DATA TABLES AND SOUND BARRIER GRAPHIC CELLS FOR FDOT DESIGN STANDARDS

Many of the structures related Design Standards require "Data Tables" that must be completed by the designer, which provide critical information for the contractor when these Design Standards are referenced in the contract plans. See the "FDOT Structures Bar Menu" included with the FDOT CADD Software for the Microstation CADD Cell Data Tables. Updates to the Data Tables for Interim Design Standards are available on the Structures Design Office website at:

http://www.dot.state.fl.us/structures/CADD/standards/CurrentStandards/MicrostationDrawings.shtm

TABLE OF CONTENTS

BOX CULVERT DATA TABLES

BOX, HEADWALL AND CUTOFF WALL DATA TABLE (inches unless shown otherwise)											Table Date 7-01-09									
LOCATION	STRUCTURE /BRIDGE NUMBER	BOX									HEADWALL AND CUTOFF WALL									
		Wc(ft)	Hc(ft)	Tt	Tw	Tb	Ti	#cells	Lc(ft)	Cover	Blhw	Hlhw	Brhw	Hrhw	Blcw	Hlcw	Brcw	Hrcw	SL(deg)	SR(deg)

LEFT SIDE WINGWALLS DATA TABLE (inches unless shown otherwise)										Table Date 7-01-09								
STRUCTURE /BRIDGE NUMBER	LEFT END WINGWALL									LEFT BEGIN ENDWALL								
	Rt	Rw	Rh	Rd	SW(deg)	β(deg)	He(ft)	Hs(ft)	Lw(ft)	Rt	Rw	Rh	Rd	SW(deg)	β(deg)	He(ft)	Hs(ft)	Lw(ft)

RIGHT SIDE WINGWALLS DATA TABLE (inches unless shown otherwise)										Table Date 7-01-09								
STRUCTURE /BRIDGE NUMBER	RIGHT END WINGWALL									RIGHT BEGIN ENDWALL								
	Rt	Rw	Rh	Rd	SW(deg)	β(deg)	He(ft)	Hs(ft)	Lw(ft)	Rt	Rw	Rh	Rd	SW(deg)	β(deg)	He(ft)	Hs(ft)	Lw(ft)

INSTRUCTIONS TO DESIGNER

1. Work these data tables with the FDOT Mathcad LRFD Culvert Program and Design Standards Index No. 289.
2. Fill in tables using key-in "include" and line1.prn thru line6.prn files located in the program root directory.
3. Use StructuresSiteMenu>Text>Table Data, which uses "Chart" TextStyle and font 169 Structures proportional.
4. Complete Notes 1 thru 7. Delete Note 7 when not applicable.
5. For box culverts meeting the definition of a bridge structure (See Plans Preparation Manual, Volume 1, Chapter 33) include the Bridge Number in the plans and the Load Rating Sheet per the Structures Design Guidelines 3.15.14.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING.

ESTIMATED CONCRETE QUANTITIES (CY)																				Table Date 7-01-09
STRUCTURE /BRIDGE NUMBER	BOX								LEFT END WINGWALL			LEFT BEGIN WINGWALL			RIGHT END WINGWALL			RIGHT BEGIN WINGWALL			Culvert Total
	Left Cutoff Wall	Right Cutoff Wall	Bottom Slab	Walls	Top Slab	Left Head Wall	Right Head Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	

MAIN STEEL REINFORCEMENT SPACING (inches)																		Table Date 7-01-09
STRUCTURE /BRIDGE NUMBER	BOX														HEADWALLS		CUTOFF WALLS	
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115, 116...	803	806	809	812

NOTES:

1. Environmental Class -----
2. Reinforcing Steel, Grade -----
3. Concrete Class ----- f'c = ----- ksi
4. Soil Properties:
   Friction Angle -----
   Modulus of Subgrade Reaction -----
   Nominal Bearing Resistance -----
5. Total Estimated Quantity of Reinforcing Steel ----- lbs
6. Work this Drawing with Design Standards Index No. 289 and Sheet Nos. -----
7. Settlement criteria for Precast Box Culvert option (Index No. 291):
   Long Term Differential Settlement (ΔY) = ------ ft.
   Effective Length for Settlement (L) = ------ ft.

WINGWALL STEEL REINFORCEMENT SPACING (inches)																										Table Date 7-01-09
STRUCTURE /BRIDGE NUMBER	LEFT END WINGWALL							LEFT BEGIN WINGWALL							RIGHT END WINGWALL							RIGHT BEGIN WINGWALL						
	401 407(8)	402 (403)	404 (405)	406	409	410	411	501 507(8)	502 (503)	504 (505)	506	509	510	511	601 607(8)	602 (603)	604 (605)	606	609	610	611	701 707(8)	702 (703)	704 (705)	706	709	710	711

WINGWALL NOTE: Bar designations in "( )" are only required for variable height wingwalls.

RETAINING WALLS DATA TABLE

WALL DIMENSIONS

Wall No.	Begin		End		Height				Wall Length		D	W	L_{foot}		L_{toe}		Slope Bkwall	D_{soil}		L_{key}	D_{key}	V_{step}	Wall Cover	FtgCov (typ.)	FtgCov (bot.)
					Begin		End																		
	Station	Offset	Station	Offset	ft.	in.	ft.	in.	ft.	in.	in.	in.	ft.	in.	ft.	in.		ft.	in.	in.	in.	in.	in.	in.	in.

BILL OF REINFORCING STEEL

Wall No.	Bars J											Bars K										Bars M							
	Size	No.	Spacing	A				B		Average Total Length		Size	No.	Spacing	A				B		Average Total Length			Size	No.	A		B		Total Length	
				Begin		End									Begin		End													
			in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.			in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.				ft.	in.	ft.	in.	ft.	in.

BILL OF REINFORCING STEEL

Wall No.	Bars H					Bars G1						Bars R				Bars Z				Bars A						
	Size	No.	Spacing	Length		Size	No.	Spacing	No. of Lap Splices	Total Length		Size	No.	Length		Size	No.	Spacing	Length	Size	No.	Length				Average Length
																						Begin		End		
			in.	ft.	in.			in.		ft.	in.			ft.	in.			in.	ft.			ft.	in.	ft.	in.	ft.	in.

BILL OF REINFORCING STEEL

Wall No.	Bars F									Bars G2				Bars D				Bars N				Bars G3			
	Size	No.	Spacing	Length				Average Length		Size	No.	Length		Size	No.	Length		Size	No.	Total Length		Size	No.	Length	
				Begin		End																			
			in.	ft.	in.	ft.	in.	ft.	in.			ft.	in.			ft.	in.			ft.	in.			ft.	in.

ESTIMATED QUANTITIES

Wall No.	Concrete			Reinf. Steel ◇3
	Footing ◇1	Wall ◇2	TOTAL	
	C. Y.	C. Y.	C. Y.	LBS.

QUANTITIES NOTES:

◇1 Includes concrete for optional shear key.

◇2 Includes additional concrete at top of wall for support of optional traffic railing barrier but does not include concrete for barrier itself (see Index No. 5100 – Payment note).

◇3 Does not include Bars 5V or any other reinf. steel for optional traffic railing barrier (see Index No. 5100 – Payment note).

NOTES:

1. Concrete Class (f'c =)
2. A value of '0' for Slope Backwall indicates front and back of wall are parallel.
3. Dsoil is typical depth of soil and is used for design purposes only. See Control Drawings for actual ground line.
4. Non-zero values for Lkey and Dkey indicate the existence of a shear key.
5. A non-zero value for Vstep indicates the existence of a footing step, see Control Drawings for location.
6. Bars J, K, A and F vary uniformly between begin and end wall heights as indicated by begin and end dimensions.
7. The number of G1 Bars includes 2 additional bars when a shear key is specified.
8. For walls with variable begin/end height, Bars G2 shall be fanned such that they are evenly spaced throughout length of wall.
9. Non-zero values for Bars N and Bars G3 indicate the existence of a barrier on the wall.

SOUND BARRIERS DATA TABLES

PROJECT AESTHETIC REQUIREMENTS							Table Date 7-01-08
WALL NOS:	REQUIRED: (YES/NO)			REQUIRED TEXTURES (3):			FLUSH PANEL/ RECESSED PANEL/ EITHER
	GRAPHICS (1)	COLORED COATINGS (2)	PRECAST POST CAP (5)	PANELS:		POSTS:	
				FRONT FACE	BACK FACE (4)	FRONT FACE	

(1) See Control Drawings.
(2) Coat all exposed faces of wall with (sacrificial/non-sacrificial) anti-graffiti coating or Class 5 Applied Finish Coating. The color shall be per Federal Color Chart, Federal Standard No. 595B, Table _____, Color _____.
(3) See Index 5201.
(4) Provide broom or Type "A" (smooth) finish when flush face panel option is utilized.
(5) See Index 5207. Coat post caps the same color as posts, with a Class 5 Applied Finish Coating.

SUMMARY OF FOUNDATIONS AND WALL QUANTITIES					Table Date 07-01-10
WALL NO.	STATION TO STATION	FOUNDATION (6)	TOP OF WALL ELEV. (FT)	BOTTOM OF WALL ELEV. (FT)	AREA (SF)
				TOTAL:	

(6) See Index No. 5206 for "1" (Table 1 - Medium Dense Granular Soils) and "2" (Table 2 - Loose Granular Soils). See Plans for "SD" (Special Design) details.

LIMITS OF ANTI-GRAFFITI COATING			Table Date 1-01-06
WALL NO.	STATION TO STATION	FRONT FACE/ BACK FACE/ BOTH	AREA (SF)
		TOTAL:	

NOTES:

1. The Contractor may choose the Standard Precast 20'-0" Panel Option depicted herein or one of the following QPL approved proprietary sound barrier panels used with FDOT standard posts and foundations:
   1). _____
   2). _____
   3). _____

   QPL approved proprietary sound barrier panels not listed above may be approved by the Engineer when all project aesthetic requirements can be met. Refer to the following web site address for the Qualified Products List for Sound Barrier Panels:

   www.dot.state.fl.us/specificationsoffice/

2. The Contractor may also choose one of the following QPL approved proprietary sound barrier systems (panels and foundation):
   1). _____
   2). _____
   3). _____

   QPL approved proprietary sound barrier systems not listed above may be approved by the Engineer when all project aesthetic requirements can be met. Refer to the following web site address for the Qualified Products List for Sound Barrier Systems:

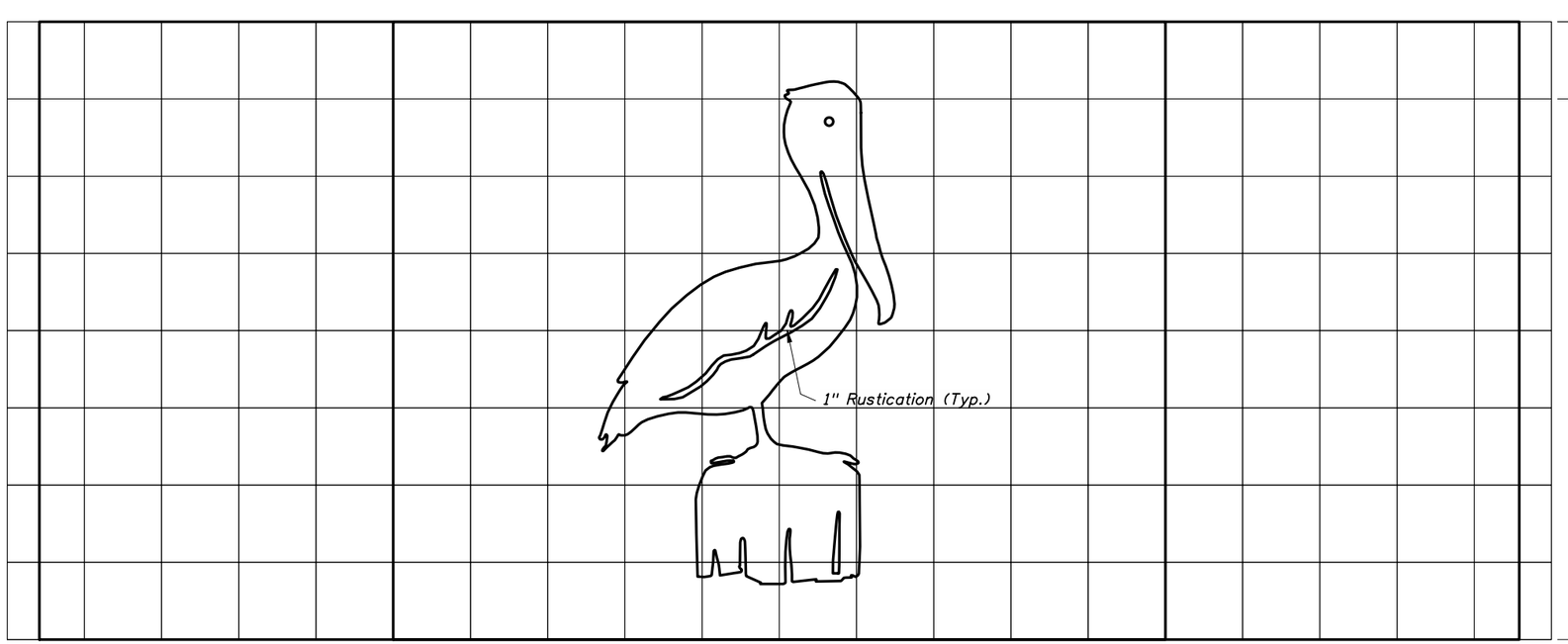
   www.dot.state.fl.us/specificationsoffice/

3. Sound barriers shall meet the project aesthetic requirements as depicted in the above table and elsewhere in the plans.

4. Front Face indicates roadway side of wall. Back Face indicates non-roadway side of wall.

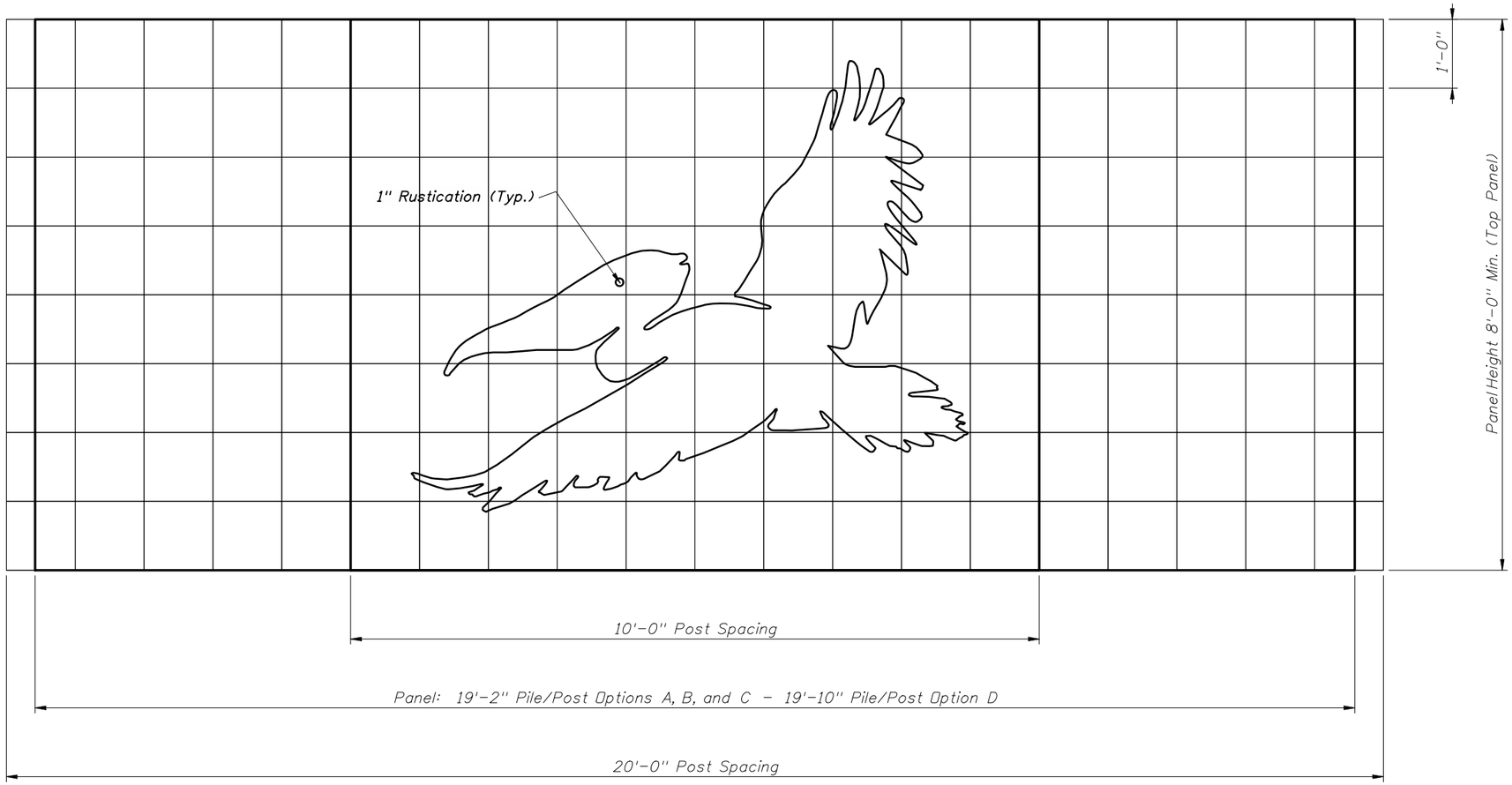
BROWN PELICAN (BP-1)

SCALE: Each Block = 1'-0" x 1'-0"



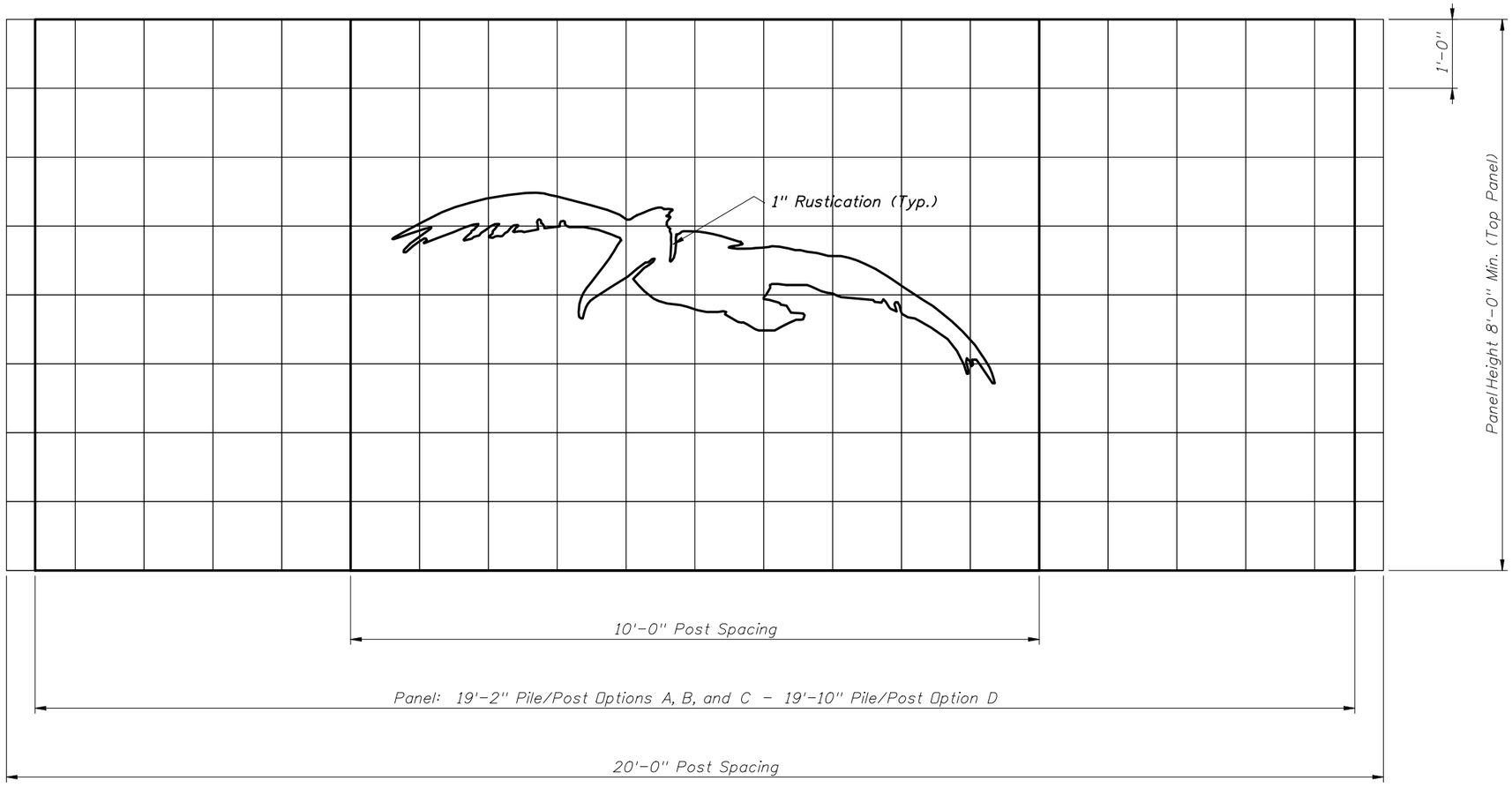
BROWN PELICAN (BP-3)

SCALE: Each Block = 1'-0" x 1'-0"



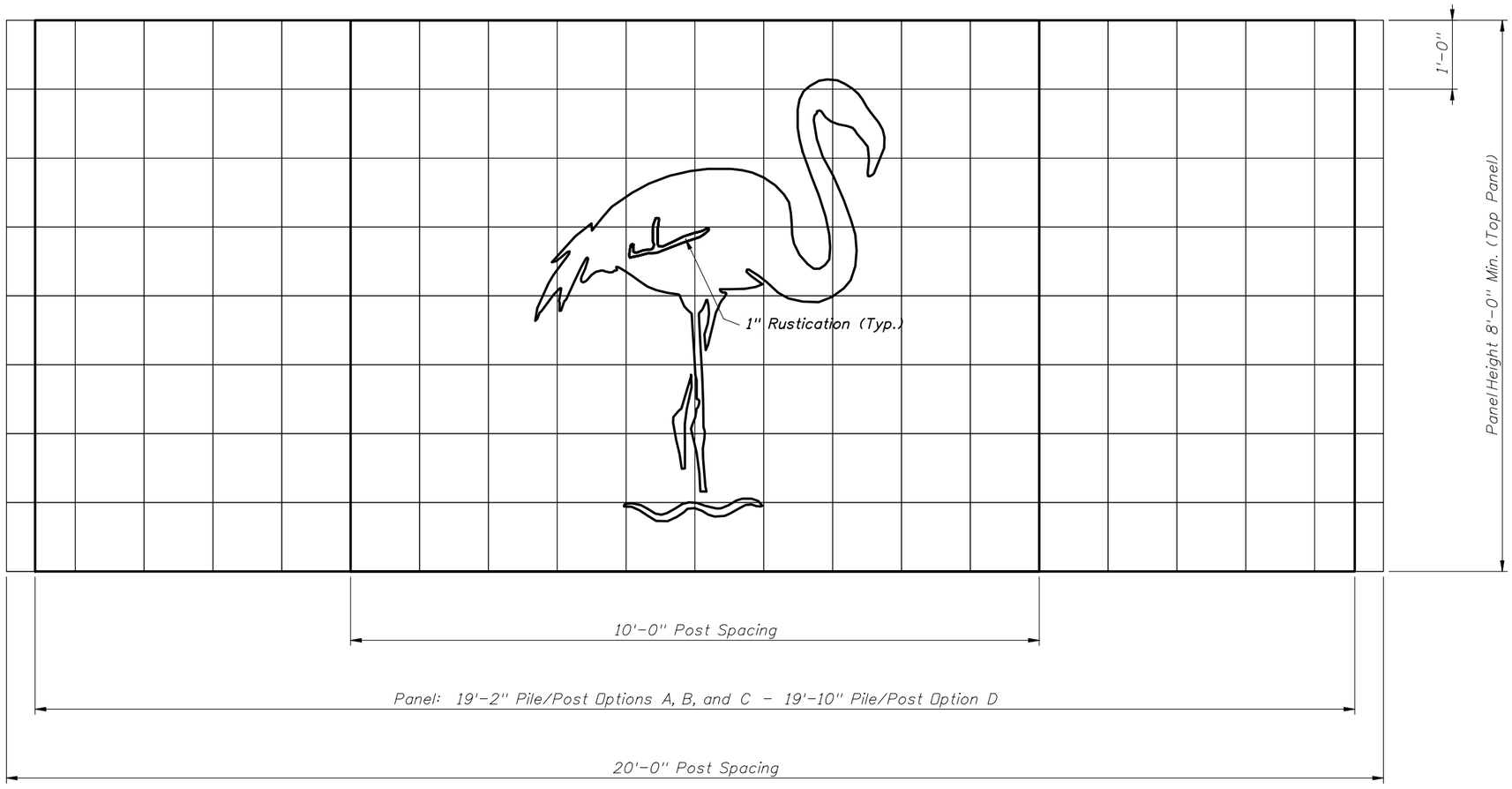
BROWN PELICAN (BP-2)

SCALE: Each Block = 1'-0" x 1'-0"



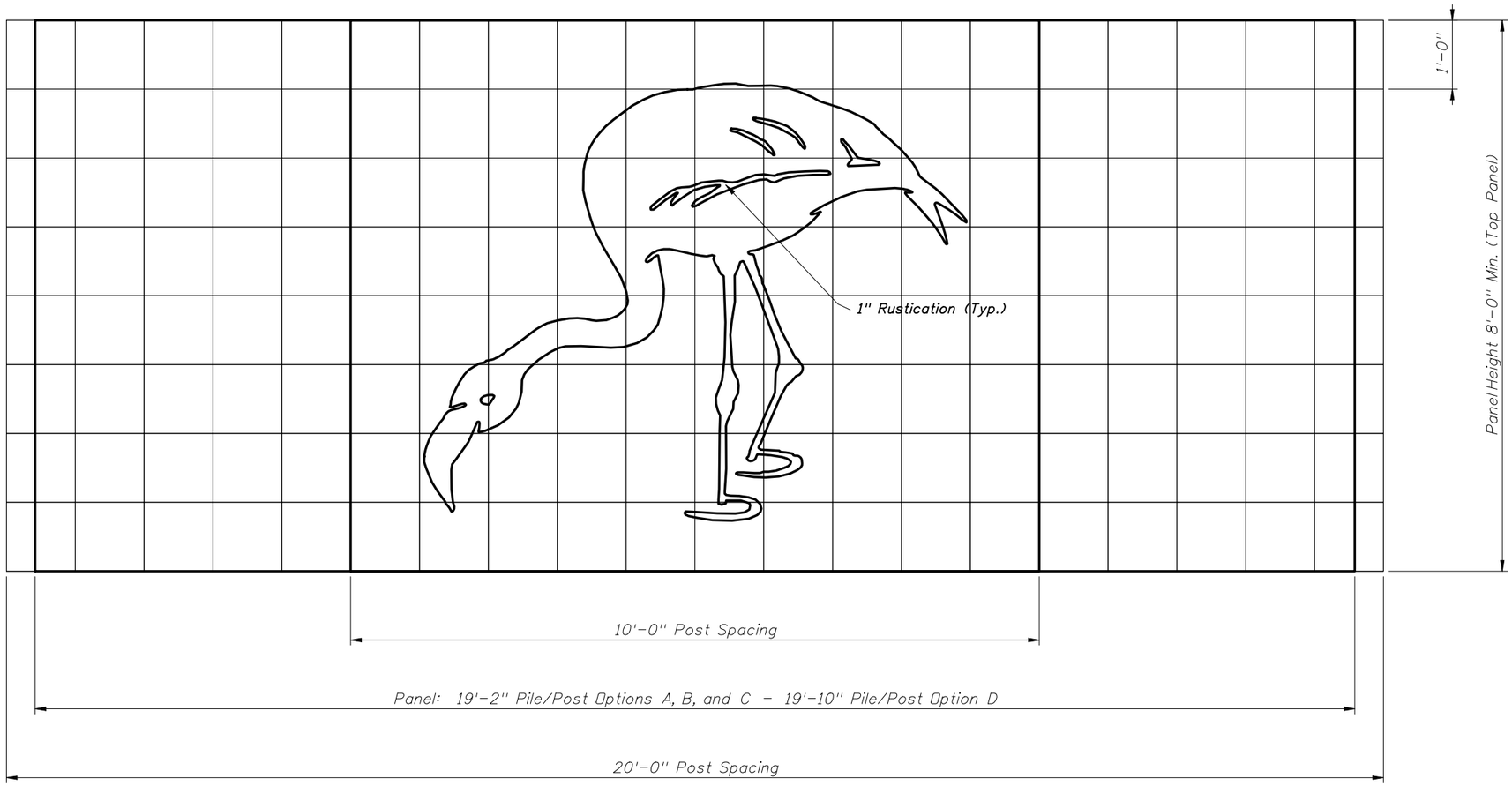
FLAMINGO (F-1)

SCALE: Each Block = 1'-0" x 1'-0"

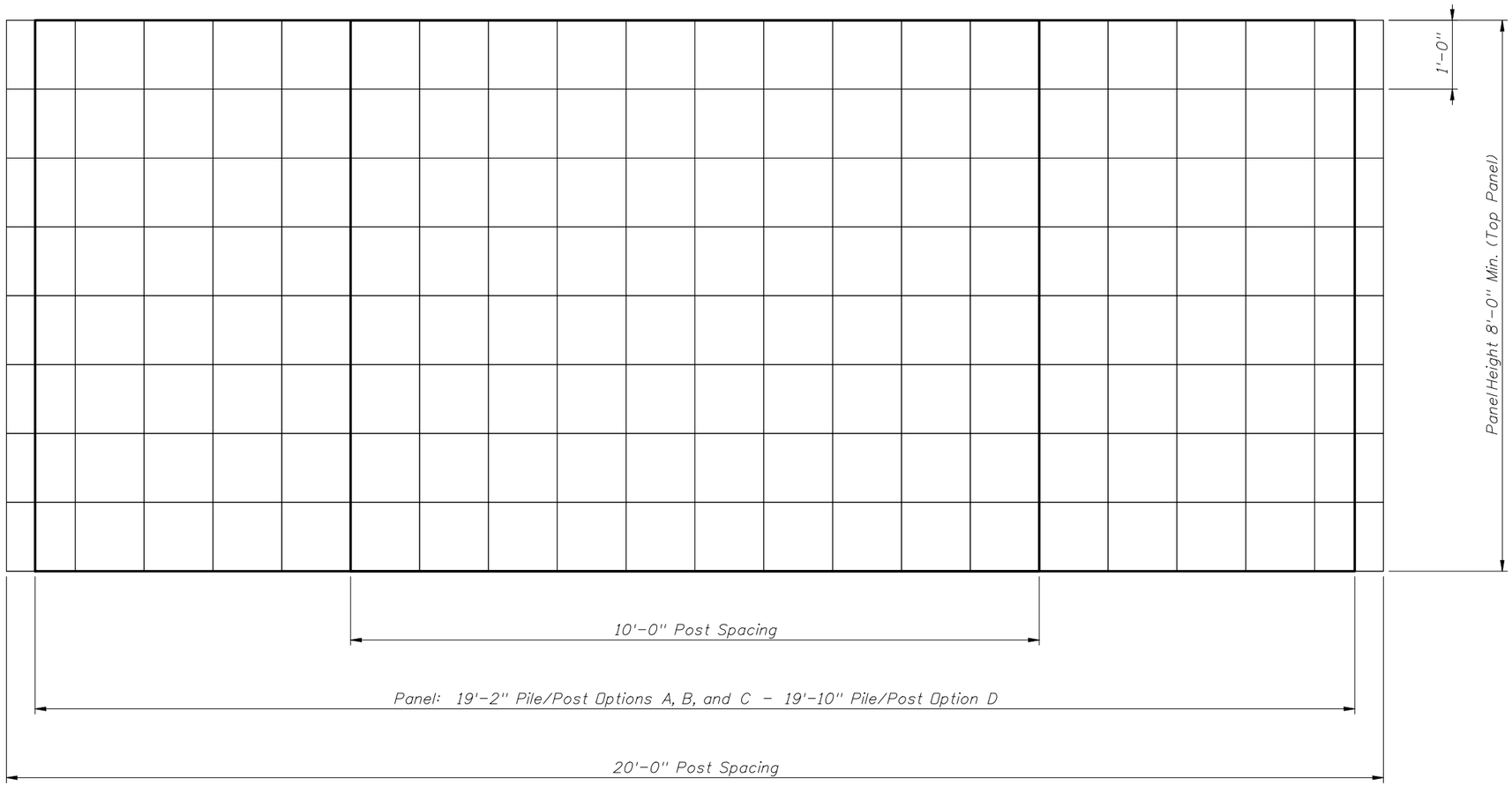


FLAMINGO (F-2)

SCALE: Each Block = 1'-0" x 1'-0"

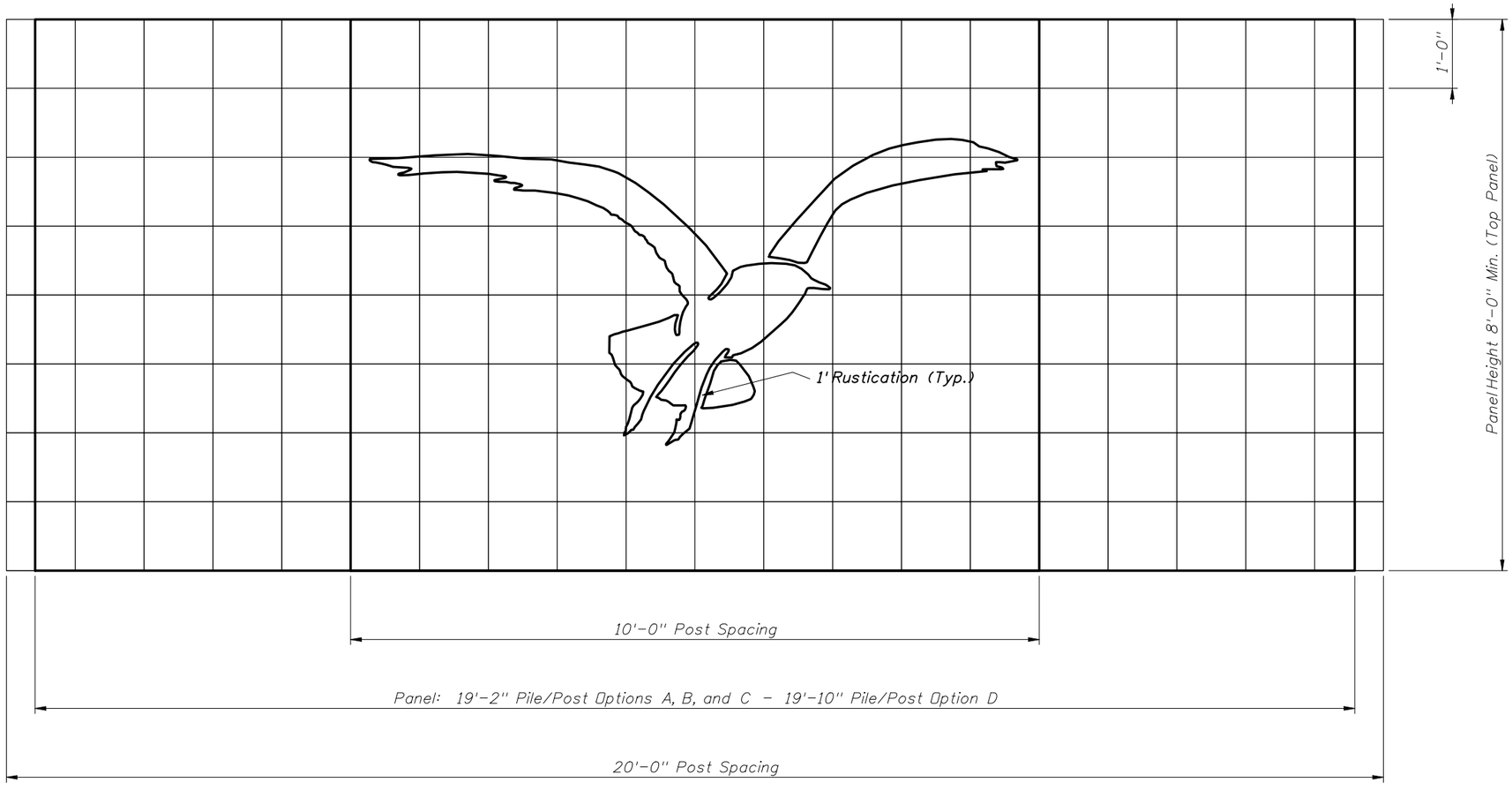


SCALE: Each Block = 1'-0" x 1'-0"



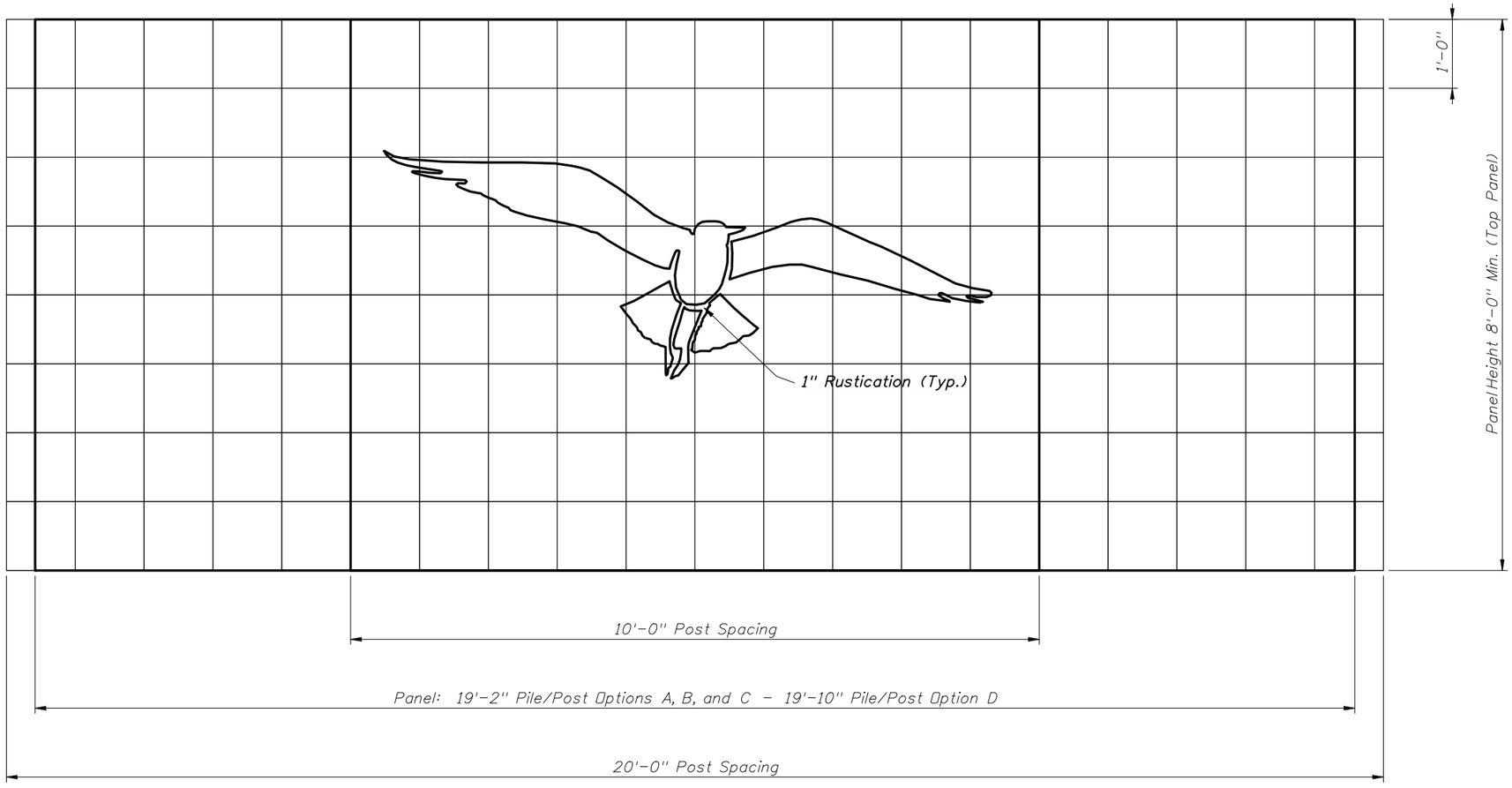
LAUGHING GULL (LG-1)

SCALE: Each Block = 1'-0" x 1'-0"



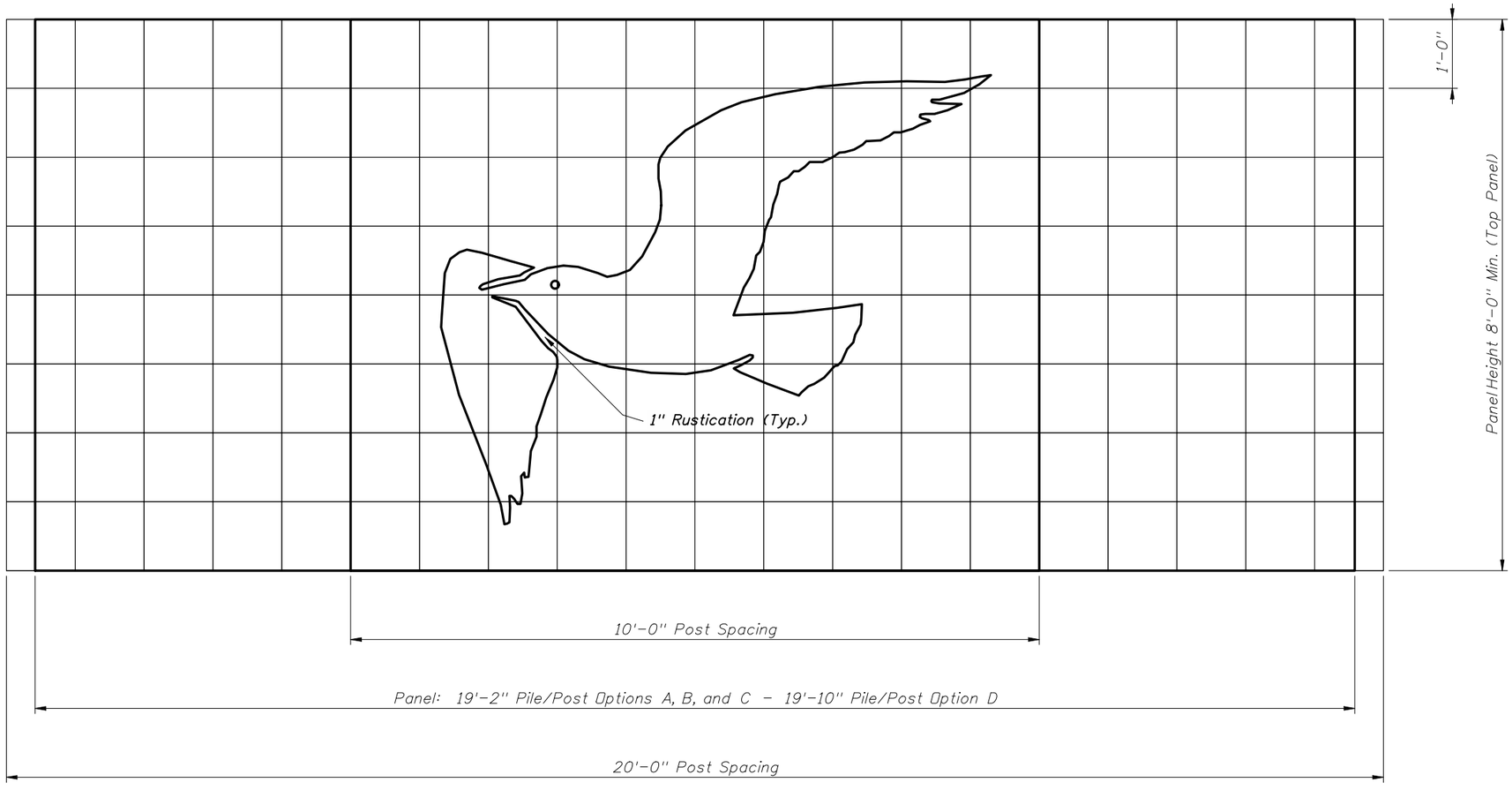
LAUGHING GULL (LG-2)

SCALE: Each Block = 1'-0" x 1'-0"



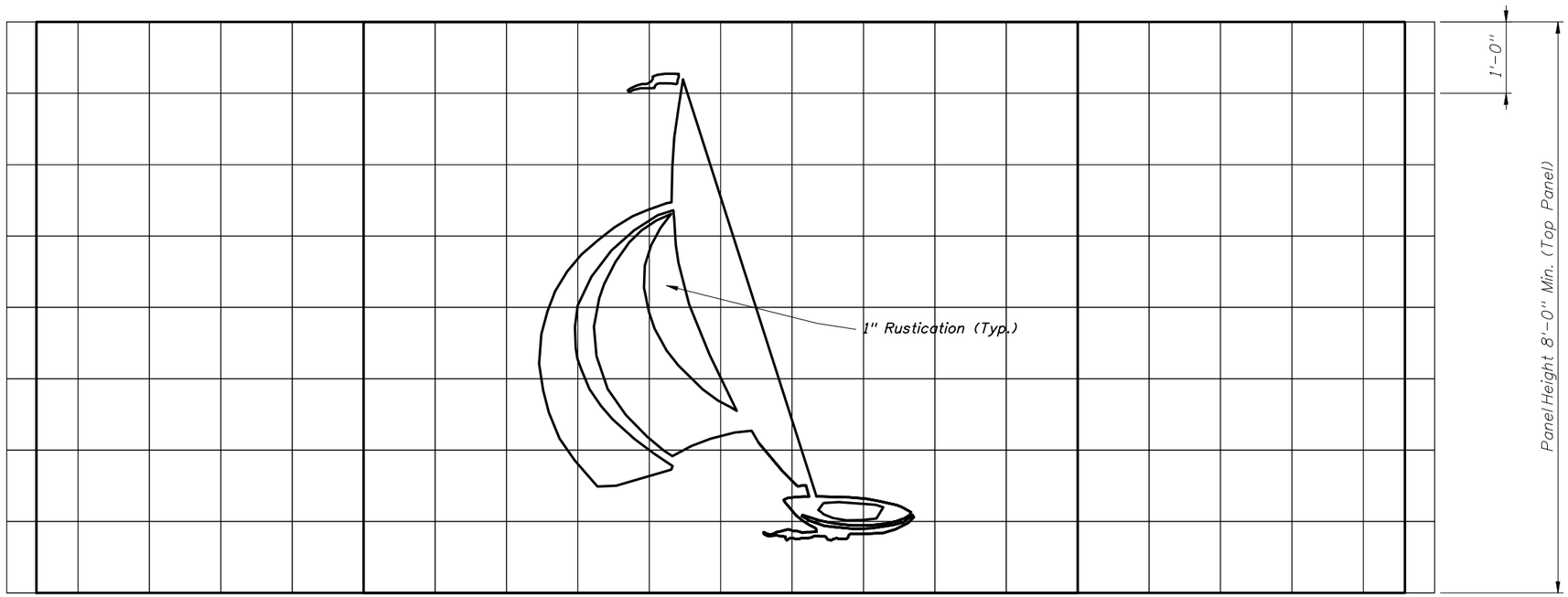
LAUGHING GULL (LG-3)

SCALE: Each Block = 1'-0" x 1'-0"



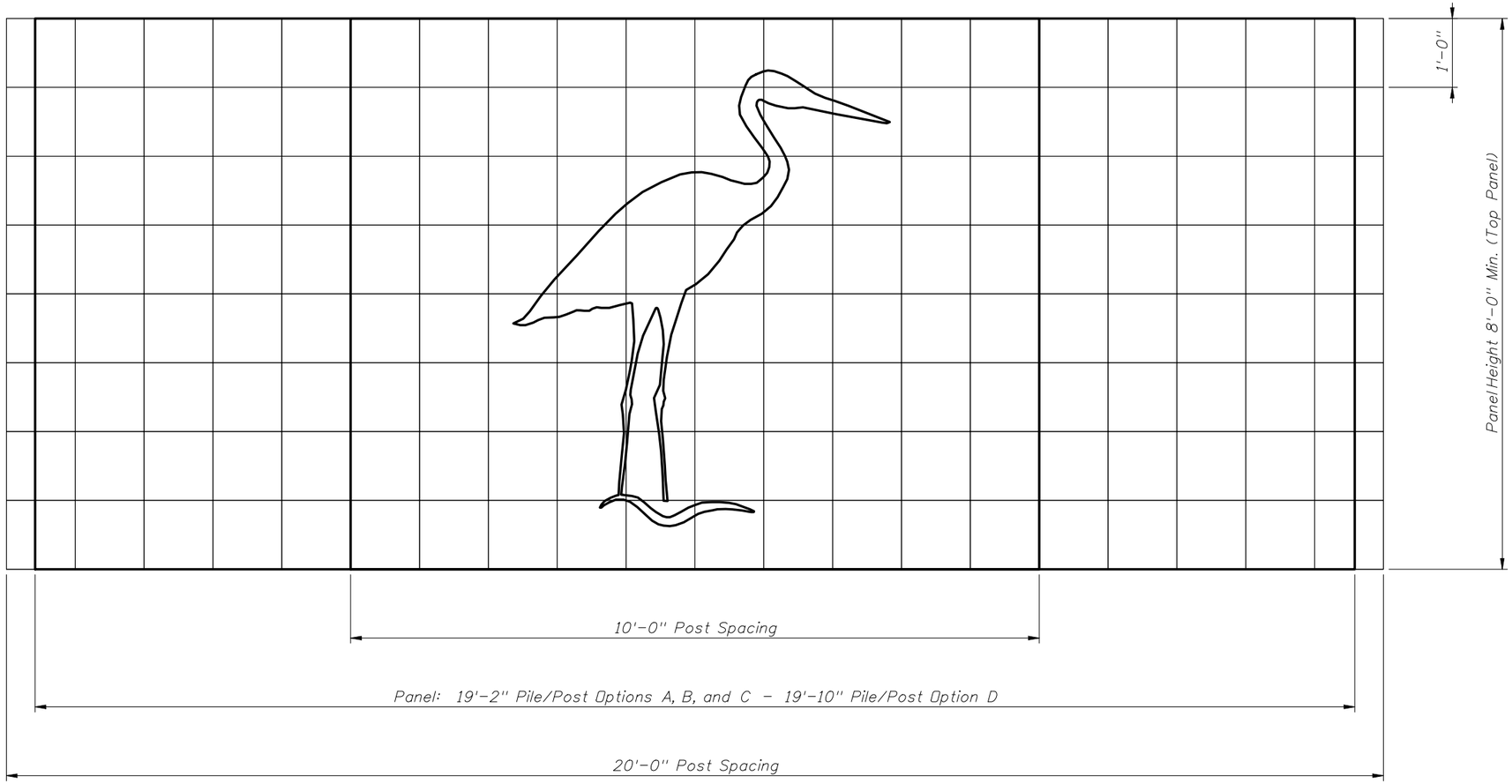
SAIL BOAT (SB-1)

SCALE: Each Block = 1'-0" x 1'-0"



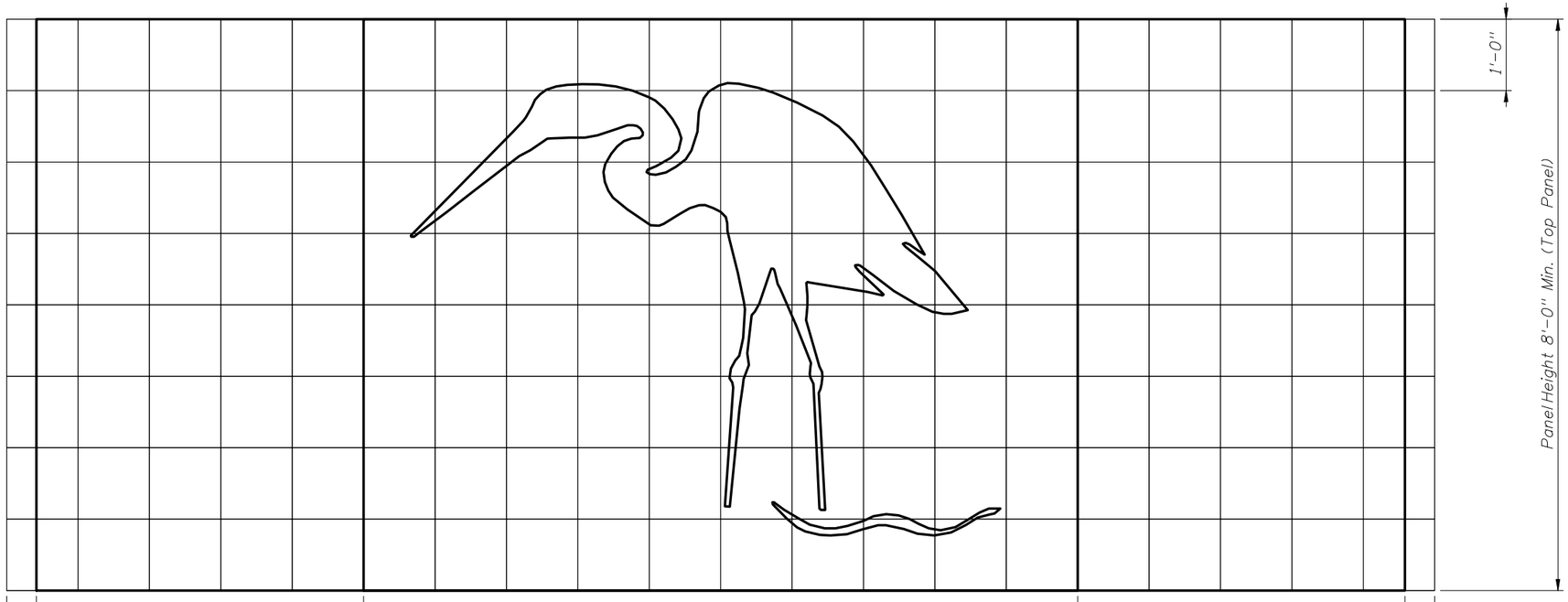
SNOWY EGRET (SE-1)

SCALE: Each Block = 1'-0" x 1'-0"



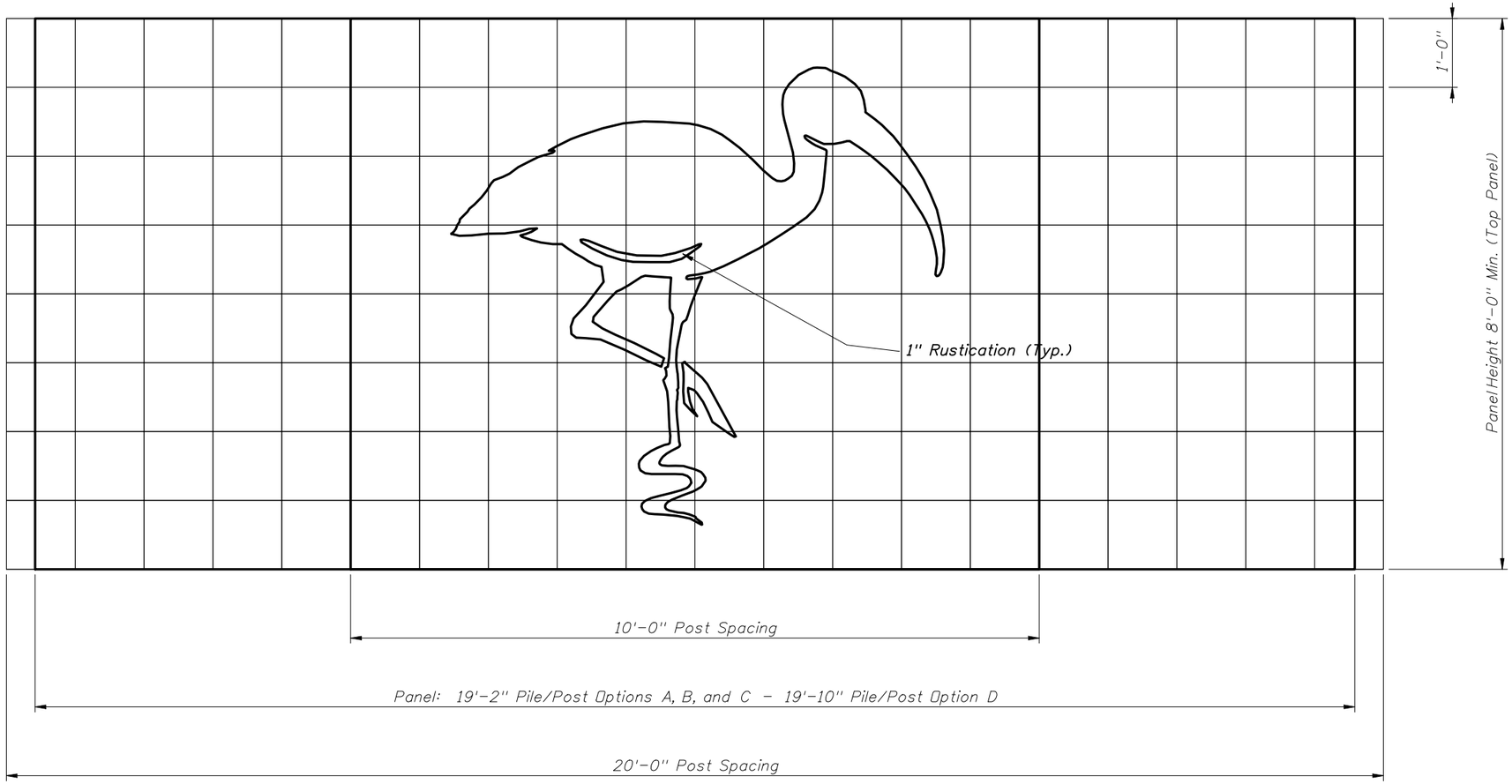
SNOWY EGRET (SE-2)

SCALE: Each Block = 1'-0" x 1'-0"



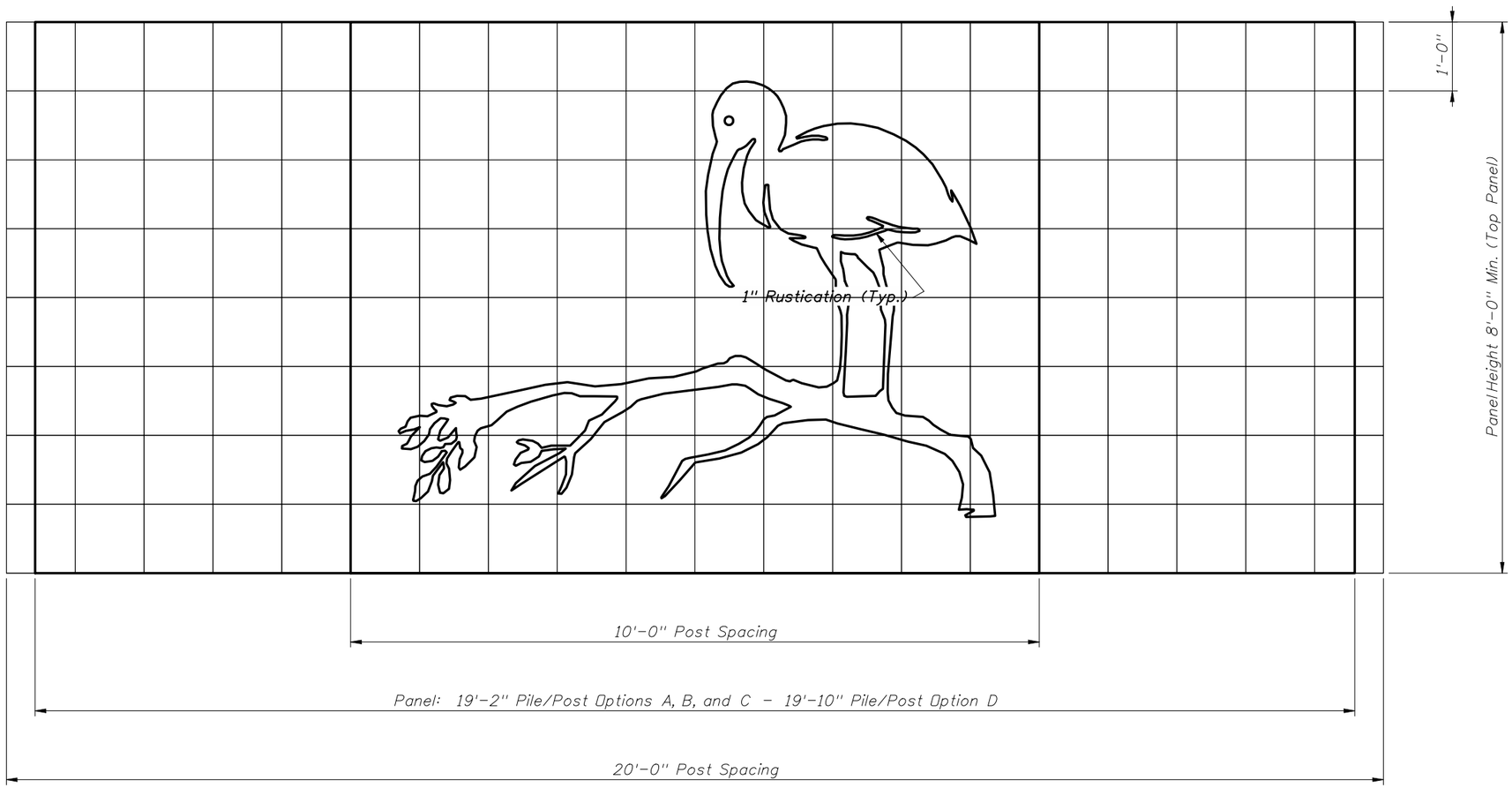
WHITE IBIS (WI-1)

SCALE: Each Block = 1'-0" x 1'-0"



WHITE IBIS (WI-2)

SCALE: Each Block = 1'-0" x 1'-0"



PERMANENT RETAINING WALL SYSTEM DATA TABLES

GEOTECHNICAL INFORMATION						Table Date 7-01-06
		Reinforced Soil & Random Backfill	Loose Fine Sand	Firm Fine Sand	Loose Clayey Fine Sand	Firm Clayey Fine Sand
Depth Below Existing Ground Line (ft.)	Wall No. 1	——				
	Wall No. 2	——				
Effective Unit Weight (pcf)						
Cohesion (psf)		0				
Internal Friction Angle						

NOTE:
If the unit weight and/or internal friction angle of the fill proposed by the Contractor differs from that shown above, the Project Engineer will contact both the District Geotechnical Engineer and the Wall Designer for a possible redesign.

RETAINING WALL VARIABLES				Table Date 7-01-08
Wall No.	Wall Settlement			
	Long Term Settlement (in.)	Short Term Settlement (in.)	Differential Settlement	
			Longitudinal (%) (ft./100ft.)	Transverse (in.)
1				N/A
2				N/A

NOTE:
Design walls for the settlements noted in the table.
Long term settlement is measured from the end of wall fill placement.
Transverse differential settlement is measured from the face of wall to the end of the soil reinforcement.

SOIL REINFORCEMENT LENGTHS FOR EXTERNAL STABILITY											Table Date 7-01-06
Wall No. 1	Wall Height (ft.)										
	Reinforcement Length (ft.)										
	Factored Bearing Resistance (psf)										
Wall No. 2	Wall Height (ft.)										
	Reinforcement Length (ft.)										
	Factored Bearing Resistance (psf)										

NOTES:
1. The reinforcement strap lengths shown above are the minimum lengths required for external stability. The reinforcement lengths used in the construction of the retaining walls will be the longer of that required for external or internal stability (determined by proprietary wall companies).
2. The Factored Bearing Resistances shown above are the critical (lowest) values from all the load cases analyzed using LRFD methodology.

NOTES:

1. Concrete facing panel surfaces treatment will be _____ .

2. If required, the soil reinforcement and fasteners for the abutment back wall will be designed and furnished by the proprietary wall company. The soil reinforcement will be designed to resist a factored horizontal load of _____ kips/ft. of back wall width. The cost of soil reinforcement and fasteners will be included in the cost of the Retaining Wall System.

3. Applicable FDOT Wall Types for each wall location are listed below. See the Qualified Products List for approved Wall Systems and Design Standards Index No. 5300 for allowable Wall Type substitutions.
   Wall No. 1 - FDOT Wall Type _____
   Wall No. 2 - FDOT Wall Type _____

4. See Design Standards Index. No. 5300 for General Notes and Details.

INSTRUCTIONS TO DESIGNER:

1. Fill in Notes and add/modify/delete as necessary.
2. List each wall in Note 3 separately, showing applicable wall system.
3. Fill in the "Geotechnical Information" table based on soil conditions for this project. See Structures Design Guidelines, Chapter 3 for required design based internal friction angle and unit weight of Reinforced Soil and Random Backfill.
4. Fill in "Retaining Wall Variables" and "Soil Reinforcement Lengths for External Stability" tables based on requirements for this project. The Wall Heights to be filled in for the "Soil Reinforcement Lengths for External Stability" table refer to the height above the leveling pad, measured to the top of the wall coping. See Structures Design Guidelines Chapter 3 Figures in the Structures Manual for details.
5. Transverse Differential Settlement is only applicable for widening of existing embankments.
6. Work this cell with Design Standards Index No. 5300.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

TEMPORARY RETAINING WALL SYSTEM DATA TABLES

GEOTECHNICAL INFORMATION						Table Date 7-01-06
		Reinforced Soil & Random Backfill	Loose Fine Sand	Firm Fine Sand	Loose Clayey Fine Sand	Firm Clayey Fine Sand
Depth Below Existing Ground Line (ft.)	Wall No. 1	——				
	Wall No. 2	——				
Effective Unit Weight (pcf)						
Cohesion (psf)		0				
Internal Friction Angle						

NOTE:
If the unit weight and/or internal friction angle of the fill proposed by the Contractor differs from that shown above, the Project Engineer will contact both the District Geotechnical Engineer and the Wall Designer for a possible redesign.

RETAINING WALL VARIABLES				Table Date 1-01-08
Wall No.	Wall Settlement			Air Contaminants Classification
	Long Term Settlement (in.)	Short Term Settlement (in.)	Differential Settlement (%) (ft./100ft.)	
1				
2				

NOTE:
Design walls for the settlements noted in the table.
Long term settlement is measured from the beginning of wall construction.

SOIL REINFORCEMENT LENGTHS FOR EXTERNAL STABILITY											Table Date 7-01-06
Wall No. 1	Wall Height (ft.)										
	Reinforcement Length (ft.)										
	Factored Bearing Resistance (psf)										
Wall No. 2	Wall Height (ft.)										
	Reinforcement Length (ft.)										
	Factored Bearing Resistance (psf)										

NOTES:
1. The reinforcement strap lengths shown above are the minimum lengths required for external stability. The reinforcement lengths used in the construction of the retaining walls will be the longer of that required for external or internal stability (determined by proprietary wall companies).
2. The Factored Bearing Resistances shown above are the critical (lowest) values from all the load cases analyzed using LRFD methodology.

NOTES:

1. See the Qualified Products List for approved Wall Systems (Type 3).
2. See Design Standards Index No. 5301 for General Notes and Details.

INSTRUCTIONS TO DESIGNER:

1. Fill in Notes and add/modify/delete as necessary.
2. Fill in the "Geotechnical Information" table based on soil conditions for this project. See Structures Design Guidelines, Chapter 3 for required design based internal friction angle and unit weight of Reinforced Soil and Random Backfill.
3. Fill in "Retaining Wall Variables" and "Soil Reinforcement Lengths for External Stability" tables based on requirements for this project. The Wall Heights to be filled in for the "Soil Reinforcement Lengths for External Stability" table refer to the height above the leveling pad, measured to the top of the wall coping. See Structures Design Guidelines Chapter 3 Figures in the Structures Manual for details.
4. Work this cell with Design Standards Index No. 5301.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

CANTILEVER SIGN STRUCTURES DATA TABLE

SIGN NO.	STATION / OFFSET	DIMENSIONS				PANELS	MEMBER SIZES			BACKRAKE
		A	B		C	N	D (CHORD)	E (WEB)	F (UPRIGHT)	G
		ft	ft	in	in	#	O. D. x Wall Thk. (in)	Angle (in)	O. D. x Wall Thk. (in)	in

NOTES:
1. Design Wind Speed = mph
2. Bolts (except Anchor Bolts) are

FOUNDATION NOTES:
1. Design based on Borings taken
   sealed by
2. Assumptions and Values used in design:
   Soil Type
   Soil Layer Thickness = ft.
   Soil Friction Angle = deg.
   Soil Weight = pcf
   Design Water Table is ft. below surface

NOTE - Work with Index 11310.

CANTILEVER SIGN STRUCTURES DATA TABLE (CONT.)

SIGN NO.	GUSSET PLATES																TRUSS CONNECTION									SPLICE			
	GA	GB	GC		GD		GE		GF		GG		GH		GJ		GK	TA	TB	TC	TD	TE	TF	TG	TH	TJ	SA	SB	SC	SD
	in	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	in	in	#	#	in	in	in	in	in	in	Angle (in)	#	in	#

CANTILEVER SIGN STRUCTURES DATA TABLE (CONT.)

SIGN NO.	BASE CONNECTION									ANCHOR		FOOTING DIMENSIONS										FOOTING REINF.				PED. REINF.	
	BA	BB	BC	BD	BE		BF	BG	BH	BJ	BK		FA		FB		FC		FD		FE	FF	FG	FH	FJ	FK	FL
	in	#	in	in	ft	in	in	in	in	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	size	size	size	size	in	# / Size

CANTILEVER SIGN STRUCTURES DATA TABLE

SIGN NO.	STATION / OFFSET	DIMENSIONS				PANELS	MEMBER SIZES			BACKRAKE
		A	B		C	N	D (CHORD)	E (WEB)	F (UPRIGHT)	G
		ft	ft	in	in	#	O. D. x Wall Thk. (in)	Angle (in)	O. D. x Wall Thk. (in)	in

NOTES:
1. Design Wind Speed = mph
2. Bolts (except Anchor Bolts) are

FOUNDATION NOTES:
1. Design based on Borings taken
   sealed by
2. Assumptions and Values used in design:
   Soil Type
   Soil Layer Thickness = ft.
   Soil Friction Angle = deg.
   Soil Weight = pcf
   Design Water Table is ft. below surface

NOTE - Work with Index 11310.

CANTILEVER SIGN STRUCTURES DATA TABLE (CONT.)

SIGN NO.	GUSSET PLATES																TRUSS CONNECTION									SPLICE			
	GA	GB	GC		GD		GE		GF		GG		GH		GJ		GK	TA	TB	TC	TD	TE	TF	TG	TH	TJ	SA	SB	SC	SD
	in	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	in	in	#	#	in	in	in	in	in	in	Angle (in)	#	in	#

CANTILEVER SIGN STRUCTURES DATA TABLE (CONT.)

SIGN NO.	BASE CONNECTION									ANCHOR		FOOTING - DRILLED SHAFT							
	BA	BB	BC	BD	BE		BF	BG	BH	BJ	BK		FA		FB		FC	FD	
	in	#	in	in	ft	in	in	in	in	in	ft	in	ft	in	ft	in	# / Size	ft	in

ALTERNATE
DRILLED SHAFT
FOUNDATION

SPAN SIGN STRUCTURES DATA TABLE

SIGN#	STATION	DIMENSIONS			PNLS	MEMBER SIZES						SPLICE		
		A	B	C	D	E	F (CHORD)	G (WEB)	H (LEFT UPRIGHT)	J (RIGHT UPRIGHT)	K (CAMBER)	SA	SB	SC
		ft	ft	ft	#	in	O. D. x Wall Thk. (in)	Angle (in)	O. D. x Wall Thk. (in)	O. D. x Wall Thk. (in)	in	Angle (in)	#	in

SPAN SIGN STRUCTURES DATA TABLE (CONT.)

SIGN#	ALTERNATE SPLICE						GUSSET PLATES																	
	PA	PB	PC	PD	PE	PF	GA	GB	GC		GD		GE		GF		GG		GH		GJ		GK		GL
	in	in	in	in	in	#	in	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	in

SPAN SIGN STRUCTURES DATA TABLE (CONT.)

SIGN#	LEFT UPRIGHT CONNECTION								RIGHT UPRIGHT CONNECTION							
	LA	LB	LC	LD	LE	LF	LG	LH	RA	RB	RC	RD	RE	RF	RG	RH
	in	#	in	in	in	in	in	in	in	#	in	in	in	in	in	in

SPAN SIGN STRUCTURES DATA TABLE (CONT.)

SIGN#	LEFT BASE CONNECTION										RIGHT BASE CONNECTION									
	BA	BB	BC	BD	BE		BF	BG	BH	BJ	CA	CB	CC	CD	CE		CF	CG	CH	CJ
	in	#	in	in	ft	in	in	in	in	in	in	#	in	in	ft	in	in	in	in	in

SPAN SIGN STRUCTURES DATA TABLE (CONT.)

SIGN#	LEFT DRILLED SHAFT							RIGHT DRILLED SHAFT							
	DA		DB		DC	DD	DE	FA		FB		FC	FD	FE	
	ft	in	ft	in	# / size	in	in	ft	in	ft	in	# / size	in	in	

NOTES:
1. Design Wind Speed = mph
2. Bolts (except Anchor Bolts and Alt. Splice Bolts) are
3. Erection is the Contractor's responsibility. To facilitate erection, the Contractor should consider using two vertical lift points, each located near a panel point approximately 20 to 25% of the truss length from each end.
4. 'DC' and 'FC' shall include quantity and size of reinforcing steel.

FOUNDATION NOTES:
1. Design based on Borings taken sealed by
2. Assumptions and Values used in design:
   Soil Type
   Soil Layer Thickness = ft.
   Soil Friction Angle = deg.
   Soil Weight = pcf
   Design Water Table is ft. below surface

NOTE - Work with Index 11320.

STANDARD MAST ARM ASSEMBLIES DATA TABLE

STRUCTURE ID NUMBERS	ASSEMBLY NUMBERS (1)	FIRST ARM			SECOND ARM			UF (deg)	LL (deg)	POLE				SPECIAL DRILLED SHAFT (4)			
		ARM TYPE	FAA (2) (ft.)	FBA (2) (in.)	ARM TYPE	FAA (2) (ft.)	FBA (2) (in.)			POLE TYPE	UAA (3) (ft.)	UB (ft.)	UCA (3) (in.)	DA (ft.)	DB (ft.)	RA	RB

TABLE NOTES:

1. *Assembly Number Legend*

   Single Arm:
   Arm Type - Pole Type = D# - S#
   = E# - T#
   = F# - W#

   Double Arm:
   First Arm Type - Second Arm Type - Pole Type = D# - D# - S#
   = E# - E# - T#
   = F# - F# - W#

2. *If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the tip diameter shall be increased from "FB" to "FBA".*

3. *If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".*

4. *The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft" data information if site conditions dictate drilled shafts with additional foundation capacity.*

   Classification = Cohesionless (Fine Sand)
   Friction Angle = 30 Degrees (30°)
   Unit Weight = 50 lbs. / cu. ft. (assumed saturated)

GENERAL NOTES:

1. *Work this sheet with the Signal Designer's "Mast Arm Tabulation". See "Mast Arm Tabulation" for special instructions that include non-standard Handhole location, paint color, terminal compartment requirement, and pedestrian features.*

2. *Work with Index Nos. 17743 and 17745.*

SPECIAL MAST ARM ASSEMBLIES DATA TABLE

NUMBER OF LOCATIONS	STRUCTURE NUMBER	FIRST ARM				FIRST ARM EXTENSION				SECOND ARM				SECOND ARM EXTENSION				POLE						
		FA(ft)	FB(in)	FC(in)	FD(in)	FE(ft)	FF(in)	FG(in)	FH(in)	SA(ft)	SB(in)	SC(in)	SD(in)	SE(ft)	SF(in)	SG(in)	SH(in)	UA(ft)	UB(ft)	UC(in)	UD(in)	UE(in)	UF(deg)	UG(ft)

SPECIAL MAST ARM ASSEMBLIES DATA TABLE (CONT.)

STRUCTURE NUMBER	FIRST ARM CONNECTION (in) First Arm Camber Angle = 2 Degrees													SECOND ARM CONNECTION (in) Second Arm Camber Angle = 2 Degrees											
	#Bolts	HT	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	#Bolts	HT	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST

SPECIAL MAST ARM ASSEMBLIES DATA TABLE (CONT.)

STRUCTURE NUMBER	POLE BASE CONNECTION (in)							SHAFT AND REINF.				LUMINAIRE AND LUMINAIRE CONNECTION										
	#Bolts	BA	BB	BC	BD	BE	BF	DA(ft)	DB(ft)	RA	RB	LA(ft)	LB(ft)	LC(in)	LD(in)	LE	LF(ft)	LG(in)	LH(in)	LJ(in)	LK(in)	LL(deg)

NOTES:
1. Work with Index 17745.
2. Design Wind Speed = mph
3. Contractor shall coordinate anchor bolt requirements with fabricator.
4. Contractor shall identify Structures Numbers and submit detailed shop drawings.

FOUNDATION NOTES:
1. Design based on Borings taken sealed by
2. Assumptions and Values used in design:
   Soil Type
   Soil Layer Thickness = ft.
   Soil Friction Angle = deg.
   Soil Weight = pcf
   Design Water Table is ft. below surface

PRESTRESSED BEAM TEMPORARY BRACING DATA TABLES

TABLE OF WIND LOAD VARIABLES	Table Date 1-01-10
WIND SPEED, BASIC (MPH)	
WIND SPEED, CONSTRUCTION INACTIVE (MPH)	
WIND SPEED, CONSTRUCTION ACTIVE (MPH)	
VELOCITY PRESSURE EXPOSURE COEFFICIENT	
GUST EFFECT FACTOR	

TABLE OF ASSUMED CONSTRUCTION LOADS (UNFACTORED)	Table Date 1-01-10
BUILD-UP (PLF)	
FORM WEIGHT (PSF)	
FINISHING MACHINE TOTAL WEIGHT (KIP)	
FINISHING MACHINE WHEEL LOCATION BEYOND EDGE OF DECK OVERHANG (IN.)	
DECK WEIGHT (PSF)	
LIVE LOAD (PSF)	
LIVE LOAD AT EXTREME DECK EDGE (PLF)	

TABLE OF TEMPORARY BRACING VARIABLES							Table Date 7-01-10
SPAN NO.	L_B, MAXIMUM UNBRACED LENGTH (FT)	HORIZONTAL FORCE AT EACH BEAM END AND ANCHOR BRACE (KIP)	HORIZONTAL FORCE AT EACH INTERMEDIATE SPAN BRACE (KIP)	OVERTURNING FORCE AT EACH BEAM END AND ANCHOR BRACE (KIPxFT)	OVERTURNING FORCE AT EACH INTERMEDIATE SPAN BRACE (KIPxFT)	BRACE ENDS PRIOR TO CRANE RELEASE?	TOTAL LINES OF BRACING
						YES/NO	
						YES/NO	
						YES/NO	
						YES/NO	

BEAM TEMPORARY BRACING NOTES:

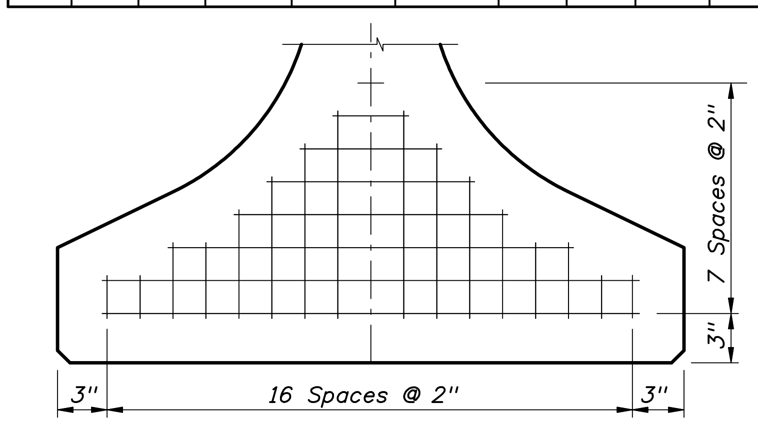
Based on investigation of the beam stability, temporary bracing as shown in the 'TABLE OF TEMPORARY BRACING VARIABLES' and Design Standard Index No. 20005 is required. The Table and following information is provided to aid the Contractor in design of beam temporary bracing:

1. Design the bracing members and connections to transfer both compressive and tensile forces equal to the horizontal forces given in the 'TABLE OF TEMPORARY BRACING VARIABLES'. Also design bracing members and connections to be capable of resisting the overturning forces given in the Table, non-simultaneously with horizontal forces. Assume that horizontal bracing forces are applied perpendicular to the beam web at mid-height of the beam, and assume that overturning bracing forces are applied at the centerline of the beam at the top of the top flange.
2. The horizontal brace forces have been determined by application of the Construction Inactive Wind Load as listed in the 'TABLE OF WIND LOAD VARIABLES'. The overturning brace forces have been determined by application of the Construction Active Wind Load as listed in the 'TABLE OF WIND LOAD VARIABLES' plus the assumed construction loads shown in the 'TABLE OF ASSUMED CONSTRUCTION LOADS'. It is the Contractor's responsibility to re-calculate the bracing requirements if the actual construction loads exceed the assumed loads shown, or if the finishing machine wheel location from the edge of the deck overhang exceeds the value listed.
3. The temporary bracing at the ends of the beams shall be installed prior to crane release if indicated in the 'TABLE OF TEMPORARY BRACING VARIABLES'. Beams shall not be left un-braced during non-work hours. Bracing shall remain in place until diaphragm concrete or bridge deck concrete reaches 2500 psi.
4. The exposure period (defined as the time period for which temporary load cases of the superstructure exist) is assumed to be less than one year. Horizontal bracing forces, as specified in the 'TABLE OF TEMPORARY BRACING VARIABLES', are not valid if the exposure period is more than one year; for this case the Contractor shall re-calculate bracing requirements.
5. Horizontal and overturning forces are factored per the Strength III limit state for construction.

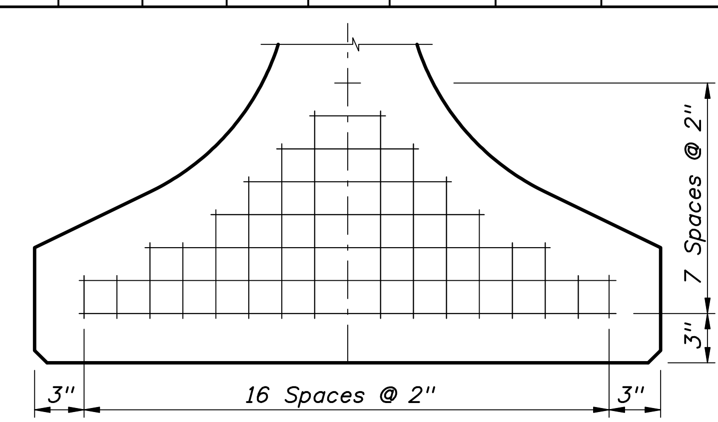
FLORIDA-I BEAM - TABLE OF BEAM VARIABLES

Table Date 7-01-09

LOCATION		BEAM TYPE	CONCRETE PROPERTIES			STND. PTRN. TYPE	END ELEV. COND.	PLAN VIEW CASE		BRG. PLATE MARK ***		END OF BEAM & BEARING DIMENSIONS **						BEAM DIMENSIONS *		REINFORCING STEEL															
SPAN NO.	BEAM NO.		CLASS	STRENGTHS (psi)				END 1	END 2	END 1	END 2	ANGLE Ø		DIM P	DIM J	DIM K1	DIM K2			3C1	3C2	3D1		3D2		3D3	4M1	4M2	4M3	5K	NO. OF SPACES BARS 5K				SP. BARS 5K *
				28 Day	Release							END 1	END 2					DIM L	DIM R	C	C	A	B	A	B	NO.	D	D	NO.	NO.	S1	S2	S3	S4	V1



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 beams with skewed ends, the debonded length shall be measured along the shielded strand.

NOTE: Work this sheet with Design Standards Index Nos. 20010 and the applicable "Florida-I Beam Standard Details" Index.

DIMENSION NOTES

* All longitudinal beam dimensions shown on this sheet with a single asterisk (*) are measured along the centerline of beam. Dimension "R" is calculated at mid-height of the beam.

** End beam bearing dimensions "J" and "K" are measured perpendicular to ℄ Bearing along the bottom of the beam.

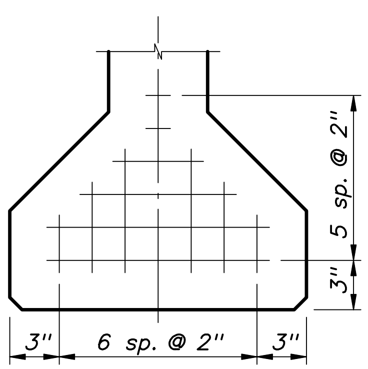
BEARING PLATES

*** See Index No. 20511 and the Bearing Plate Data Table for details.

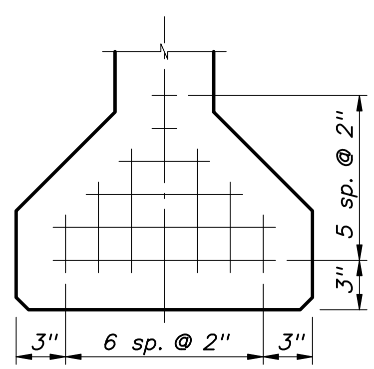
AASHTO TYPE II BEAM - TABLE OF BEAM VARIABLES

Table Date 1-01-06

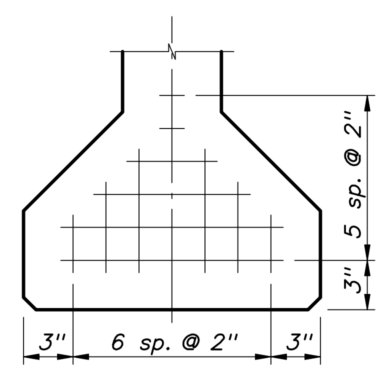
LOCATION		CONCRETE PROPERTIES			STND.	END	PLAN VIEW		BRG. PLATE		END OF BEAM & BEARING DIMENSIONS **						BEAM		REINFORCING STEEL													
SPAN	BEAM	CLASS	STRENGTHS (psi)		PTRN.	ELEV.	CASE		MARK ***		ANGLE Ø		DIM P	DIM J	DIM K1	DIM K2	DIMENSIONS *		3D1		3D2		4K	NO. OF SPACES BARS 4K				SPACING BARS 4K *			
NO.	NO.		28 Day	Release	TYPE	COND.	END 1	END 2	END 1	END 2	END 1	END 2					DIM L	DIM R	B	Length	B	Length	NO.	S1	S2	S3	S4	V1	V2	V3	V4



TYPE ① __ STRANDS



TYPE ② __ STRANDS



TYPE ③ __ 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 beams with skewed ends the debonded length shall be measured along the debonded strand.

NOTE: Work this sheet with Design Standards Index Nos. 20110 and 20120.

DIMENSION NOTES

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

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

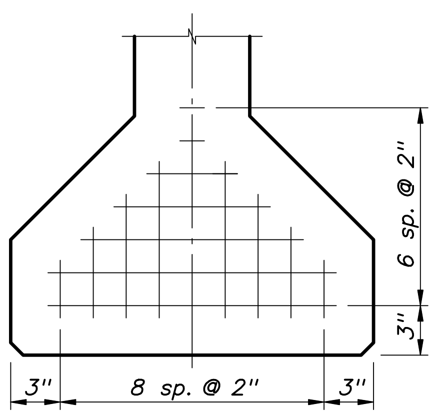
BEARING PLATES

*** Mark indicates beveled bearing plate and embedded bearing plate required. See Index No. 20501 for details.

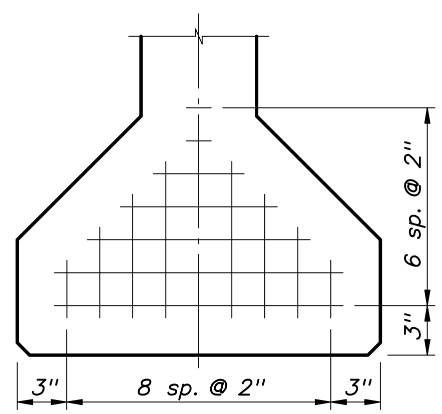
AASHTO TYPE III BEAM - TABLE OF BEAM VARIABLES

Table Date 1-01-06

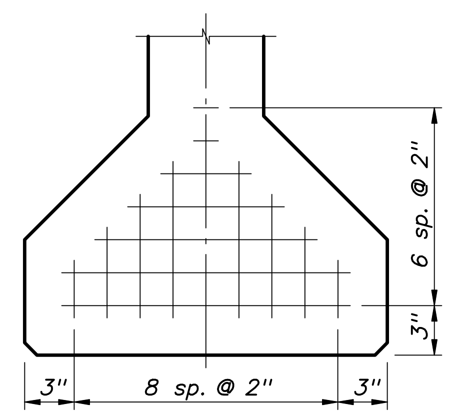
LOCATION		CONCRETE PROPERTIES			STND.	END	PLAN VIEW		BRG. PLATE		END OF BEAM & BEARING DIMENSIONS **						BEAM		REINFORCING STEEL													
SPAN	BEAM	CLASS	STRENGTHS (psi)		PTRN.	ELEV.	CASE		MARK ***		ANGLE Ø		DIM P	DIM J	DIM K1	DIM K2	DIMENSIONS *		3D1		3D2		4K	NO. OF SPACES BARS 4K				SPACING BARS 4K *			
NO.	NO.		28 Day	Release	TYPE	COND.	END 1	END 2	END 1	END 2	END 1	END 2					DIM L	DIM R	B	Length	B	Length	NO.	S1	S2	S3	S4	V1	V2	V3	V4



TYPE (1) __ STRANDS



TYPE (2) __ STRANDS



TYPE (3) __ 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 beams with skewed ends the debonded length shall be measured along the debonded strand.

NOTE: Work this sheet with Design Standards Index Nos. 20110 and 20130.

DIMENSION NOTES

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

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

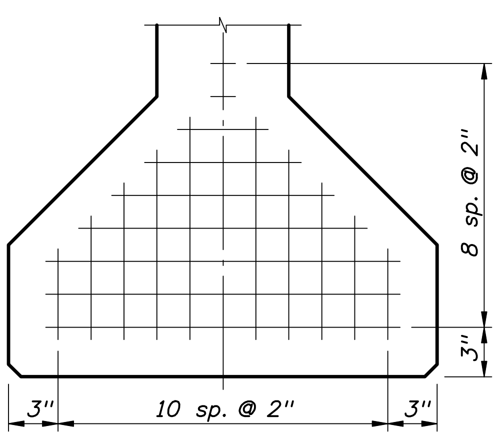
BEARING PLATES

*** Mark indicates beveled bearing plate and embedded bearing plate required. See Index No. 20501 for details.

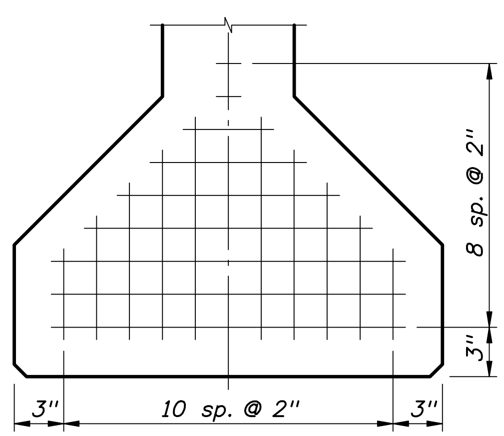
AASHTO TYPE IV BEAM - TABLE OF BEAM VARIABLES

Table Date 1-01-06

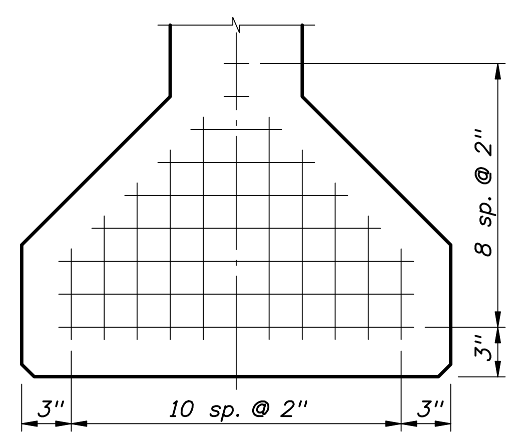
LOCATION		CONCRETE PROPERTIES			STND.	END	PLAN VIEW		BRG. PLATE		END OF BEAM & BEARING DIMENSIONS **						BEAM		REINFORCING STEEL												
SPAN	BEAM	CLASS	STRENGTHS (psi)		PTRN.	ELEV.	CASE		MARK ***		ANGLE ∅		DIM P	DIM J	DIM K1	DIM K2	DIMENSIONS *		3D1		3D2		4K	NO. OF SPACES BARS 4K				SPACING BARS 4K *			
NO.	NO.		28 Day	Release	TYPE	COND.	END 1	END 2	END 1	END 2	END 1	END 2					DIM L	DIM R	B	Length	B	Length	NO.	S1	S2	S3	S4	V1	V2	V3	V4



TYPE ① __ STRANDS



TYPE ② __ STRANDS



TYPE ③ __ 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. 20110 and 20140.

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 beams with skewed ends the debonded length shall be measured along the debonded strand.

DIMENSION NOTES

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

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

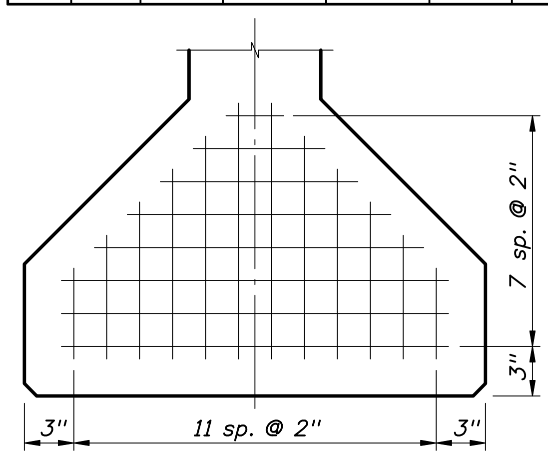
BEARING PLATES

*** Mark indicates beveled bearing plate and embedded bearing plate required. See Index No. 20501 for details.

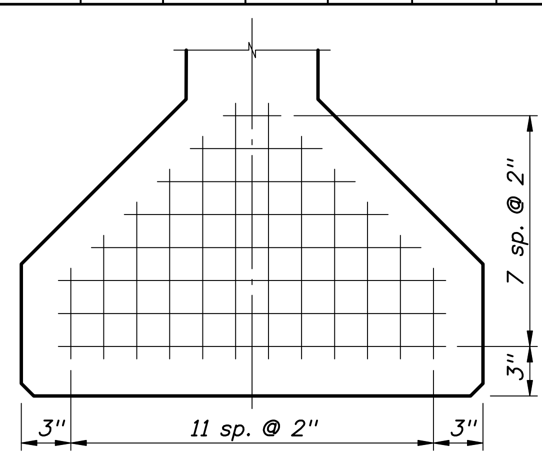
AASHTO TYPE V BEAM - TABLE OF BEAM VARIABLES

Table Date 1-01-06

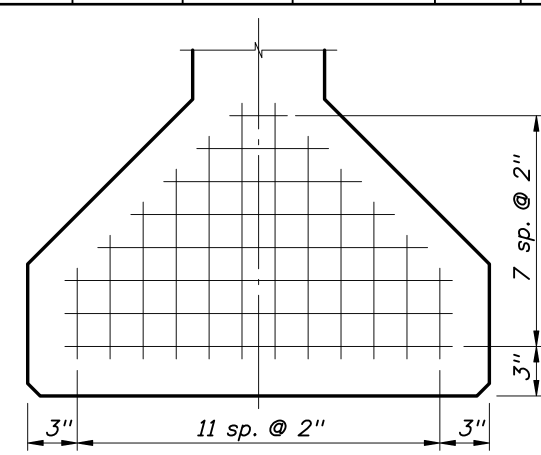
LOCATION		CONCRETE PROPERTIES			STND.	END	PLAN VIEW		BRG. PLATE		END OF BEAM & BEARING DIMENSIONS **						BEAM		REINFORCING STEEL															
SPAN	BEAM	CLASS	STRENGTHS (psi)		PTRN.	ELEV.	CASE		MARK ***		ANGLE ∅		DIM P	DIM J	DIM K1	DIM K2	DIMENSIONS *		3D1		3D2		4M1	4M2	4M3	5K	NO. OF SPACES BARS 5K				SPACING BARS 5K *			
NO.	NO.		28 Day	Release	TYPE	COND.	END 1	END 2	END 1	END 2	END 1	END 2					DIM L	DIM R	B	Length	B	Length	Length	Length	NO.	NO.	S1	S2	S3	S4	V1	V2	V3	V4



TYPE ① __ STRANDS



TYPE ② __ STRANDS



TYPE ③ __ 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. 20110 and 20150.

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 beams with skewed ends the debonded length shall be measured along the debonded strand.

DIMENSION NOTES

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

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

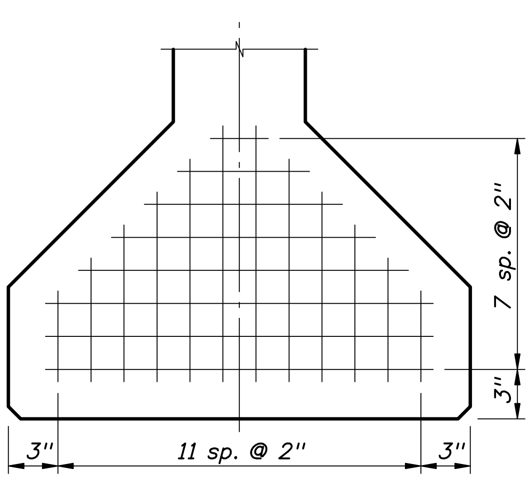
BEARING PLATES

*** Mark indicates beveled bearing plate required. Embedded bearing plates are required on all beams. See Index No. 20501 for details.

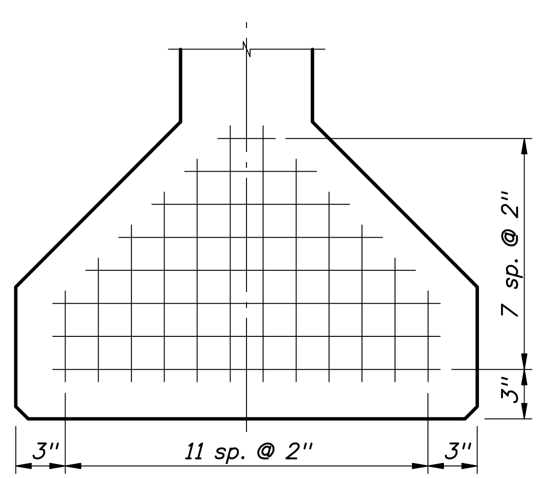
AASHTO TYPE VI BEAM - TABLE OF BEAM VARIABLES

Table Date 1-01-06

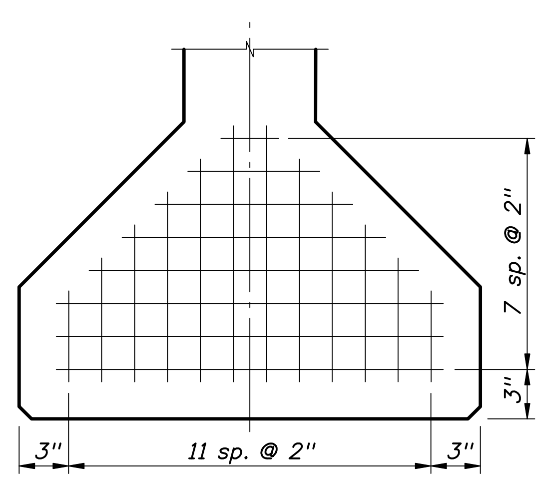
LOCATION		CONCRETE PROPERTIES			STND.	END	PLAN VIEW		BRG. PLATE		END OF BEAM & BEARING DIMENSIONS **						BEAM		REINFORCING STEEL															
SPAN	BEAM	CLASS	STRENGTHS (psi)		PTRN.	ELEV.	CASE		MARK ***		ANGLE ∅		DIM P	DIM J	DIM K1	DIM K2	DIMENSIONS *		3D1		3D2		4M1	4M2	4M3	5K	NO. OF SPACES BARS 5K				SPACING BARS 5K *			
NO.	NO.		28 Day	Release	TYPE	COND.	END 1	END 2	END 1	END 2	END 1	END 2					DIM L	DIM R	B	Length	B	Length	Length	Length	NO.	NO.	S1	S2	S3	S4	V1	V2	V3	V4



TYPE ① __ STRANDS



TYPE ② __ STRANDS



TYPE ③ __ 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 beams with skewed ends the debonded length shall be measured along the debonded strand.

NOTE: Work this sheet with Design Standards Index Nos. 20110 and 20160.

DIMENSION NOTES

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

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

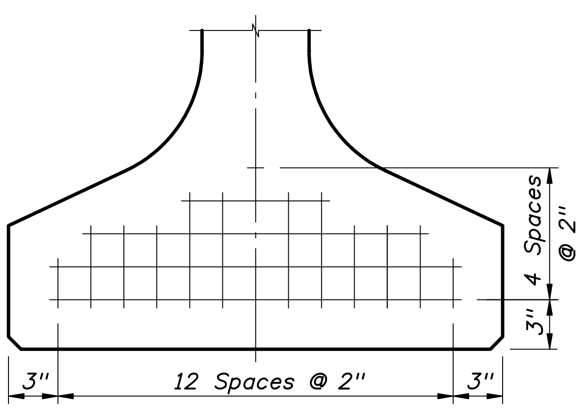
BEARING PLATES

*** Mark indicates beveled bearing plate required. Embedded bearing plates are required on all beams. See Index No. 20501 for details.

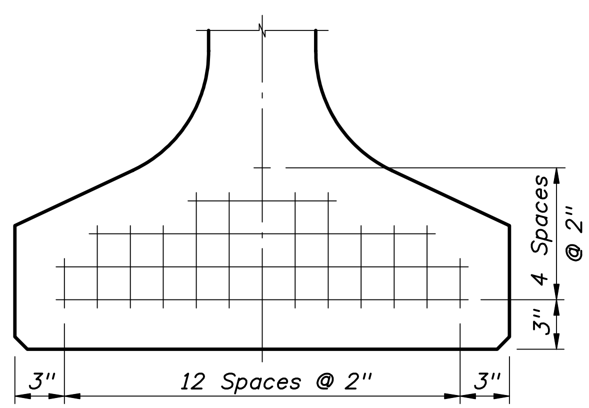
FLORIDA BULB-T 72 BEAM - TABLE OF BEAM VARIABLES

Table Date 1-01-06

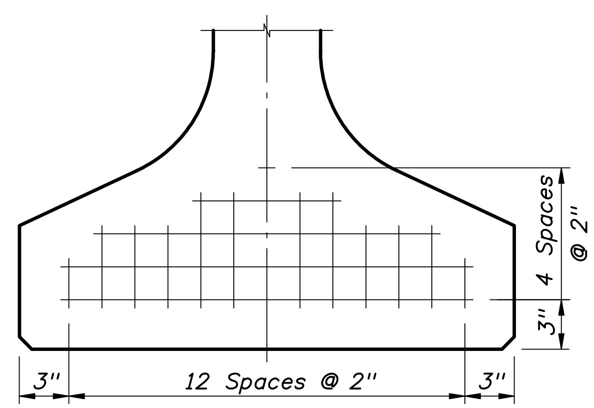
LOCATION		CONCRETE PROPERTIES			STND.	END	PLAN VIEW		BRG. PLATE		END OF BEAM & BEARING DIMENSIONS **						BEAM		REINFORCING STEEL															
SPAN	BEAM	CLASS	STRENGTHS (psi)		PTRN.	ELEV.	CASE		MARK ***		ANGLE ∅		DIM P	DIM J	DIM K1	DIM K2	DIMENSIONS *		3D1		3D2		4M1	4M2	4M3	5K	NO. OF SPACES BARS 5K				SPACING BARS 5K *			
NO.	NO.		28 Day	Release	TYPE	COND.	END 1	END 2	END 1	END 2	END 1	END 2					DIM L	DIM R	B	Length	B	Length	Length	Length	NO.	NO.	S1	S2	S3	S4	V1	V2	V3	V4



TYPE ① __ STRANDS



TYPE ② __ STRANDS



TYPE ③ __ 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. 20110 and 20172.

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 beams with skewed ends the debonded length shall be measured along the shielded strand.

DIMENSION NOTES

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

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

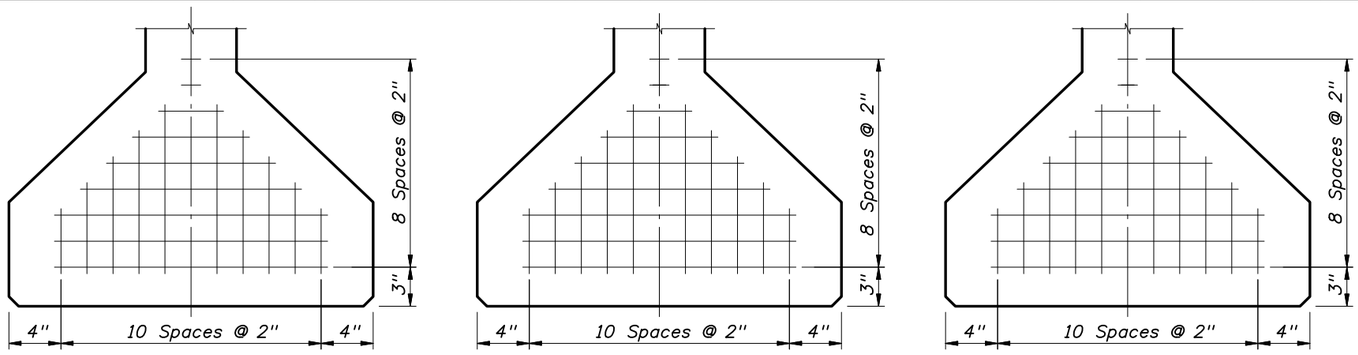
BEARING PLATES

*** Mark indicates beveled bearing plate required. Embedded bearing plates are required on all beams. See Index No. 20501 for details.

FLORIDA BULB-T 78 BEAM - TABLE OF BEAM VARIABLES

Table Date 1-01-06

LOCATION		CONCRETE PROPERTIES			STND.	END	PLAN VIEW		BRG. PLATE		END OF BEAM & BEARING DIMENSIONS **						BEAM DIMENSIONS *		REINFORCING STEEL															
SPAN	BEAM	CLASS	STRENGTHS (psi)		PTRN.	ELEV.	CASE		MARK ***		ANGLE ∅		DIM P	DIM J	DIM K1	DIM K2			3D1		3D2		4M1	4M2	4M3	5K	NO. OF SPACES BARS 5K				SPACING BARS 5K *			
NO.	NO.		28 Day	Release	TYPE	COND.	END 1	END 2	END 1	END 2	END 1	END 2					DIM L	DIM R	B	Length	B	Length	Length	Length	NO.	NO.	S1	S2	S3	S4	V1	V2	V3	V4



TYPE ① __ STRANDS TYPE ② __ STRANDS TYPE ③ __ 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. 20110 and 20178.

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 beams with skewed ends the debonded length shall be measured along the shielded strand.

DIMENSION NOTES

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

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

BEARING PLATES

*** Mark indicates beveled bearing plate required. Embedded bearing plates are required on all beams. See Index No. 20501 for details.

BUILD-UP & DEFLECTION DATA TABLE FOR AASHTO, BULB-T AND FLORIDA-I BEAMS

Table Date 7-01-09

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

BUILD-UP & DEFLECTION DATA TABLE FOR AASHTO, BULB-T AND FLORIDA-I BEAMS

Table Date 7-01-09

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

BUILD-UP & DEFLECTION DATA TABLE FOR AASHTO, BULB-T AND FLORIDA-I BEAMS

Table Date 7-01-09

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

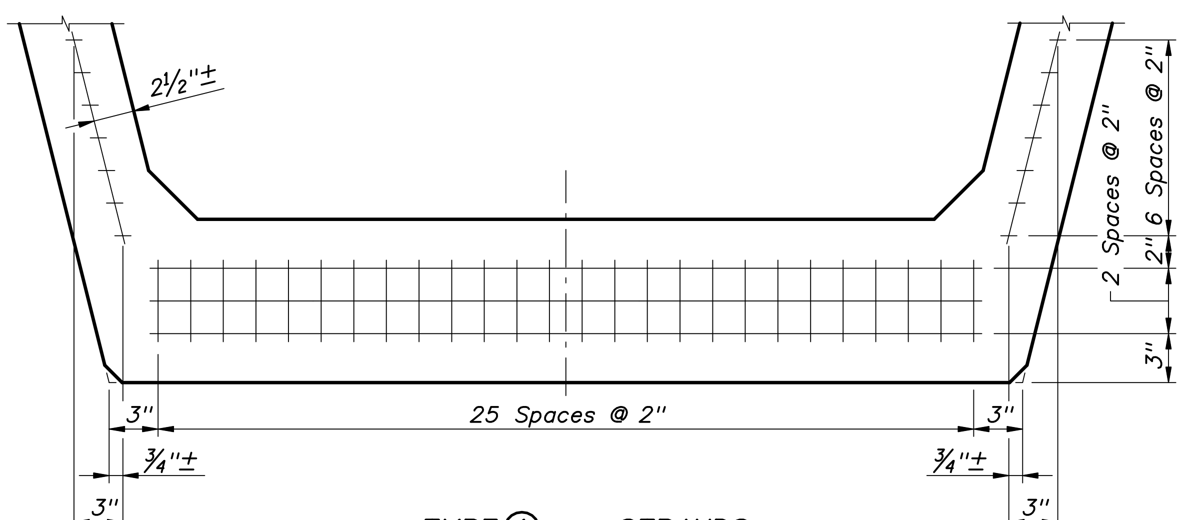
NOTES: Work this sheet with Design Standard Index No. 20199.

FLORIDA U BEAM - TABLE OF BEAM VARIABLES

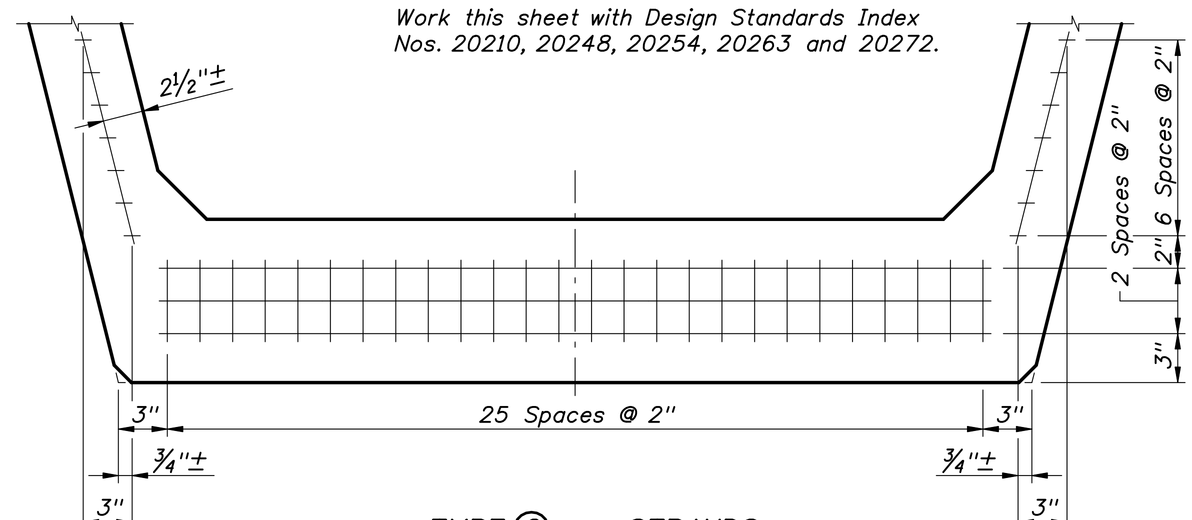
Table Date 1-01-06

FUB TYPE	LOCATION		CONCRETE PROPERTIES			STND. PTRN.	END ELEV.	PLAN VIEW CASE		BRG. PLATE MARK ***		END OF BEAM AND BEARING DIMENSIONS **						BEAM DIMENSIONS *		REINFORCING STEEL									
	SPAN	BEAM	CLASS	STRENGTHS (psi)								ANGLE Ø		DIM P	DIM J	DIM K1	DIM K2	DIM L	DIM R	4G	4H	4M	5K	NO. OF SPACES BARS 5K & 4M			SPACING BARS 5K & 4M *		
	NO.	NO.		28 Day	Release	TYPE	COND.	END 1	END 2	END 1	END 2	END 1	END 2							NO.	NO.	NO.	NO.	S1	S2	S3	V1	V2	V3

NOTE:
Work this sheet with Design Standards Index Nos. 20210, 20248, 20254, 20263 and 20272.



TYPE ① __ STRANDS



TYPE ② __ STRANDS

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

STRAND PATTERN

DIMENSION NOTES

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

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

BEARING PLATES

*** Mark indicates beveled bearing plate and embedded bearing plate required. See Index No. 20502 for details.

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 beams with skewed ends the debonded length shall be measured along the shielded strand.

BUILD-UP & DEFLECTION DATA TABLE FOR FLORIDA U BEAMS

Table Date 1-01-09

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

BUILD-UP & DEFLECTION DATA TABLE FOR FLORIDA U BEAMS

Table Date 1-01-09

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

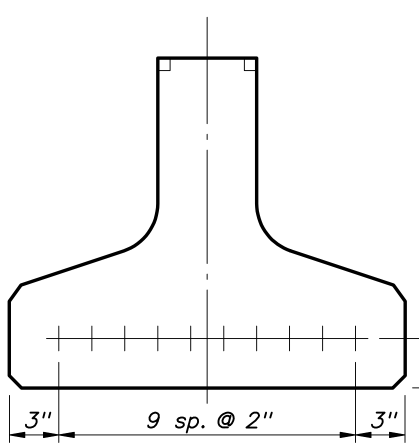
NOTES: Work this sheet with Design Standard Index No. 20299.

INVERTED-T BEAM - TABLE OF BEAM VARIABLES

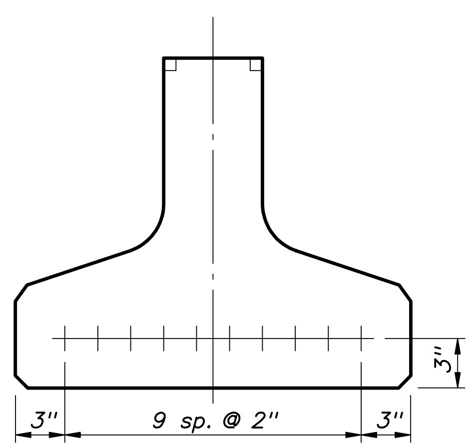
Table Date 7-01-05

LOCATION		CONCRETE PROPERTIES			STND.	PLAN VIEW		END OF BEAM AND BEARING DIMENSIONS **					BEAM DIMENSIONS *		REINFORCING STEEL													
SPAN	BEAM	CLASS	STRENGTHS (f'c)		PTRN.	CASE		ANGLE Ø		DIM J	DIM K1	DIM K2	DIM L	DIM R	5A *	3D1		3D2		4K	NO. OF SPACES BARS 4K				SPACING FOR BARS 4K *			
NO.	NO.		28 Day	Release	TYPE	END 1	END 2	END 1	END 2						Length	B	Length	B	Length	NO.	S1	S2	S3	S4	V1	V2	V3	V4

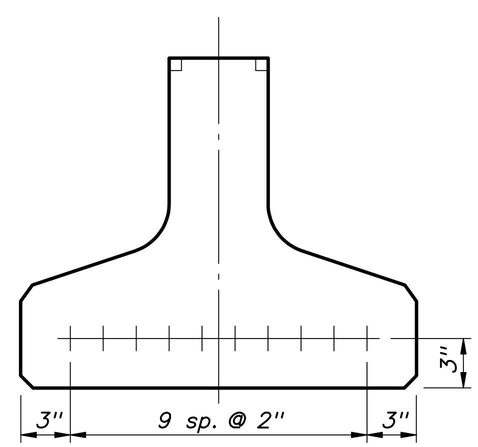
NOTE: Work this sheet with Design Standards Index Nos. 20310 and 20320.



TYPE ① __ STRANDS



TYPE ② __ STRANDS



TYPE ③ __ 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 beams with skewed ends, the debonded length shall be measured along the debonded strand.

DIMENSION NOTES

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

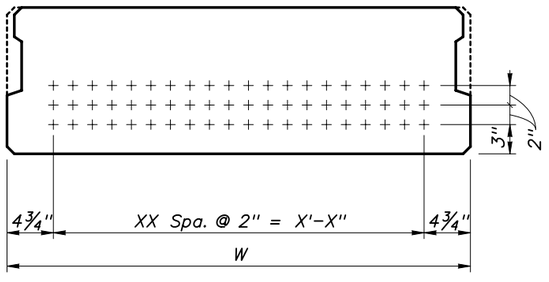
** End of beam bearing dimensions "J" and "K" are measured along the bottom of the beam.

PRESTRESSED CUSTOM WIDTH SLAB UNITS - TABLE OF VARIABLES

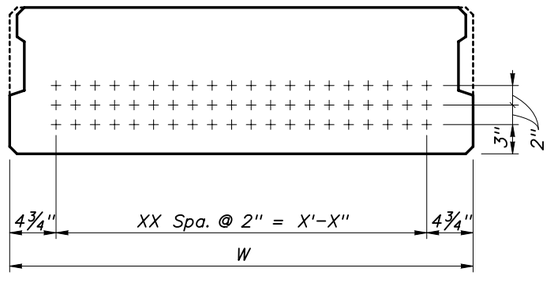
Table Date 1-01-10

LOCATION		CONCRETE PROPERTIES			STND.	PLAN VIEW CASE		END OF UNIT **					DIM	UNIT DIMENSIONS *		REINFORCING STEEL															
SPAN NO.	SLAB UNIT NO.(S) / 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	4D1 DIM D	4D2 DIM D	4D3 NO.	4D3 DIM C	5Y1 DIM B	5Y2 DIM B	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. Dimension "R" is calculated at mid-height of the slab unit.

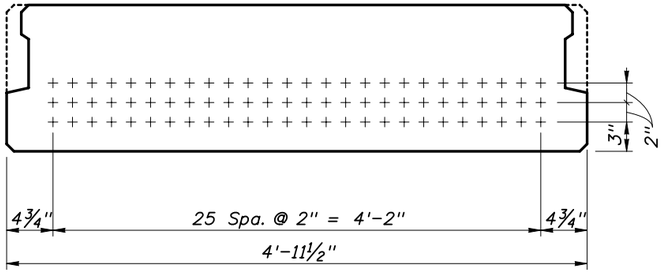
** End of slab unit bearing dimensions "J" and "K" are measured perpendicular to ℄ Bearing along the bottom of the slab unit.

*** See Index No. 20350 for modified reinforcement. See "Prestressed Slab Units - Traffic Railing Reinforcing Layout Table" for railing placement on horizontal curves. Dimension X_L is measured from the bottom left edge of the slab unit to the ℄ of the reinforcement.

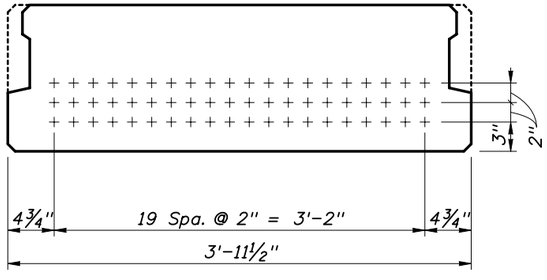
PRESTRESSED STANDARD SLAB UNITS - TABLE OF VARIABLES

Table Date 1-01-10

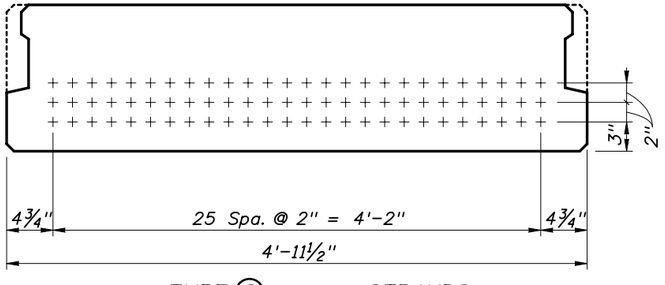
LOCATION		CONCRETE PROPERTIES			STND.	PLAN VIEW		END OF UNIT **					UNIT		REINFORCING STEEL														
SPAN	SLAB UNIT	CLASS	STRENGTHS (psi)		PTRN.	CASE		ANGLE ∅		DIM J	DIM K1	DIM K2	DIMENSIONS *		4D1	4D2	4D3	Y1	Y2	4K	NO. OF BAR SPACES			BAR SPACING *			RAILING REINF. ***		
NO.	NO.(S) / TYPE		28 Day	Release	TYPE	END 1	END 2	END 1	END 2				DIM L	DIM R	DIM D	DIM D	NO.	DIM B	DIM B	NO.	S1	S2	S3	V1	V2	V3	INDEX NO.	CASE	DIM X_L



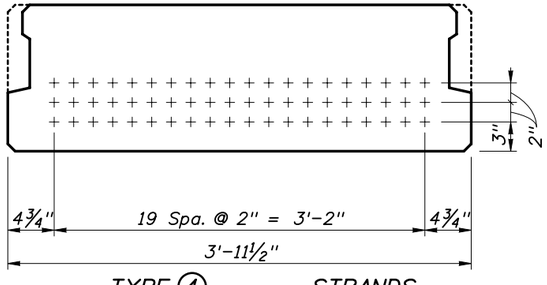
TYPE ① __ STRANDS



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, 20354, 20355, 20364 and 20365.

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. Dimension "R" is calculated at mid-height of the slab unit.

** End of slab unit bearing dimensions "J" and "K" are measured perpendicular to ℄ Bearing 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. Dimension "X_L" is measured from the bottom left edge of slab unit to the ℄ reinforcement.

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.

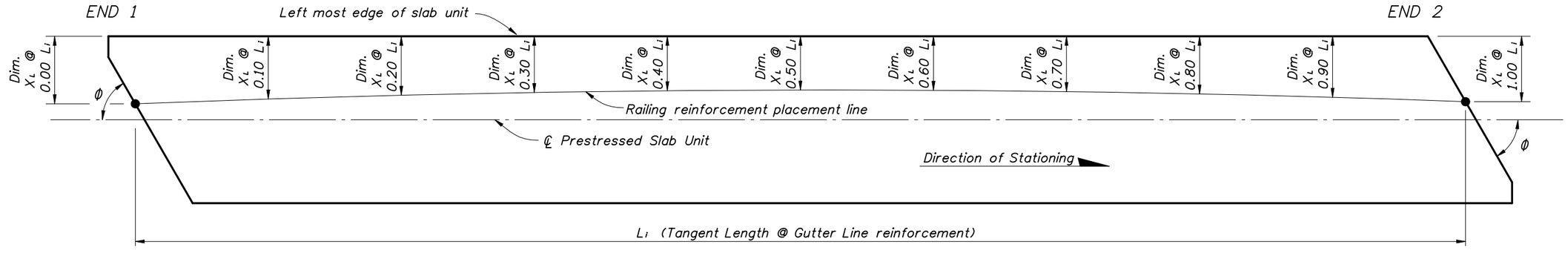
Dim. X_L is measured perpendicular from the left most edge of the slab unit (looking from END 1 towards END 2) to the vertical leg of the Traffic Railing reinforcement.

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

OVERLAY & DEFLECTION DATA TABLE FOR PRESTRESSED SLAB UNITS

Table Date 7-01-09

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

OVERLAY & DEFLECTION DATA TABLE FOR PRESTRESSED SLAB UNITS

Table Date 7-01-09

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

OVERLAY & DEFLECTION DATA TABLE FOR PRESTRESSED SLAB UNITS

Table Date 7-01-09

LOCATION		REQUIRED THEORETICAL OVERLAY ON ℄ SLAB UNIT			NET BEAM CAMBER (PRESTRESS - DEAD LOAD OF SLAB UNIT) @ 120 DAYS	DEAD LOAD DEFLECTION DURING OVERLAY POUR @ 120 DAYS DIM "A"	OVERLAY 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.

CONCRETE SHEET PILE DATA TABLE					Table Date 7-01-06
TYPE (See Detail A)	NUMBER REQUIRED	L (Ft.)	T (In.)	X (Ft.)	∅ (Degrees)

NOTE:
Work Concrete Sheet Pile Data Table with Standard Index No. 20400.

BEARING PAD DATA TABLE				Table Date 1-01-08
SPAN NO(s).	BEAM NO(s).	PAD TYPE	BEAM TYPE	BEAM END *

NOTE:
Work this table with Index No. 20500 for Pad Types A, B & C and/or any project specific bearing pads.
* END 1 = Begin Bridge end of beam (Back station).
END 2 = End Bridge end of beam (Ahead station).

INSTRUCTIONS TO DESIGNER:

This table is intended for use with prestressed beam bridges, but may be modified for steel girder or other bridge types.
Supplement the BEARING PAD DATA TABLE with additional columns or notes as required to clearly identify the location and type of bearing pads.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

ESTIMATED BEARING PAD QUANTITIES		Table Date 01-01-07
PAD TYPE	NUMBER REQUIRED	QUANTITY (CF)

BEARING PLATE DATA TABLE

Table Date 1-01-08

GENERAL BEARING PLATE DATA								EMBEDDED PLATE DIMENSIONS (PLATE A) (inches)			BEVELED PLATE REQUIRED (Yes/No)	BEVELED PLATE DIMENSIONS (PLATE B) (inches)					
BRG. PLATE MARK ***	SPAN NO(s).	BEAM NO(s).	PAD TYPE	BEAM END	PLAN VIEW CASE	SLOPE (%) **	ANGLE ∅ *	C	D	C+D/TAN ∅		C	D	C+D/TAN ∅	X	Y	Z

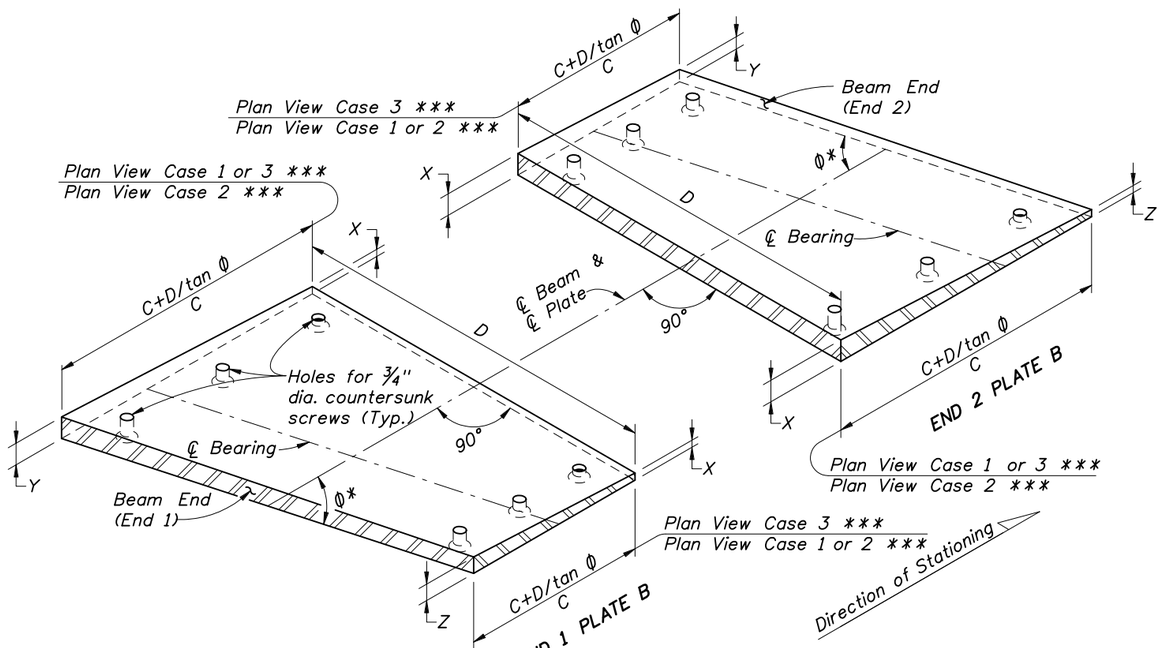
NOTES:

* ∅ = Acute angle (≤ 90°) measured from left or right side of ℄ Beam as required.

** Slope measured along ℄ of Beam at ℄ of Bearing.

*** See "TABLE OF BEAM VARIABLES" and Index No. 20110.

See Index No. 20501 for additional notes and details.



ISOMETRIC VIEW OF BEVELED BEARING PLATES
(SKEWED PLATES SHOWN, NON-SKEWED PLATES SIMILAR)

INSTRUCTIONS TO DESIGNER:

1. Fill in the table to correspond with data on the 'TABLE OF BEAM VARIABLES' using inch units for Beveled Plate dimensions 'X', 'Y' & 'Z' rounded to $\frac{1}{16}$th of an inch.
2. Use the following equations to determine the Beveled Plate thicknesses for 'PLAN VIEW CASES' and 'END ELEVATION CONDITIONS' corresponding to those shown on Design Standards Index No. 20110. The Slope parameter in these equations requires decimal units and correct sign convention:

	END 1	END 2
(I) PLAN VIEW CASE 1:		
(a) END ELEVATION CONDITION 1 or 2 (Positive Slope)		
	X = 0.5" + (C) x Slope	X = 0.500"
	Y = Z = 0.500"	Y = Z = 0.5" + (C) x Slope
(b) END ELEVATION CONDITION 3 (Negative Slope)		
	X = 0.500"	X = 0.5" − (C) x Slope
	Y = Z = 0.5" − (C) x Slope	Y = Z = 0.500"
(II) PLAN VIEW CASE 2:		
(a) END ELEVATION CONDITION 1 or 2 (Positive Slope)		
	X = 0.5" + (C + D / tan ∅) x Slope	X = 0.500"
	Y = 0.500"	Y = 0.5" + (C) x Slope
	Z = 0.5" + (D / tan ∅) x Slope	Z = 0.5" + (C + D / tan ∅) x Slope
(b) END ELEVATION CONDITION 3 (Negative Slope)		
	X = 0.500"	X = 0.5" − (C + D / tan ∅) x Slope
	Y = 0.5" − (C + D / tan ∅) x Slope	Y = 0.5" − (D / tan ∅) x Slope
	Z = 0.5" − (C) x Slope	Z = 0.500"
(III) PLAN VIEW CASE 3:		
(a) END ELEVATION CONDITION 1 or 2 (Positive Slope)		
	X = 0.5" + (C + D / tan ∅) x Slope	X = 0.500"
	Y = 0.5" + (D / tan ∅) x Slope	Y = 0.5" + (C + D / tan ∅) x Slope
	Z = 0.500"	Z = 0.5" + (C) x Slope
(b) END ELEVATION CONDITION 3 (Negative Slope)		
	X = 0.500"	X = 0.5" − (C + D / tan ∅) x Slope
	Y = 0.5" − (C) x Slope	Y = 0.500"
	Z = 0.5" − (C + D / tan ∅) x Slope	Z = 0.5" − (D / tan ∅) x Slope

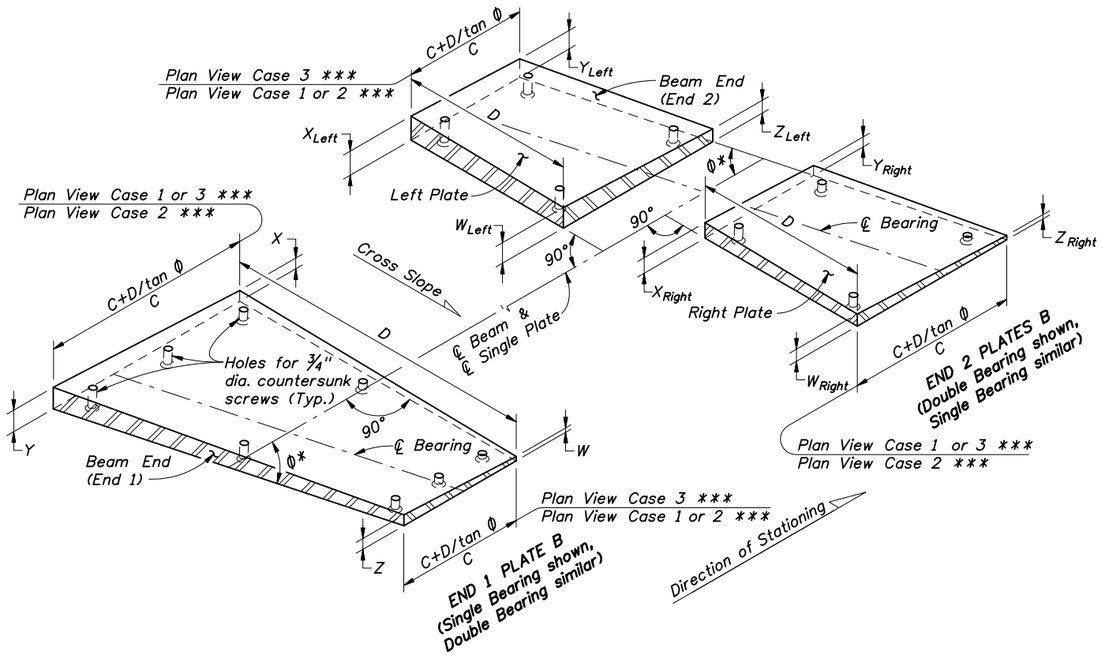
PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

BEARING PLATE DATA TABLE

Table Date 1-01-08

GENERAL BEARING PLATE DATA									EMBEDDED PLATE DIMENSIONS (PLATE A) (inches)			BEVELED PLATE REQUIRED (Yes/No)	BEVELED PLATE DIMENSIONS (PLATE B) (inches)						
BRG. PLATE MARK ***	SPAN NO(s).	BEAM NO(s).	BEARING TYPE	BEAM END	PLAN VIEW CASE	CROSS SLOPE (%) ##	SLOPE (%) **	ANGLE ∅ *	C	D	C+D/TAN ∅		C	D	C+D/TAN ∅	W	X	Y	Z

NOTES:
- * ∅ = Acute angle (≤ 90°) measured from left or right side of ℄ Beam as required (See Plan View Case No.).
- ** Slope measured along ℄ of Beam at ℄ of Bearing.
- ## Cross Slope measured perpendicular to ℄ of Beam at bottom of beam.
- *** See "TABLE OF BEAM VARIABLES" and Index No. 20210.
- See Index No. 20502 for additional notes and details.



ISOMETRIC VIEW OF BEVELED BEARING PLATES FOR FLORIDA U-BEAMS
(SKEWED PLATES SHOWN, NON-SKEWED PLATES SIMILAR)

INSTRUCTIONS TO DESIGNER (PART 1):

1. Fill in the table to correspond with data on the 'TABLE OF BEAM VARIABLES' using inch units for Beveled Plate dimensions 'W', 'X', 'Y' & 'Z' rounded to 1/16th of an inch.
2. Use the average deck cross slope perpendicular to ℄ of beam from End 1 and End 2, for the beam cross slope for spans with superelevation transitions.
3. Use the following equations to determine the Beveled Plate thicknesses for 'PLAN VIEW CASES' and 'END ELEVATION CONDITIONS' corresponding to those shown on Design Standards Index No. 20210, when single pedestals are used beneath the beam ends. For split pedestals beneath double bearings, adjust the upper pedestal elevation to utilize the same thickness bearing plate on the left and right sides of the beam as shown in paragraphs (i) and (ii) below. Slope and Cross Slope parameters in these equations require decimal units and correct sign convention:

	END 1	END 2
(I) PLAN VIEW CASE 1 (No Skew):		
(a) END ELEVATION CONDITION 1 (Positive Slope)		
(i) Positive Cross Slope, Single Bearing & Left Side Double Bearing		
	W = 0.5" + (C) x Slope + (D) x Cross Slope	W = 0.5" + (D) x Cross Slope
	X = 0.5" + (C) x Slope	X = 0.5"
	Y = 0.5"	Y = 0.5" + (C) x Slope
	Z = 0.5" + (D) x Cross Slope	Z = 0.5" + (C) x Slope + (D) x Cross Slope
(ii) Negative Cross Slope, Single Bearing & Right Side Double Bearing		
	W = 0.5" + (C) x Slope	W = 0.5"
	X = 0.5" + (C) x Slope − (D) x Cross Slope	X = 0.5" − (D) x Cross Slope
	Y = 0.5" − (D) x Cross Slope	Y = 0.5" + (C) x Slope − (D) x Cross Slope
	Z = 0.5"	Z = 0.5" + (C) x Slope
(iii) Positive Cross Slope, Right Side Double Bearing		
	W = 0.5" + (C) x Slope + (2D+E) x Cross Slope	W = 0.5" + (2D+E) x Cross Slope
	X = 0.5" + (C) x Slope + (D+E) x Cross Slope	X = 0.5" + (D+E) x Cross Slope
	Y = 0.5" + (D+E) x Cross Slope	Y = 0.5" + (C) x Slope + (D+E) x Cross Slope
	Z = 0.5" + (2D+E) x Cross Slope	Z = 0.5" + (C) x Slope + (2D+E) x Cross Slope
(iv) Negative Cross Slope, Left Side Double Bearing		
	W = 0.5" + (C) x Slope − (D+E) x Cross Slope	W = 0.5" − (D+E) x Cross Slope
	X = 0.5" + (C) x Slope − (2D+E) x Cross Slope	X = 0.5" − (2D+E) x Cross Slope
	Y = 0.5" − (2D+E) x Cross Slope	Y = 0.5" + (C) x Slope − (2D+E) x Cross Slope
	Z = 0.5" − (D+E) x Cross Slope	Z = 0.5" + (C) x Slope − (D+E) x Cross Slope
(b) END ELEVATION CONDITION 3 (Negative Slope)		
(i) Positive Cross Slope, Single Bearing & Left Side Double Bearing		
	W = 0.5" + (D) x Cross Slope	W = 0.5" − (C) x Slope + (D) x Cross Slope
	X = 0.5"	X = 0.5" − (C) x Slope
	Y = 0.5" − (C) x Slope	Y = 0.5"
	Z = 0.5" − (C) x Slope + (D) x Cross Slope	Z = 0.5" + (D) x Cross Slope
(ii) Negative Cross Slope, Single Bearing & Right Side Double Bearing		
	W = 0.5"	W = 0.5" − (C) x Slope
	X = 0.5" − (D) x Cross Slope	X = 0.5" − (C) x Slope − (D) x Cross Slope
	Y = 0.5" − (C) x Slope − (D) x Cross Slope	Y = 0.5" − (D) x Cross Slope
	Z = 0.5" − (C) x Slope	Z = 0.5"
(iii) Positive Cross Slope, Right Side Double Bearing		
	W = 0.5" + (2D+E) x Cross Slope	W = 0.5" − (C) x Slope + (2D+E) x Cross Slope
	X = 0.5" + (D+E) x Cross Slope	X = 0.5" − (C) x Slope + (D+E) x Cross Slope
	Y = 0.5" − (C) x Slope + (D+E) x Cross Slope	Y = 0.5" + (D+E) x Cross Slope
	Z = 0.5" − (C) x Slope + (2D+E) x Cross Slope	Z = 0.5" + (2D+E) x Cross Slope
(iv) Negative Cross Slope, Left Side Double Bearing		
	W = 0.5" − (D+E) x Cross Slope	W = 0.5" − (C) x Slope − (D+E) x Cross Slope
	X = 0.5" − (2D+E) x Cross Slope	X = 0.5" − (C) x Slope − (2D+E) x Cross Slope
	Y = 0.5" − (C) x Slope − (2D+E) x Cross Slope	Y = 0.5" − (2D+E) x Cross Slope
	Z = 0.5" − (C) x Slope − (D+E) x Cross Slope	Z = 0.5" − (D+E) x Cross Slope

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INSTRUCTIONS TO DESIGNER (PART 2):

	END 1	END 2
(II)	PLAN VIEW CASE 2:	
(a)	END ELEVATION CONDITION 1 OR 2 (Positive Slope)	
(i)	Positive Cross Slope, Single Bearing & Left Side Double Bearing	
	W = 0.5" + (C+D/tan ∅) x Slope + (D) x Cross Slope	W = 0.5" + (D) x Cross Slope
	X = 0.5" + (C+D/tan ∅) x Slope	X = 0.5"
	Y = 0.5"	Y = 0.5" + (C) x Slope
	Z = 0.5" + (D/tan ∅) x Slope + (D) x Cross Slope	Z = 0.5" + (C+D/tan ∅) x Slope + (D) x Cross Slope
(ii)	Negative Cross Slope, Single Bearing & Right Side Double Bearing	
	W = 0.5" + (C) x Slope	W = 0.5"
	X = 0.5" + (C) x Slope − (D) x Cross Slope	X = 0.5" − (D) x Cross Slope
**	Y = 0.5" − (D/tan ∅) x Slope − (D) x Cross Slope	Y = 0.5" + (C) x Slope − (D) x Cross Slope
	Z = 0.5"	Z = 0.5" + (C+D/tan ∅) x Slope
(iii)	Positive Cross Slope, Right Side Double Bearing	
	W = 0.5" + [(2D+E)/tan ∅ + C] x Slope + (2D+E) x Cross Slope	W = 0.5" + (D+E)/tan ∅ x Slope + (2D+E) x Cross Slope
	X = 0.5" + [(2D+E)/tan ∅ + C] x Slope + (D+E) x Cross Slope	X = 0.5" + (D+E)/tan ∅ x Slope + (D+E) x Cross Slope
	Y = 0.5" + (D+E)/tan ∅ x Slope + (D+E) x Cross Slope	Y = 0.5" + [(D+E)/tan ∅ + C] x Slope + (D+E) x Cross Slope
	Z = 0.5" + (2D+E)/tan ∅ x Slope + (2D+E) x Cross Slope	Z = 0.5" + [(2D+E)/tan ∅ + C] x Slope + (2D+E) x Cross Slope
(iv)	Negative Cross Slope, Left Side Double Bearing	
	W = 0.5" + [C − (D+E)/tan ∅] x Slope − (D+E) x Cross Slope	** W = 0.5" − (D+E)/tan ∅ x Slope − (D+E) x Cross Slope
	X = 0.5" + [C − (D+E)/tan ∅] x Slope − (2D+E) x Cross Slope	** X = 0.5" − (D+E)/tan ∅ x Slope − (2D+E) x Cross Slope
**	Y = 0.5" − (2D+E)/tan ∅ x Slope − (2D+E) x Cross Slope	Y = 0.5" + [C − (D+E)/tan ∅] x Slope − (2D+E) x Cross Slope
**	Z = 0.5" − (D+E)/tan ∅ x Slope − (D+E) x Cross Slope	Z = 0.5" + [C − E/tan ∅] x Slope − (D+E) x Cross Slope
(b)	END ELEVATION CONDITION 3 (Negative Slope)	
(i)	Positive Cross Slope, Single Bearing & Left Side Double Bearing	
	W = 0.5" + (D) x Cross Slope	W = 0.5" − (C) x Slope + (D) x Cross Slope
	X = 0.5"	X = 0.5" − (C) x Slope
	Y = 0.5" − (C+D/tan ∅) x Slope	Y = 0.5"
	Z = 0.5" − (C) x Slope + (D) x Cross Slope	** Z = 0.5" + (D/tan ∅) x Slope + (D) x Cross Slope
(ii)	Negative Cross Slope, Single Bearing & Right Side Double Bearing	
	W = 0.5"	W = 0.5" − (C+D/tan ∅) x Slope
	X = 0.5" − (D) x Cross Slope	X = 0.5" − (C+D/tan ∅) x Slope − (D) x Cross Slope
	Y = 0.5" − (C+D/tan ∅) x Slope − (D) x Cross Slope	Y = 0.5" − (D/tan ∅) x Slope − (D) x Cross Slope
	Z = 0.5" − (C) x Slope	Z = 0.5"
(iii)	Positive Cross Slope, Right Side Double Bearing	
**	W = 0.5" + (D+E)/tan ∅ x Slope + (2D+E) x Cross Slope	W = 0.5" − [C − (D+E)/tan ∅] x Slope + (2D+E) x Cross Slope
**	X = 0.5" + (D+E)/tan ∅ x Slope + (D+E) x Cross Slope	X = 0.5" − [C − (D+E)/tan ∅] x Slope + (D+E) x Cross Slope
	Y = 0.5" − [C−E/tan ∅] x Slope + (D+E) x Cross Slope	** Y = 0.5" + (D+E)/tan ∅ x Slope + (D+E) x Cross Slope
	Z = 0.5" − [C − (D+E)/tan ∅] x Slope + (2D+E) x Cross Slope	** Z = 0.5" + (2D+E)/tan ∅ x Slope + (2D+E) x Cross Slope
(iv)	Negative Cross Slope, Left Side Double Bearing	
	W = 0.5" − (D+E)/tan ∅ x Slope − (D+E) x Cross Slope	W = 0.5" − [C + (2D+E)/tan ∅] x Slope − (D+E) x Cross Slope
	X = 0.5" − (D+E)/tan ∅ x Slope − (2D+E) x Cross Slope	X = 0.5" − [C + (2D+E)/tan ∅] x Slope − (2D+E) x Cross Slope
	Y = 0.5" − [C + (2D+E)/tan ∅] x Slope − (2D+E) x Cross Slope	Y = 0.5" − (2D+E)/tan ∅ x Slope − (2D+E) x Cross Slope
	Z = 0.5" − [C + (D+E)/tan ∅] x Slope − (D+E) x Cross Slope	Z = 0.5" − (D+E)/tan ∅ x Slope − (D+E) x Cross Slope

** Could be less than 0.5" for steep slopes. Adjust plate thickness equally at all corners of both left and right side plates to provide a minimum 0.5" thickness.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

INSTRUCTIONS TO DESIGNER (PART 3):

	END 1	END 2
(III)	PLAN VIEW CASE 3:	
(a)	END ELEVATION CONDITION 1 OR 2 (Positive Slope)	
(i)	Positive Cross Slope, Single Bearing & Left Side Double Bearing	
	W = 0.5" + (C) x Slope + (D) x Cross Slope	W = 0.5" + (D) x Cross Slope
	X = 0.5" + (C) x Slope	X = 0.5"
	Y = 0.5"	Y = 0.5" + (C+D/tan ∅) x Slope
**	Z = 0.5" − (D/tan ∅) x Slope + (D) x Cross Slope	Z = 0.5" + (C) x Slope + (D) x Cross Slope
(ii)	Negative Cross Slope, Single Bearing & Right Side Double Bearing	
	W = 0.5" + (C+D/tan ∅) x Slope	W = 0.5"
	X = 0.5" + (C+D/tan ∅) x Slope − (D) x Cross Slope	X = 0.5" − (D) x Cross Slope
	Y = 0.5" − (D/tan ∅) x Slope − (D) x Cross Slope	Y = 0.5" + (C+D/tan ∅) − (D) x Cross Slope
	Z = 0.5"	Z = 0.5" + (C) x Slope
(iii)	Positive Cross Slope, Right Side Double Bearing	
	W = 0.5" + [C − (D+E)/tan ∅] x Slope + (2D+E) x Cross Slope	** W = 0.5" − (D+E)/tan ∅ x Slope + (2D+E) x Cross Slope
	X = 0.5" + [C − (D+E)/tan ∅] x Slope + (D+E) x Cross Slope	** X = 0.5" − (D+E)/tan ∅ x Slope + (D+E) x Cross Slope
**	Y = 0.5" − (D+E)/tan ∅ x Slope + (D+E) x Cross Slope	Y = 0.5" + (C−E/tan ∅] x Slope + (D+E) x Cross Slope
**	Z = 0.5" − (2D+E)/tan ∅ x Slope + (2D+E) x Cross Slope	Z = 0.5" + [C − (D+E)/tan ∅] x Slope + (2D+E) x Cross Slope
(iv)	Negative Cross Slope, Left Side Double Bearing	
	W = 0.5" + [C + (2D+E)/tan ∅] x Slope − (D+E) x Cross Slope	W = 0.5" + (D+E)/tan ∅ x Slope − (D+E) x Cross Slope
	X = 0.5" + [C + (2D+E)/tan ∅] x Slope − (2D+E) x Cross Slope	X = 0.5" + (D+E)/tan ∅ x Slope − (2D+E) x Cross Slope
	Y = 0.5" + (2D+E)/tan ∅ x Slope − (2D+E) x Cross Slope	Y = 0.5" + [C + (2D+E)/tan ∅] x Slope − (2D+E) x Cross Slope
	Z = 0.5" + (D+E)/tan ∅ x Slope − (D+E) x Cross Slope	Z = 0.5" + [C + (D+E)/tan ∅] x Slope − (D+E) x Cross Slope
(b)	END ELEVATION CONDITION 3 (Negative Slope)	
(i)	Positive Cross Slope, Single Bearing & Left Side Double Bearing	
	W = 0.5" + (D) x Cross Slope	W = 0.5" − (C+D/tan ∅) x Slope + (D) x Cross Slope
	X = 0.5"	X = 0.5" − (C+D/tan ∅) x Slope
	Y = 0.5" − (C) x Slope	Y = 0.5"
	Z = 0.5" − [C+D/tan ∅] x Slope + (D) x Cross Slope	Z = 0.5" − (D/tan ∅) x Slope + (D) x Cross Slope
(ii)	Negative Cross Slope, Single Bearing & Right Side Double Bearing	
	W = 0.5"	W = 0.5" − (C) x Slope
	X = 0.5" − (D) x Cross Slope	X = 0.5" − (C) x Slope − (D) x Cross Slope
	Y = 0.5" − (C) x Slope − (D) x Cross Slope	Y = 0.5" + (D/tan ∅) x Slope − (D) x Cross Slope
	Z = 0.5" − (C+D/tan ∅) x Slope	Z = 0.5"
(iii)	Positive Cross Slope, Right Side Double Bearing	
	W = 0.5" − (D+E)/tan ∅ x Slope + (2D+E) x Cross Slope	W = 0.5" − [C + (2D+E)/tan ∅] x Slope + (2D+E) x Cross Slope
	X = 0.5" − (D+E)/tan ∅ x Slope + (D+E) x Cross Slope	X = 0.5" − [C + (2D+E)/tan ∅] x Slope + (D+E) x Cross Slope
	Y = 0.5" − [C + (D+E)/tan ∅] x Slope + (D+E) x Cross Slope	Y = 0.5" − (D+E)/tan ∅ x Slope + (D+E) x Cross Slope
	Z = 0.5" − [C + (2D+E)/tan ∅] x Slope + (2D+E) x Cross Slope	Z = 0.5" − (2D+E)/tan ∅ x Slope + (2D+E) x Cross Slope
(iv)	Negative Cross Slope, Left Side Double Bearing	
**	W = 0.5" + (D+E)/tan ∅ x Slope − (D+E) x Cross Slope	W = 0.5" − [C − (D+E)/tan ∅] x Slope − (D+E) x Cross Slope
**	X = 0.5" + (D+E)/tan ∅ x Slope − (2D+E) x Cross Slope	X = 0.5" − [C − (D+E)/tan ∅] x Slope − (2D+E) x Cross Slope
	Y = 0.5" − [C − (D+E)/tan ∅] x Slope − (2D+E) x Cross Slope	** Y = 0.5" + (2D+E)/tan ∅ x Slope − (2D+E) x Cross Slope
	Z = 0.5" − [C − (E)/tan ∅] x Slope − (D+E) x Cross Slope	** Z = 0.5" + (D+E)/tan ∅ x Slope − (D+E) x Cross Slope

** Could be less than 0.5" for steep slopes. Adjust plate thickness equally at all corners of both left and right side plates to provide a minimum 0.5" thickness.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

BEARING PAD DATA TABLE				Table Date 7-01-09
SPAN NO(s).	BEAM NO(s).	PAD TYPE	BEAM TYPE	BEAM END *

NOTE:
Work this table with Index No. 20510 for Pad Types D, E, F, G, H, J & K, and/or any project specific bearing pads.
* END 1 = Begin Bridge end of beam (Back station).
END 2 = End Bridge end of beam (Ahead station).

INSTRUCTIONS TO DESIGNER:

This table is intended for use with prestressed beam bridges, but may be modified for steel girder or other bridge types.
Supplement the BEARING PAD DATA TABLE with additional columns or notes as required to clearly identify the location and type of bearing pads.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

ESTIMATED BEARING PAD QUANTITIES		Table Date 07-01-09
PAD TYPE	NUMBER REQUIRED	QUANTITY (CF)

BEARING PLATE DATA TABLE

Table Date 7-01-09

GENERAL BEARING PLATE DATA								EMBEDDED PLATE DIMENSIONS (PLATE A) (inches)			BEVELED PLATE REQUIRED (Yes/No)	BEVELED PLATE DIMENSIONS (PLATE B) (inches)					
BRG. PLATE MARK ***	SPAN NO(s).	BEAM NO(s).	PAD TYPE	BEAM END	PLAN VIEW CASE	SLOPE (%) **	ANGLE ∅ *	C	D	C+D/TAN ∅		C	D	C+D/TAN ∅	X	Y	Z

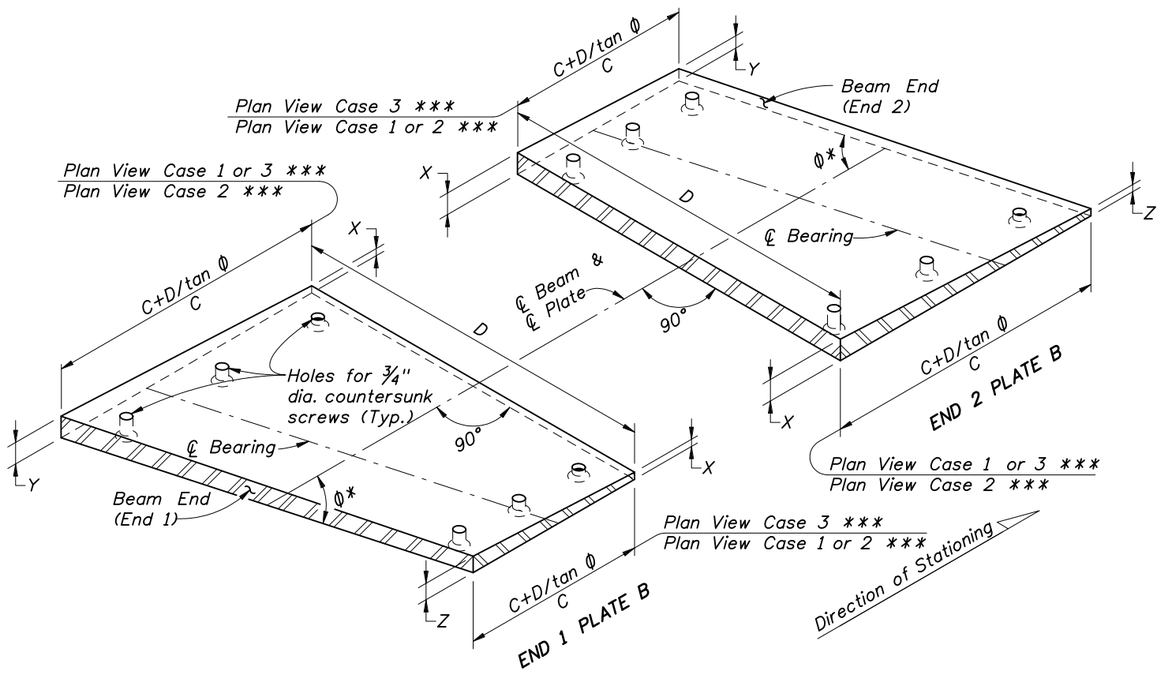
NOTES:

* ∅ = Acute angle (≤ 90°) measured from left or right side of ℄ Beam as required.

** Slope measured along ℄ of Beam at ℄ of Bearing.

*** See "TABLE OF BEAM VARIABLES" and Index No. 20010.

See Index No. 20511 for additional notes and details.



ISOMETRIC VIEW OF BEVELED BEARING PLATES
(SKEWED PLATES SHOWN, NON-SKEWED PLATES SIMILAR)

INSTRUCTIONS TO DESIGNER:

1. Fill in the table to correspond with data on the 'TABLE OF BEAM VARIABLES' using inch units for Beveled Plate dimensions 'X', 'Y' & 'Z' rounded to 1/16th of an inch.
2. Use the following equations to determine the Beveled Plate thicknesses for 'PLAN VIEW CASES' and 'END ELEVATION CONDITIONS' corresponding to those shown on Design Standards Index No. 20010. The Slope parameter in these equations requires decimal units and correct sign convention:

END 1	END 2
(I) PLAN VIEW CASE 1:	
(a) END ELEVATION CONDITION 1 or 2 (Positive Slope)	
X = 0.5" + (C) x Slope	X = 0.500"
Y = Z = 0.500"	Y = Z = 0.5" + (C) x Slope
(b) END ELEVATION CONDITION 3 (Negative Slope)	
X = 0.500"	X = 0.5" − (C) x Slope
Y = Z = 0.5" − (C) x Slope	Y = Z = 0.500"
(II) PLAN VIEW CASE 2:	
(a) END ELEVATION CONDITION 1 or 2 (Positive Slope)	
X = 0.5" + (C + D / tan ∅) x Slope	X = 0.500"
Y = 0.500"	Y = 0.5" + (C) x Slope
Z = 0.5" + (D / tan ∅) x Slope	Z = 0.5" + (C + D / tan ∅) x Slope
(b) END ELEVATION CONDITION 3 (Negative Slope)	
X = 0.500"	X = 0.5" − (C + D / tan ∅) x Slope
Y = 0.5" − (C + D / tan ∅) x Slope	Y = 0.5" − (D / tan ∅) x Slope
Z = 0.5" − (C) x Slope	Z = 0.500"
(III) PLAN VIEW CASE 3:	
(a) END ELEVATION CONDITION 1 or 2 (Positive Slope)	
X = 0.5" + (C + D / tan ∅) x Slope	X = 0.500"
Y = 0.5" + (D / tan ∅) x Slope	Y = 0.5" + (C + D / tan ∅) x Slope
Z = 0.500"	Z = 0.5" + (C) x Slope
(b) END ELEVATION CONDITION 3 (Negative Slope)	
X = 0.500"	X = 0.5" − (C + D / tan ∅) x Slope
Y = 0.5" − (C) x Slope	Y = 0.500"
Z = 0.5" − (C + D / tan ∅) x Slope	Z = 0.5" − (D / tan ∅) x Slope

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

BEARING PLATE DATA TABLE

Table Date 7-01-10

GENERAL BEARING PLATE DATA								EMBEDDED PLATE DIMENSIONS (PLATE A) (inches)		BEVELED PLATE REQUIRED (Yes/No)	BEVELED PLATE DIMENSIONS (PLATE B) (inches)							
BRG. PLATE MARK ***	SPAN NO(s).	BEAM NO(s).	PAD TYPE	BEAM END	PLAN VIEW CASE	SLOPE (%) **	ANGLE Ø *	G	F		C	D	E	F	W	X	Y	Z

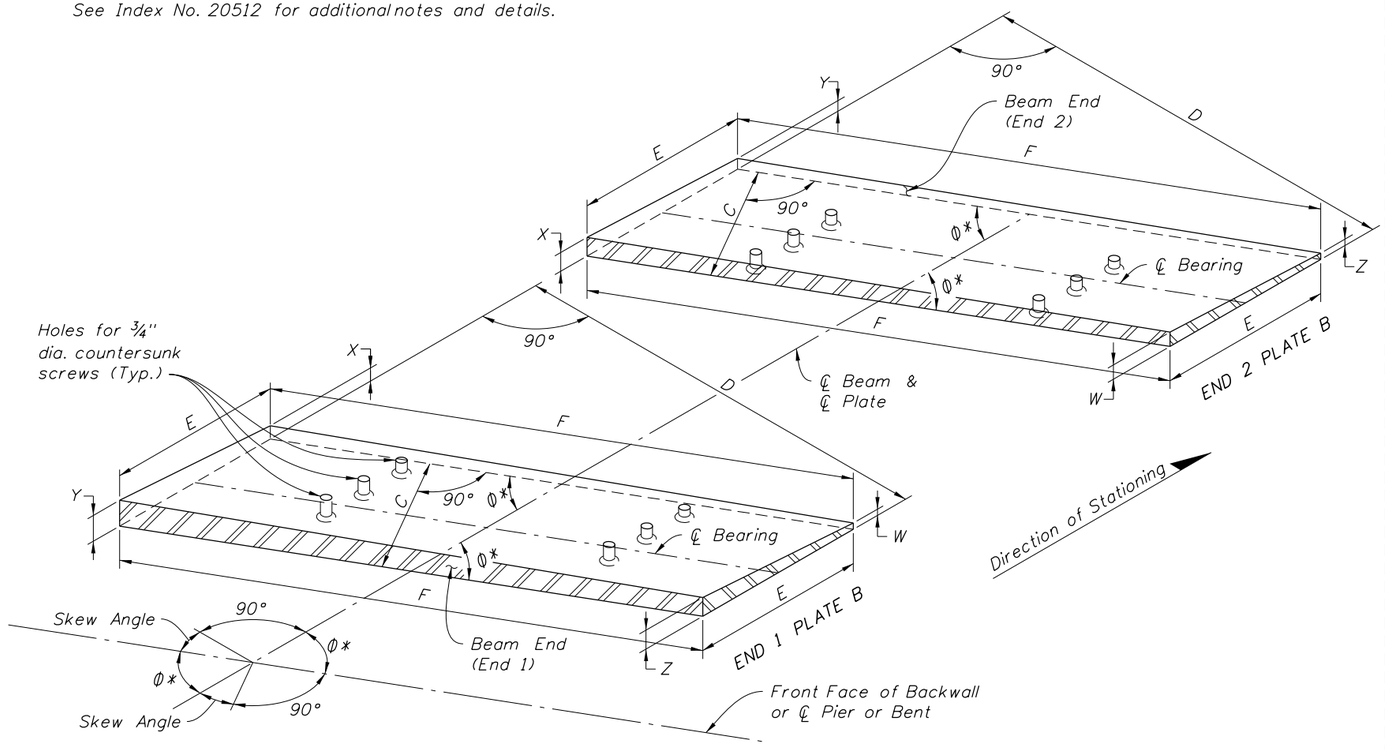
NOTES:

* Ø = Acute angle (= 90°) measured from left or right side of ℄ Beam as required.

** Slope measured along ℄ of Beam at ℄ of Bearing.

*** See "TABLE OF BEAM VARIABLES" and Index No. 20010.

See Index No. 20512 for additional notes and details.



ISOMETRIC VIEW OF BEVELED BEARING PLATES FOR FLORIDA I-BEAMS
(SKEWED PLATES SHOWN, NON-SKEWED PLATES SIMILAR)

INSTRUCTIONS TO DESIGNER:

1. Fill in the table to correspond with data on the 'TABLE OF BEAM VARIABLES' using inch units for Beveled Plate dimensions 'W', 'X', 'Y' & 'Z' rounded to 1/16th of an inch.
2. Use the following equations to determine the Beveled Plate thicknesses for 'PLAN VIEW CASES' and 'END ELEVATION CONDITIONS' corresponding to those shown on Design Standards Index No. 20010. The Slope parameter in these equations requires decimal units and correct sign convention:
3. For all cases and either end:
   E = C/sin Ø For Bearing Pad Type D-K, G = 13½"/sin Ø
   F = D/sin Ø

	END 1	END 2
(I)	PLAN VIEW CASE 1:	
(a)	END ELEVATION CONDITION 1 or 2 (Positive Slope)	
	W = X = 0.5" + (C) x Slope	W = X = 0.5"
	Y = Z = 0.5"	Y = Z = 0.5" + (C) x Slope
(b)	END ELEVATION CONDITION 1 or 3 (Negative Slope)	
	W = X = 0.5"	W = X = 0.5" − (C) x Slope
	Y = Z = 0.5" − (C) x Slope	Y = Z = 0.5"
(II)	PLAN VIEW CASE 2:	
(a)	END ELEVATION CONDITION 1 or 2 (Positive Slope)	
	W = 0.5" + (C/sin Ø + D/tan Ø) x Slope	W = 0.5" + (D/tan Ø) x Slope
	X = 0.5" + (C/sin Ø) x Slope	X = 0.5"
	Y = 0.5"	Y = 0.5" + (C/sin Ø) x Slope
	Z = 0.5" + (D/tan Ø) x Slope	Z = 0.5" + (C/sin Ø + D/tan Ø) x Slope
(b)	END ELEVATION CONDITION 1 or 3 (Negative Slope)	
	W = 0.5"	W = 0.5" − (C/sin Ø) x Slope
	X = 0.5" − (D/tan Ø) x Slope	X = 0.5" − (C/sin Ø + D/tan Ø) x Slope
	Y = 0.5" − (C/sin Ø + D/tan Ø) x Slope	Y = 0.5" − (D/tan Ø) x Slope
	Z = 0.5" − (C/sin Ø) x Slope	Z = 0.5"
(III)	PLAN VIEW CASE 3:	
(a)	END ELEVATION CONDITION 1 or 2 (Positive Slope)	
	W = 0.5" + (C/sin Ø) x Slope	W = 0.5"
	X = 0.5" + (C/sin Ø + D/tan Ø) x Slope	X = 0.5" + (D/tan Ø) x Slope
	Y = 0.5" + (D/tan Ø) x Slope	Y = 0.5" + (C/sin Ø + D/tan Ø) x Slope
	Z = 0.5"	Z = 0.5" + (C/sin Ø) x Slope
(b)	END ELEVATION CONDITION 1 or 3 (Negative Slope)	
	W = 0.5" − (D/tan Ø) x Slope	W = 0.5" − (C/sin Ø + D/tan Ø) x Slope
	X = 0.5"	X = 0.5" − (C/sin Ø) x Slope
	Y = 0.5" − (C/sin Ø) x Slope	Y = 0.5"
	Z = 0.5" − (C/sin Ø + D/tan Ø) x Slope	Z = 0.5" − (D/tan Ø) x Slope

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

INSTRUCTION TO DESIGNER: Change to "PILE ORDER LENGTH (ft.)" for projects without Test Piles

PILE DATA TABLE

Table Date 7-01-10

INSTALLATION CRITERIA								DESIGN CRITERIA							PILE CUT-OFF ELEVATIONS								
PIER or BENT NUMBER	PILE SIZE (in.)	NOMINAL BEARING RESISTANCE (tons)	TENSION RESISTANCE (tons)	MINIMUM TIP ELEVATION (ft.)	TEST PILE LENGTH (ft.)	REQUIRED JET ELEVATION (ft.)	REQUIRED PREFORM ELEVATION (ft.)	FACTORED DESIGN LOAD (tons)	DOWN DRAG (tons)	TOTAL SCOUR RESISTANCE (tons)	NET SCOUR RESISTANCE (tons)	100-YEAR SCOUR ELEVATION (ft.)	LONG TERM SCOUR ELEVATION (ft.)	RESISTANCE FACTOR-Ø	PILE 1	PILE 2	PILE 3	PILE 4	PILE 5	PILE 6	PILE 7	PILE 8	PILE 9

$$\frac{\text{Factored Design Load} + \text{Net Scour Resistance} + \text{Down Drag}}{\emptyset} \leq \text{Nominal Bearing Resistance}$$

TENSION RESISTANCE - The ultimate side friction capacity that must be obtained below the 100 year scour elevation to resist pullout of the pile (Specify only when design requires tension capacity).

TOTAL SCOUR RESISTANCE - An estimate of the ultimate static side friction resistance provided by the scourable soil.

NET SCOUR RESISTANCE - An estimate of the ultimate static side friction resistance provided by the soil from the required preformed or jetting elevation to the scour elevation.

100-YEAR SCOUR ELEVATION - Estimated elevation of scour due to the 100 year storm event.

LONG TERM SCOUR ELEVATION - Estimated elevation of scour used in design for extreme event loading.

PILE INSTALLATION NOTES:

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

Minimum Tip Elevation is required for lateral stability.

When a required jetting elevation is shown, the jet shall be lowered to the elevation and continue to operate at this elevation until the pile driving is completed. If jetting or preforming elevations differ from those shown on the table, the Engineer shall be responsible for determination of the required driving resistance.

No jetting will be allowed without the approval of the Engineer.

The Contractor should not anticipate being allowed to jet piles below the 100-year scour elevation or required jet elevation, whichever is deeper.

At each Bent, pile driving is to commence at the center of the Bent and proceed outward.

EMBEDDED DATA COLLECTOR NOTE:

Provide Embedded Data Collector (EDC) Instrumentation in all piles in accordance with Design Standard Index No. 20602.

INSTRUCTIONS TO DESIGNER:

Modify table and notes as required to accommodate the required number of piles, piers and/or bents, use of Test Piles and EDC instrumentation.

DO NOT INCLUDE THIS "INSTRUCTIONS TO DESIGNER" NOTE IN PLANS

APPROACH SLAB INDEX NO. 20900 TABLE OF DIMENSIONS AND ESTIMATED QUANTITIES

Table Date 7-01-05

LOCATION	DIMENSIONS					ANGLE ∅	REINFORCING STEEL (Lbs.)	CLASS II CONCRETE (C.Y.)
	L 1	L 2	M1	M2	N			

Dimension and Quantity Notes:

Dimensions 'L 1' & 'L 2' are measured along gutter line, inside face of parapet or inside face of railing on raised sidewalks.
Dimensions 'L 1' & 'L 2' are arc dimensions within curved alignments.

Quantities shown are for one Approach Slab and where applicable, raised sidewalks. Quantities do not include items placed on the slab such as Traffic Railing, Pedestrian/Bicycle Railings or Traffic Separators.

For Traffic Railing, Pedestrian/Bicycle Railing and Traffic Separator Quantities see Bid Item List.

APPROACH SLAB INDEX NO. 20910 TABLE OF DIMENSIONS AND ESTIMATED QUANTITIES								Table Date 7-01-05
LOCATION	DIMENSIONS					ANGLE Ø	REINFORCING STEEL (Lbs.)	CLASS II CONCRETE (C.Y.)
	L 1	L 2	M1	M2	N			

Dimension and Quantity Notes:

Dimensions 'L 1'& 'L 2'are measured along gutter line, inside face of parapet or inside face of railing on raised sidewalks.
Dimensions 'L 1'& 'L 2'are arc dimensions within curved alignments.

Quantities shown are for one Approach Slab and where applicable, raised sidewalks. Quantities do not include items placed on the slab such as Traffic Railing, Pedestrian/Bicycle Railings or Traffic Separators.

For Traffic Railing, Pedestrian/Bicycle Railing and Traffic Separator Quantities see Bid Item List.

STRIP SEAL EXPANSION JOINT DATA TABLE INDEX NO. 21100								Table Date 7-01-09
LOCATION	TOTAL DESIGN MOVEMENT			MOVEMENT ANGLE α	SKEW ANGLE		DIM. "A" @ 70°F	DIM. "A" ADJUSTMENT PER 10°F
	IN DIRECTION OF MOVEMENT	PERPENDICULAR TO ℄ JOINT	PARALLEL TO ℄ JOINT		LEFT SIDE	RIGHT SIDE		

NOTE:
Dim. "A" adjustment per 10°F shown is measured perpendicular to ℄ Expansion Joint. For theoretical direction of movement, see Index No. 21100, Sheet 2 of 3.

INSTRUCTIONS TO DESIGNER:

1. Total Design Movement shall be the factored movement.

2. Dimension "A" @ 70°F is normally set at 2" to accommodate installation of the neoprene seal and a total design movement up to 3". The designer should adjust Dimension "A" when necessary to account for skews or greater design movement with the following considerations:
   (a) the minimum joint opening in the direction of movement is ½" for the factored movement;
   (b) the maximum joint opening in the direction of travel is 4" for the factored movement;

3. Dimension "A" Adjustments for 10°F shall be based on the unfactored movements.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

POURED EXPANSION JOINT DATA TABLE INDEX NO. 21110			Table Date 1-01-09
LOCATION	DIM. "A" @ 70°F	TOTAL DESIGN MOVEMENT	DIM. "A" ADJUSTMENT PER 10°F
NOTE: Dim. "A" adjustment per 10°F shown is measured perpendicular to ℄ Expansion Joint. Work this table with Design Standards Index No. 21110.			

INSTRUCTIONS TO DESIGNER:

1. Total Design Movement shall be the factored movement.

2. Dimension "A" @ 70°F is normally set at 2" for a total design movement up to 2" for non-skewed joints. The designer may reduce Dimension "A" when necessary to account for skews or smaller design movement with the following considerations:
   (a) the design joint opening (Dimension "A") should not be less than twice the joint contraction;
   (b) the minimum joint opening in the direction of movement is ½" for the factored movement;
   (c) the maximum joint opening in the direction of travel is 3" for the factored movement;
   (d) the minimum joint opening recommended by manufacturers at the time of installation is 1".

3. Dimension "A" Adjustments for 10°F shall be based on the unfactored movements.

PLEASE DELETE THIS NOTE UPON COMPLETION OF THIS DRAWING

ESTIMATED BILL OF MATERIALS FENDER SYSTEM - HEAVY DUTY DESIGN STANDARDS INDEX NO. 21910			Table Date 01-01-06
MARK	NO. REQ'D.	UNIT	QUANTITY
A1		MB	
A2		MB	
A3		MB	
A4		MB	
A5		MB	
A6		MB	
B		MB	
C		MB	
D		MB	
* E		MB	
F1		MB	
F2		MB	
F3		MB	
F4		MB	
F5		MB	
F6		MB	
G1		MB	
G2		MB	
H1		MB	
H2		MB	

NOTE: For Member Marks, Sizes and Dimensions see Design Standards Index No. 21910, Sheet 5.

Bill of Materials Table above is for an entire fender system (left and right fenders).

* Provide 2'-6" wide Fiberglass Open Grating for full length of fender in lieu of 2" X 12" Plastic Lumber when called for in Plans. Provide Stainless Steel Mounting Hardware and install per Manufacturer's recommendations. See Index Nos. 21900 & 21910 for notes. Include the cost of Fiberglass Open Grating and miscellaneous items required to install the grating in the price for Plastic Marine Lumber (Non-Reinforced).

INSTRUCTIONS TO DESIGNER:

One Bill of Materials Table, one Fender System Table of Variables and one Estimated Quantities Block is required for each Fender System location within a project. The Designer shall clearly note which Fender System the Tables and Blocks are applicable to. Include quantity for Composite Marine Lumber 10" X 10" Wales Mark A under Pay Item for Plastic Marine Lumber (Reinforced). Include quantity for all other Plastic Lumber under Pay Item for Plastic Marine Lumber (Non-Reinforced).

See the "Structures Design Guidelines" for instructions for determining Minimum Pile Tip Elevations and Pile Lengths.

DO NOT INCLUDE THIS "INSTRUCTIONS TO DESIGNER" NOTE IN PLANS

FENDER SYSTEM TABLE OF VARIABLES INDEX NO. 21910		Table Date 01-01-06
CONTROL POINTS	STATION	OFFSET Lt. or Rt.
A		
B		
C		
D		
DIMENSION "L"		
CLEAR CHANNEL WIDTH		
CHANNEL SKEW ANGLE		
MHW or NHW ELEVATION		
MLW or NLW ELEVATION		
PILE CUTOFF ELEVATION		
MINIMUM PILE TIP ELEVATION LEFT FENDER		
PILE LENGTH LEFT FENDER		
MINIMUM PILE TIP ELEVATION RIGHT FENDER		
PILE LENGTH RIGHT FENDER		
NUMBER OF WALE ROWS		

NOTE: Work this Table with Design Standards Index Nos. 21900 and 21910.

ESTIMATED QUANTITIES, INDEX NO. 21910		Table Date 01-01-06
MARK	UNIT	QUANTITY
Plastic Marine Lumber (Reinforced)	MB	
Plastic Marine Lumber (Non-Reinforced)	MB	
Plastic Marine Composite Piles 16" ϕ	LF	

NOTE: Estimated Quantities are for one entire fender system (left and right fenders).

ESTIMATED BILL OF MATERIALS FENDER SYSTEM - MEDIUM DUTY DESIGN STANDARDS INDEX NO. 21920			Table Date 01-01-06
MARK	NO. REQ'D.	UNIT	QUANTITY
A1		MB	
A2		MB	
A3		MB	
A4		MB	
A5		MB	
A6		MB	
B		MB	
C		MB	
D		MB	
* E		MB	
F1		MB	
F2		MB	
F3		MB	
F4		MB	
F5		MB	
F6		MB	
G1		MB	
G2		MB	
H1		MB	
H2		MB	

NOTE: For Member Marks, Sizes and Dimensions see Design Standards Index No. 21920, Sheet 5.

Bill of Materials Table above is for an entire fender system (left and right fenders).

* Provide 2'-6" wide Fiberglass Open Grating for full length of fender in lieu of 2" X 12" Plastic Lumber when called for in Plans. Provide Stainless Steel Mounting Hardware and install per Manufacturer's recommendations. See Index Nos. 21900 & 21920 for notes. Include the cost of Fiberglass Open Grating and miscellaneous items required to install the grating in the price for Plastic Marine Lumber (Non-Reinforced).

INSTRUCTIONS TO DESIGNER:

One Bill of Materials Table, one Fender System Table of Variables and one Estimated Quantities Block is required for each Fender System location within a project. The Designer shall clearly note which Fender System the Tables and Blocks are applicable to. Include quantity for Composite Marine Lumber 10" X 10" Wales Mark A under Pay Item for Plastic Marine Lumber (Reinforced). Include quantity for all other Plastic Lumber under Pay Item for Plastic Marine Lumber (Non-Reinforced).

See the "Structures Design Guidelines" for instructions for determining Minimum Pile Tip Elevations and Pile Lengths.

DO NOT INCLUDE THIS "INSTRUCTIONS TO DESIGNER" NOTE IN PLANS

FENDER SYSTEM TABLE OF VARIABLES INDEX NO. 21920		Table Date 01-01-06
CONTROL POINTS	STATION	OFFSET Lt. or Rt.
A		
B		
C		
D		
DIMENSION "L"		
CLEAR CHANNEL WIDTH		
CHANNEL SKEW ANGLE		
MHW or NHW ELEVATION		
MLW or NLW ELEVATION		
PILE CUTOFF ELEVATION		
MINIMUM PILE TIP ELEVATION LEFT FENDER		
PILE LENGTH LEFT FENDER		
MINIMUM PILE TIP ELEVATION RIGHT FENDER		
PILE LENGTH RIGHT FENDER		
NUMBER OF WALE ROWS		

NOTE: Work this Table with Design Standards Index Nos. 21900 and 21920.

ESTIMATED QUANTITIES, INDEX NO. 21920		Table Date 01-01-06
MARK	UNIT	QUANTITY
Plastic Marine Lumber (Reinforced)	MB	
Plastic Marine Lumber (Non-Reinforced)	MB	
Plastic Marine Composite Piles 16" Ø	LF	

NOTE: Estimated Quantities are for one entire fender system (left and right fenders).

ESTIMATED BILL OF MATERIALS FENDER SYSTEM - LIGHT DUTY DESIGN STANDARDS INDEX NO. 21930			Table Date 01-01-06
MARK	NO. REQ'D.	UNIT	QUANTITY
A1		MB	
A2		MB	
A3		MB	
A4		MB	
A5		MB	
A6		MB	
B		MB	
C		MB	
D		MB	
* E		MB	
F1		MB	
F2		MB	
F3		MB	
F4		MB	
F5		MB	
F6		MB	
G1		MB	
G2		MB	
H1		MB	
H2		MB	

NOTE: For Member Marks, Sizes and Dimensions see Design Standards Index No. 21930, Sheet 5.

Bill of Materials Table above is for an entire fender system (left and right fenders).

* Provide 2'-6" wide Fiberglass Open Grating for full length of fender in lieu of 2" X 12" Plastic Lumber when called for in Plans. Provide Stainless Steel Mounting Hardware and install per Manufacturer's recommendations. See Index Nos. 21900 & 21930 for notes. Include the cost of Fiberglass Open Grating and miscellaneous items required to install the grating in the price for Plastic Marine Lumber (Non-Reinforced).

INSTRUCTIONS TO DESIGNER:

One Bill of Materials Table, one Fender System Table of Variables and one Estimated Quantities Block is required for each Fender System location within a project. The Designer shall clearly note which Fender System the Tables and Blocks are applicable to. Include quantity for Composite Marine Lumber 10" X 10" Wales Mark A under Pay Item for Plastic Marine Lumber (Reinforced). Include quantity for all other Plastic Lumber under Pay Item for Plastic Marine Lumber (Non-Reinforced).

See the "Structures Design Guidelines" for instructions for determining Minimum Pile Tip Elevations and Pile Lengths.

DO NOT INCLUDE THIS "INSTRUCTIONS TO DESIGNER" NOTE IN PLANS

FENDER SYSTEM TABLE OF VARIABLES INDEX NO. 21930			Table Date 01-01-06
CONTROL POINTS	STATION	OFFSET Lt. or Rt.	
A			
B			
C			
D			
DIMENSION "L"			
CLEAR CHANNEL WIDTH			
CHANNEL SKEW ANGLE			
MHW or NHW ELEVATION			
MLW or NLW ELEVATION			
PILE CUTOFF ELEVATION			
MINIMUM PILE TIP ELEVATION LEFT FENDER			
PILE LENGTH LEFT FENDER			
MINIMUM PILE TIP ELEVATION RIGHT FENDER			
PILE LENGTH RIGHT FENDER			
NUMBER OF WALE ROWS			

NOTE: Work this Table with Design Standards Index Nos. 21900 and 21930.

ESTIMATED QUANTITIES, INDEX NO. 21930		Table Date 01-01-06
MARK	UNIT	QUANTITY
Plastic Marine Lumber (Reinforced)	MB	
Plastic Marine Lumber (Non-Reinforced)	MB	
14" Sq. Prestressed Concrete piles	LF	

NOTE: Estimated Quantities are for one entire fender system (left and right fenders).