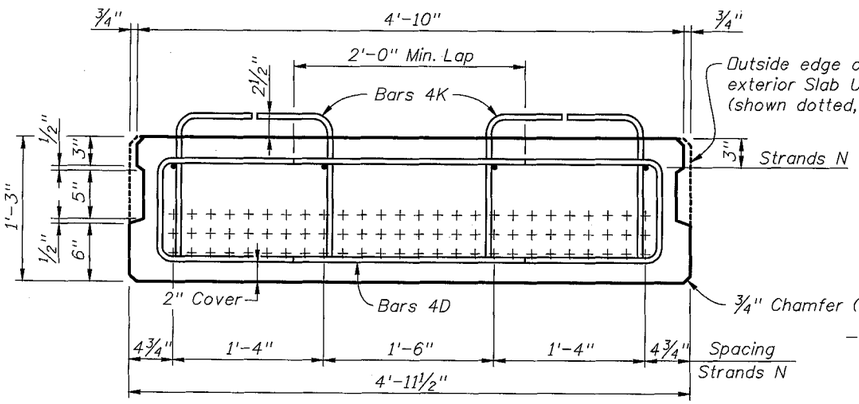
##STANDARD YEAR##

15"x48" PRESTRESSED SLAB UNIT STANDARD DETAILS

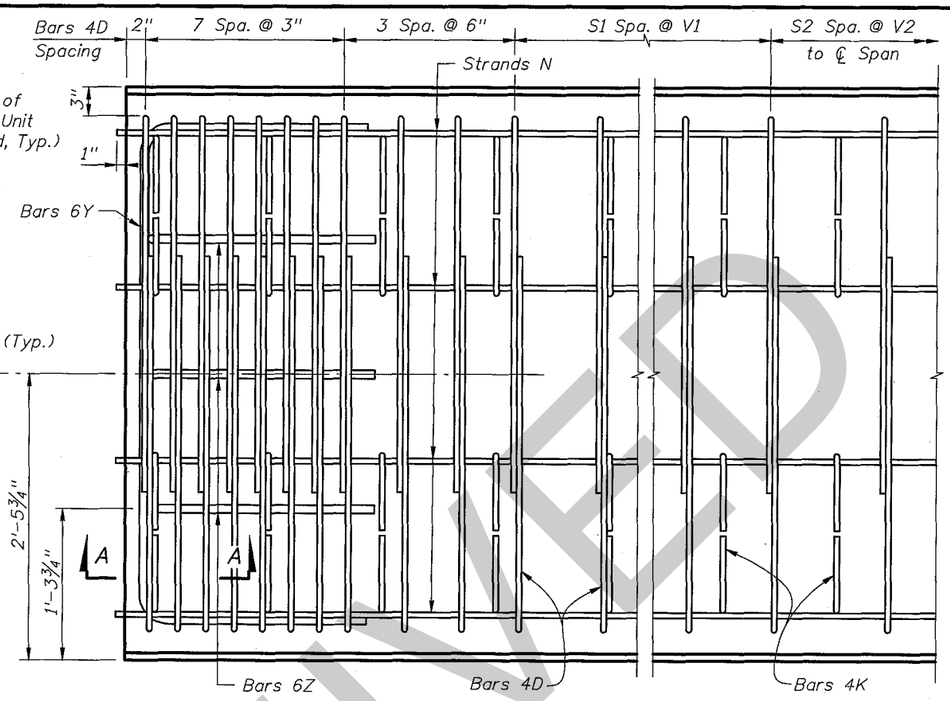
#Label1# #Label2# 01/01/09

Sheet No. 1 of 1

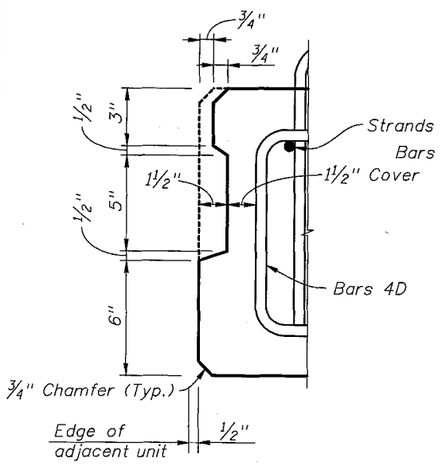
Index No. 20364



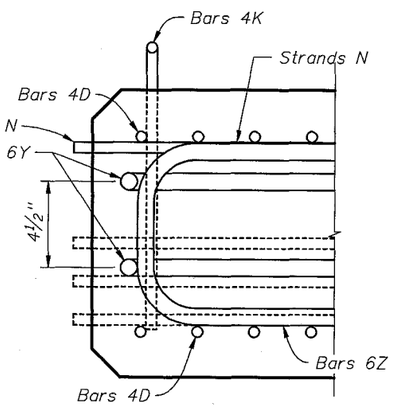
TYPICAL SECTION



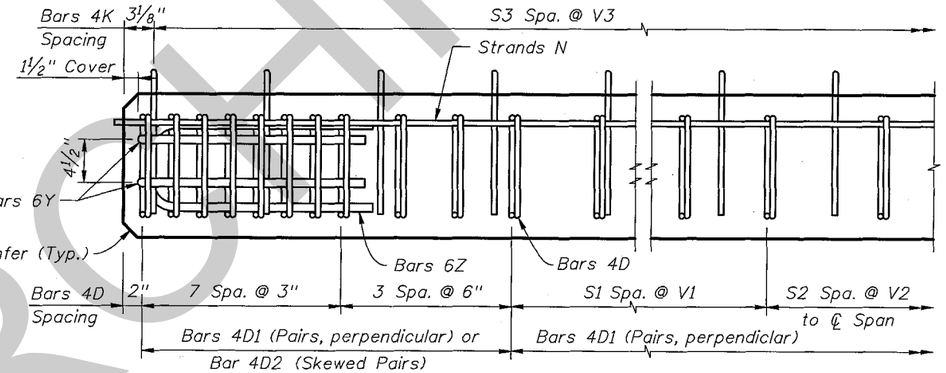
PLAN AT END OF PRESTRESSED SLAB UNIT



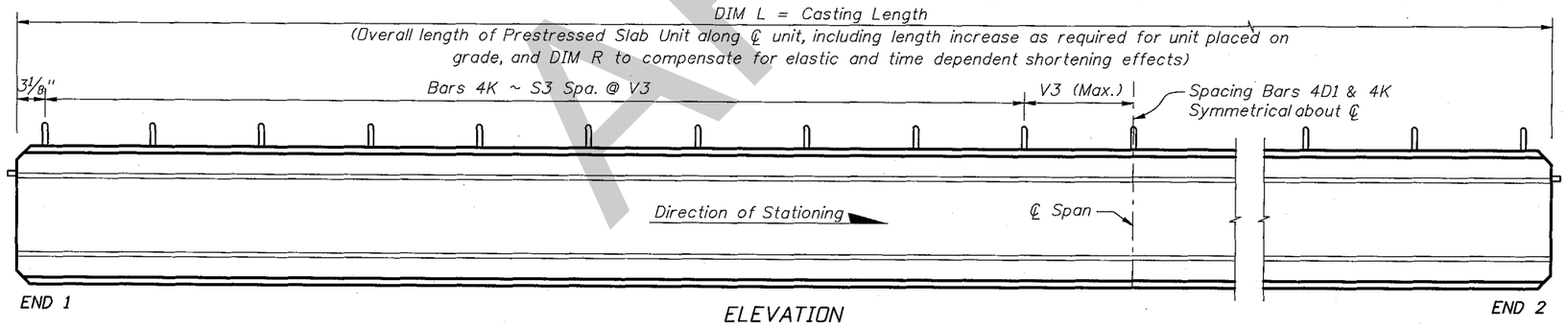
KEYWAY DETAIL



SECTION A-A



ELEVATION AT END OF PRESTRESSED SLAB UNIT

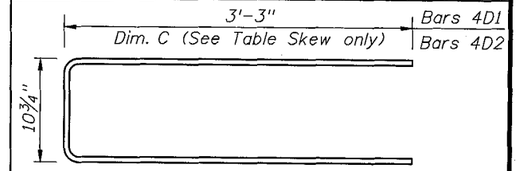


ELEVATION

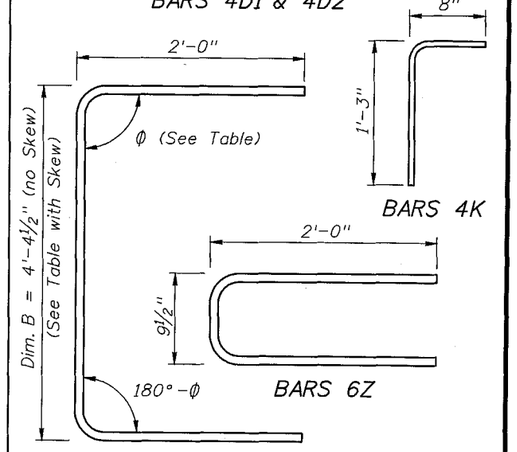
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	5	4	See Table	7'-5"
D2	4, 5	4	40*	See Table
Y	4	6	4	See Table
K	4, 5	4	See Table	1'-11"
N	2, 8	⅜" ϕ Strands	4	Dim. L + 2"
Z	-	6	6	4'-10"

BENDING DIAGRAMS (See Note 1)



BARS 4D1 & 4D2



BARS 4K

BARS 6Z

BARS 6Y

NOTES:

Work this Index with Index No. 20350 and Prestressed Slab Units - Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, C, L, R, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Slab Units - Table of Variables in Structures Plans.

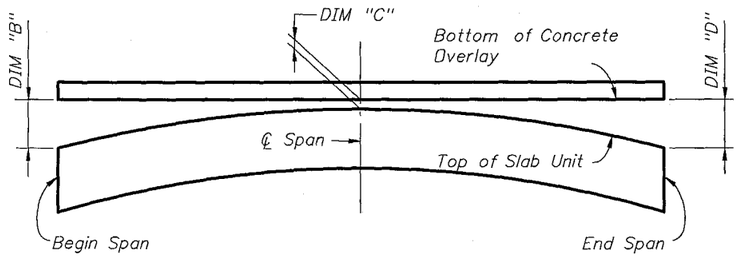
* See Note 4 for additional Bars 4D2 for skewed units

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			

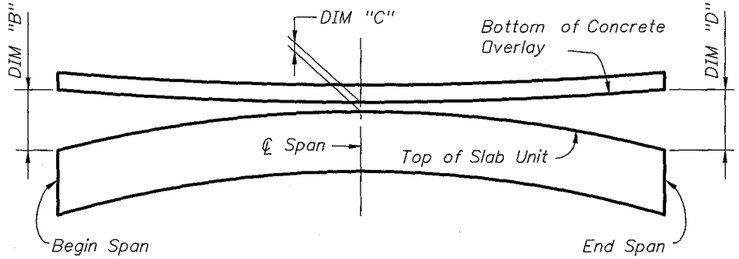
##STANDARD YEAR##

15"x60" PRESTRESSED SLAB UNIT STANDARD DETAILS

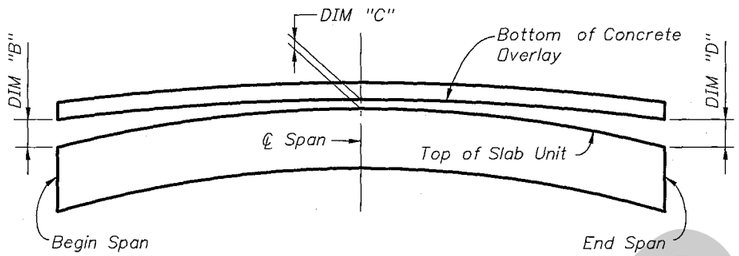
#Label1# #Label2#	Sheet No.
01/01/09	1 of 1
Index No.	
20365	



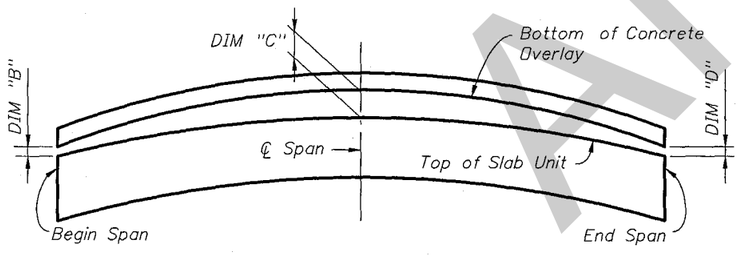
BUILD-UP DIAGRAM FOR TANGENT SPANS
(ALONG ℄ SLAB UNIT) (CASE 1)



BUILD-UP DIAGRAM FOR SAG VERTICAL CURVE SPANS
- CONTROL AT ℄ SPAN
(ALONG ℄ SLAB UNIT) (CASE 2)



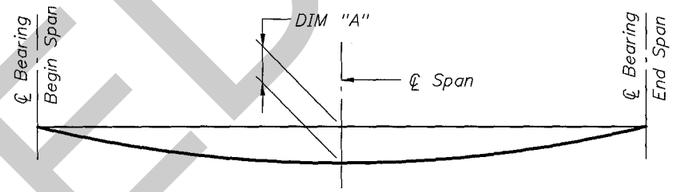
BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
- CONTROL AT ℄ SPAN
(ALONG ℄ SLAB UNIT) (CASE 3)



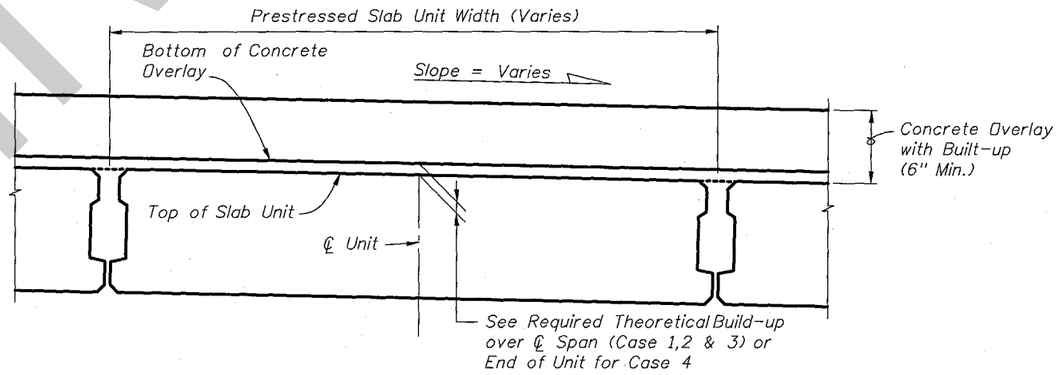
BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
- CONTROL AT BEGIN OR END SPAN
(ALONG ℄ SLAB UNIT) (CASE 4)

PRESTRESSED SLAB UNIT CAMBER AND BUILD-UP NOTES:

The build-up values given in the table are based on theoretical unit cambers. The Contractor shall monitor unit cambers for the purpose of predicting camber values at the time of the deck pour. If the predicted cambers based on field measurements differ more than ± ½" from the theoretical "Net Unit Camber @ 120 Days" shown in the table, propose modifed build-up dimensions as required and submit to the Engineer for approval a minimum of 21 days prior to casting overlay concrete.



DEAD LOAD DEFLECTION DIAGRAM



BUILD-UP OVER SLAB UNITS

INSTRUCTIONS TO DESIGNER:

Although not shown here in the Diagrams or Notes, the effect of Horizontal Curvature, when present, needs to be considered for the Build-up Calculations.

NOTE:
Work this Index with the Build-up and Deflection Data Table for Prestressed Slab Units in Structures Plans.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

##STANDARD YEAR##

BUILD-UP & DEFLECTION DATA FOR PRESTRESSED SLAB UNITS

#Label1# #Label2#	Sheet No.
01/01/09	1 of 1
Index No.	
20399	

BUILD-UP & DEFLECTION DATA TABLE FOR PRESTRESSED SLAB UNITS

Table Date 1-01-09

LOCATION		REQUIRED THEORETICAL BUILD-UP OVER ℄ SLAB UNIT			NET BEAM CAMBER (PRESTRESS - DEAD LOAD OF SLAB UNIT) @ 120 DAYS	DEAD LOAD DEFLECTION DURING OVERLAY POUR @ 120 DAYS DIM "A"	BUILD-UP CASE NO.
SPAN NO.	SLAB UNIT NO.	AT BEGIN SPAN DIM "B"	AT ℄ SPAN DIM "C"	AT END SPAN DIM "D"			

BUILD-UP & DEFLECTION DATA TABLE FOR PRESTRESSED SLAB UNITS

Table Date 1-01-09

LOCATION		REQUIRED THEORETICAL BUILD-UP OVER ℄ SLAB UNIT			NET BEAM CAMBER (PRESTRESS - DEAD LOAD OF SLAB UNIT) @ 120 DAYS	DEAD LOAD DEFLECTION DURING OVERLAY POUR @ 120 DAYS DIM "A"	BUILD-UP CASE NO.
SPAN NO.	SLAB UNIT NO.	AT BEGIN SPAN DIM "B"	AT ℄ SPAN DIM "C"	AT END SPAN DIM "D"			

BUILD-UP & DEFLECTION DATA TABLE FOR PRESTRESSED SLAB UNITS

Table Date 1-01-09

LOCATION		REQUIRED THEORETICAL BUILD-UP OVER ℄ SLAB UNIT			NET BEAM CAMBER (PRESTRESS - DEAD LOAD OF SLAB UNIT) @ 120 DAYS	DEAD LOAD DEFLECTION DURING OVERLAY POUR @ 120 DAYS DIM "A"	BUILD-UP CASE NO.
SPAN NO.	SLAB UNIT NO.	AT BEGIN SPAN DIM "B"	AT ℄ SPAN DIM "C"	AT END SPAN DIM "D"			

NOTE: Work this sheet with Design Standard
Index No. 20399.