



FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

PREFACE

The "Drawings" in this document were produced with the use of Computer Aided Design and Drafting equipment, and depict common structural components or elements suitable for standardization. Whenever possible the drawings were developed to full completion and are ready for Insertion in the Contract Documents. These fully developed drawings are referred to as "Standard Drawings" and are easily recognized by referring to their Index Numbers, which in this case consist of numerical symbols only.

Besides fully developed "Standard Drawings", this document also contains two (2) other types of drawings. The first type provides Incomplete standard details and/or a table of variables, that should be completed by the designer prior to Inclusion of the drawing in the Contract Documents. These Incomplete drawings are referred to as "Semi-Standard Drawings" and their Index Numbers are preceded by the letter "S".

The Index Numbers for the remaining drawings are preceded by the letter "I". These drawings provide information or instructions to designers and shall not be included in the Contract Documents.

The Engineer of Record (EOR) for a "Standard Drawing" is already shown in the portion of the title block which has been executed. He/She will continue to be the EOR for as long as the drawing(s) remain unaltered. The designer shall complete the remaining portion of the title block; however, completion of the title block is not deemed to be a drawing alteration.

The Engineer of Record for a "Semi-Standard Drawing Is the Professional Engineer responsible for the completion of the drawing.

In the event that a designer decides to alter the content of a "Standard Drawing" to suit a particular design, the designer may do one of the following:


1. Produce a new project specific drawing using the "Standard Drawing" as a guide.
2. Delete the name of the EOR and the Index Number, and modify the details/notes in the "Standard Drawing" as required. In this event, the "Standard Drawing" ceases to be a standard and the engineer responsible for the modifications to the "Standard Drawing" becomes the EOR for the modified drawing.
3. If the required modifications are minor, show the modifications on a separate sheet. In this case cross-reference notes shall be provided on the "Standard Drawing" and on the sheet that shows the modifications, and "MOD." (Modified) shall be added to the Index Number.

It should be clearly understood that if modifications to the "Standard Drawings" are required, the work shall be performed under the direct supervision of a Professional Engineer, who then becomes responsible for the altered design.

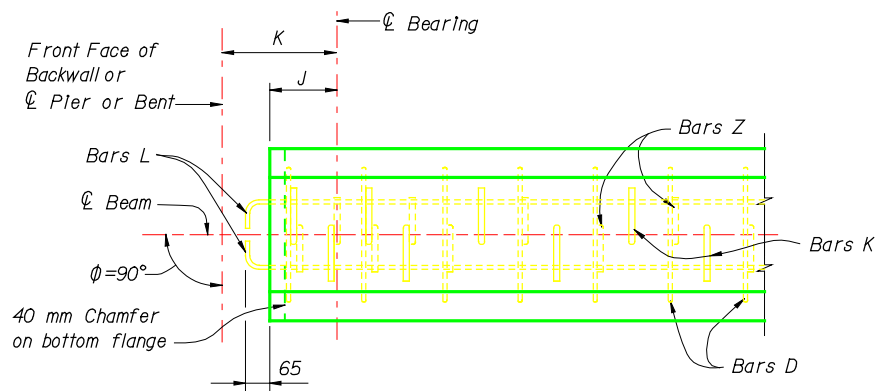
Again, it must be emphasized that "Standard Drawings" are sheets that require no further work and development; however, the subject treated by the standard might require additional details that have to be prepared by the designer. For example, the user of Indices 300 thru 311 (Bents for Detour Bridge) should prepare additional drawing(s) showing the bridge Plan and Elevation, and other details necessary for its construction; likewise, the user of Indices 800 thru 822 (Retaining Walls), and/or Indices 510, 511 (Navigation Lights) or 512 (Maintenance Lighting for Box Girders) should prepare additional drawing(s) in order to convey clearly the full extent of the proposed work.

Some drawings include information for the designer, that should be erased as instructed, before the drawings are incorporated in the set of construction plans.

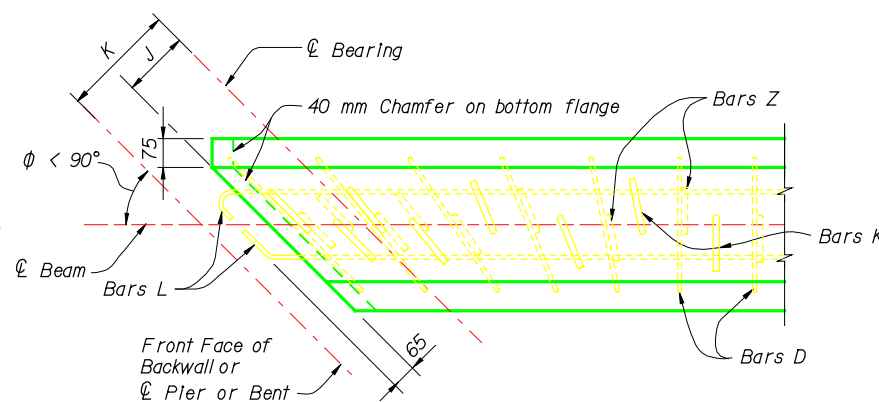
The number indicates the year.
If the letter "R" is added, the
drawing issued the previous year
was revised.

<div>REVISIONS</div> <table><thead><tr><th>DATE</th><th>BY</th><th>DESCRIPTION</th></tr></thead><tbody><tr><td>98</td><td></td><td></td></tr></tbody></table>			DATE	BY	DESCRIPTION	98			<table><tr><td>DRAWN BY</td><td></td><td></td></tr><tr><td>CHECKED BY</td><td></td><td></td></tr><tr><td>DESIGNED BY</td><td></td><td></td></tr><tr><td>CHECKED BY</td><td></td><td></td></tr><tr><td>APPROVED BY</td><td colspan="2">AJG</td></tr></table>	DRAWN BY			CHECKED BY			DESIGNED BY			CHECKED BY			APPROVED BY	AJG		<table><tr><td>NAMES</td><td>DATES</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>	NAMES	DATES									ENGINEER OF RECORD.	LOGO.	<div><div></div><div>FLORIDA DEPARTMENT OF TRANSPORTATION</div><div>STRUCTURES DESIGN OFFICE</div></div> <table><tr><td>ROAD NO.</td><td>COUNTY</td><td>PROJECT NO.</td></tr><tr><td></td><td></td><td></td></tr></table>	ROAD NO.	COUNTY	PROJECT NO.				<table><tr><td>SHEET TITLE:</td><td>DRAWING NO.</td></tr><tr><td>PREFACE</td><td>1 of 1</td></tr><tr><td>PROJECT NAME:</td><td>INDEX NO.</td></tr><tr><td></td><td>1-001</td></tr></table>	SHEET TITLE:	DRAWING NO.	PREFACE	1 of 1	PROJECT NAME:	INDEX NO.		1-001
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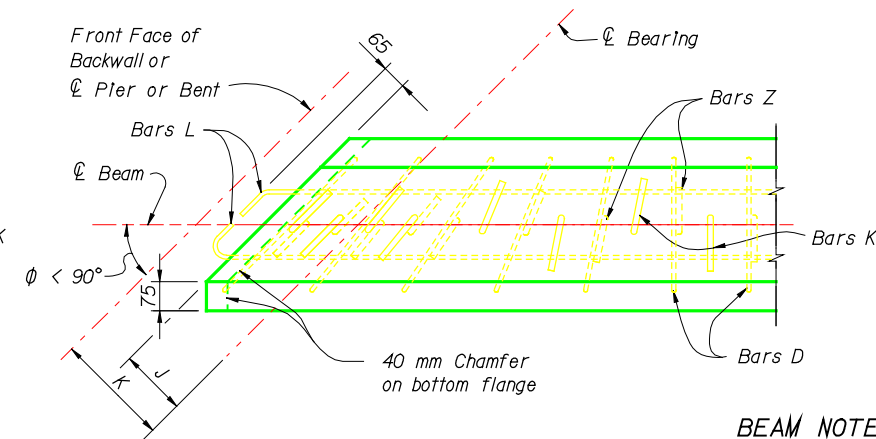
CASE 1



CASE 2

(See Note)

PLAN ENDS OF BEAMS



CASE 3

(See Note)

BEAM NOTES

MORTAR LEAKAGE: Any mortar leakage that occurs and stains resulting from leakage shall be removed so that beams have a uniform appearance.

STRANDS: At the option of the Contractor, other types, sizes and/or configurations of strands may be used in lieu of the stranding shown on these sheets. Calculations shall be submitted showing the substitution meets the following requirements:

1. The strands meet all the requirements of ASTM A416/A416M for the grade of strands proposed.
2. The net compressive stress in the concrete due to prestressing acting alone, after all losses, is not less than that provided by the stranding shown on these sheets.
3. The ultimate strength of the structure with the proposed stranding is not less than the ultimate strength of the original design.
4. The proposed stranding complies in all respects with the Department's Structures Design Guidelines.

FINISH: The top surface of the beam shall be rough floated and then scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding. All beams shall receive a Class 3 surface finish.

SUBMITTALS: The Specifications stipulate the conditions for which Shop Drawings are not required. If each and every condition cannot be met, then a formal Shop Drawing submittal is required. Supplemental reinforcing provided by the Contractor to facilitate fabrication of prestressed beams do not require Shop Drawings.

STRAND DETENSIONING: Strand detensioning shall be based upon the following priority, from first to last:

1. Top dormant strands (Bars N)
2. Fully bonded strands
3. Partially debonded (shilded) strands

FORMS AND PALLETS: All beams shall be cast on concrete based pallets and in metal forms.

HANDLING: In the handling of beams, they must be maintained in an upright position at all times and must be picked up from points located a maximum distance of 1,000 m from the ends of the beam.

STORAGE AND TRANSPORTATION: Beams shall be stored on adequate dunnage and supported during transit within 500 mm from ends of beam.

STRAND EXTENSION: All strands shall extend 65 mm beyond ends of beams.

CONCRETE: Refer to Table of Beam Variables sheets for the class of concrete, 28-day strength (f'c) and cylinder strength at transfer of the tensioning load (f'ci).

REINFORCING STEEL: All reinforcing steel shall be ASTM A615M-96, Grade 420.

BEARING PADS: The cost of installing bearing pads shall be included in the contract unit price of prestressed beams.

MISCELLANEOUS: The cost of Inserts for diaphragm tie bars shall be included in the contract unit prices for prestressed beams.

NOTES: Work this sheet with Individual beam sheets, Type II, III and IV only. See "TABLE OF BEAM VARIABLES" sheets for angle "φ" and Dimensions "J", "K", "L" and "P" (S-119).

For beams with vertically bevelled ends, such as conditions 2 & 3, the first two Bar K shall be placed parallel to the end bevel. Adjacent Bars Z and K shall be placed so as to transition from the end bevel to a vertical axis. The spacing of Bars K and Z shown shall apply along the top flange of the beam and the spacing along the bottom of the beam shall be adjusted by not more than 15 mm (±) until the vertical position is attained.

All dimensions are in millimeters (mm), except as noted.

TABLE OF DIMENSIONS M	
BEAM TYPE	DIMENSION M
II	50 mm
III	65 mm
IV	75 mm

NOTES:

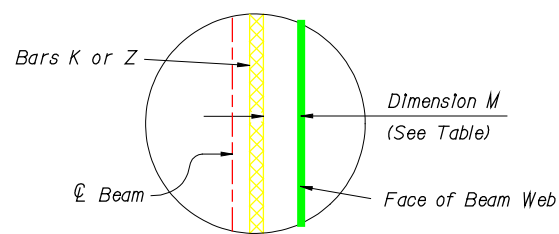
For both Plan Views Case 2 and Case 3, the first two Bars Z and K shall be placed parallel to the skewed end of the Beam. The remainder of the Bars Z & K shall be placed so as to transition from the skewed end to an axis perpendicular to the centerline of the beam. Bars D in the bottom flange shall be rotated along with Bars Z & K. Bar spacing may not agree with Beam Sheets.

End of Beam Bearing Dimensions "J" and "K" are measured along the Bottom of the Beam.

Insert shall be 25.4 mm φ, zinc-electroplated, ferrule wing nut, UNC threads, 7.8 mm φ min. wire, not more than 100 mm in depth and shall have a minimum ultimate tensile strength of 50.7 kN in 28 MPa concrete.

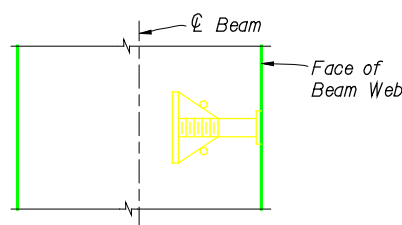
If Inserts are needed on both sides of web an assembly as long as the thickness of the web, consisting of two (2) Ferrule Inserts attached by two (2) or more struts may be utilized. The connecting struts shall have a minimum ultimate tensile strength of 50.7 kN.

*" If slope is equal to or less than 2%, see Index S-200. If grade exceeds 2% provide either bevelled plates or notches at beam ends to normalize loads to pedestals.



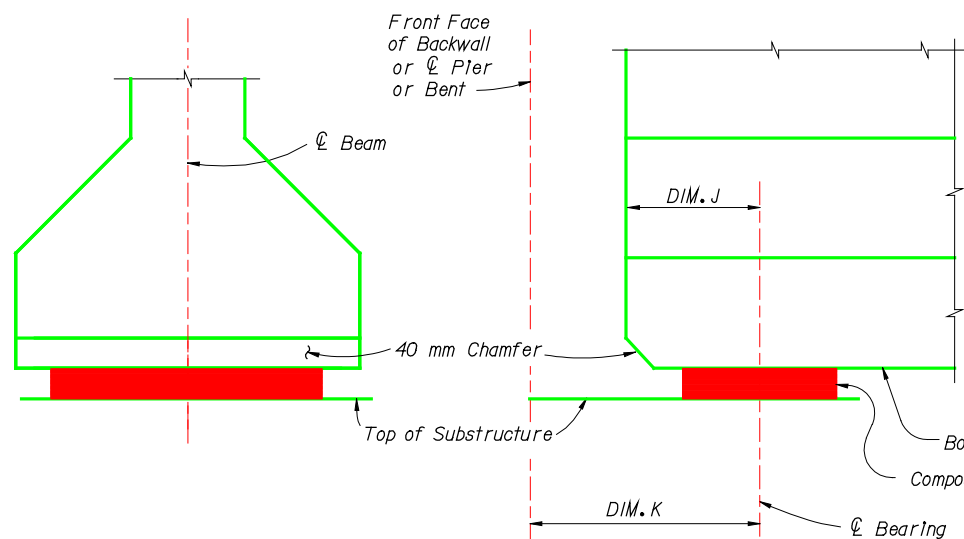
SECTION THRU BEAM WEB

(Showing Concrete Cover)



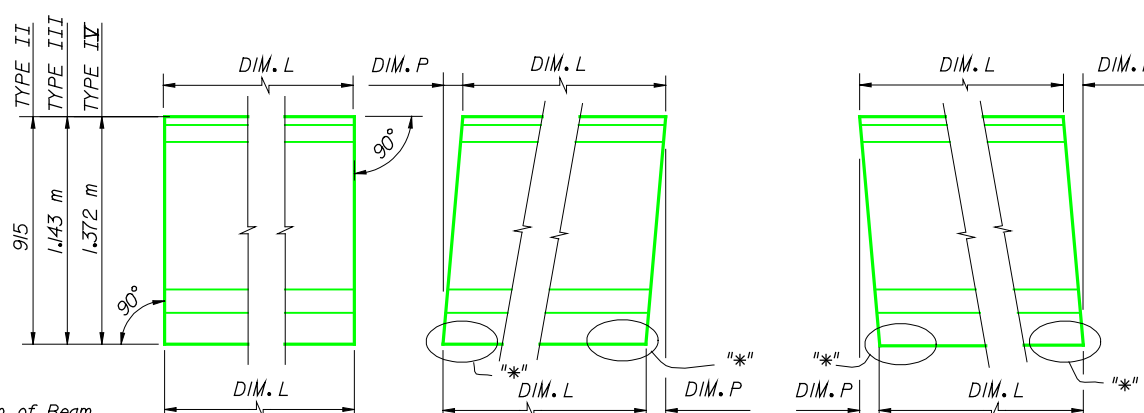
SECTION THRU BEAM WEB AT INSERT FOR DIAPHRAGM REINFORCING

(When Intermediate Diaphragms are Required)



END ELEVATION
(Perpendicular to Beam)

SIDE ELEVATION
(Perpendicular to Beam)



CONDITION 1
(P = 0.0 mm)

CONDITION 2

CONDITION 3

END ELEVATIONS OF BEAMS

(Showing Vertical Bevel of Beam End)

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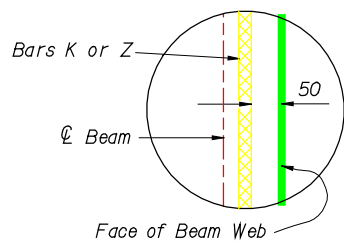
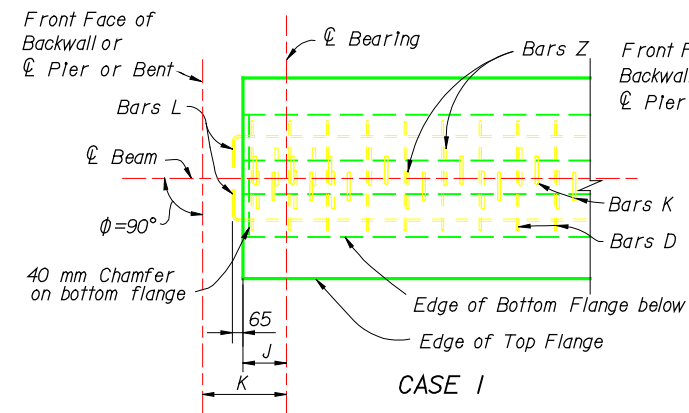
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APPROVED BY	REN	

ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

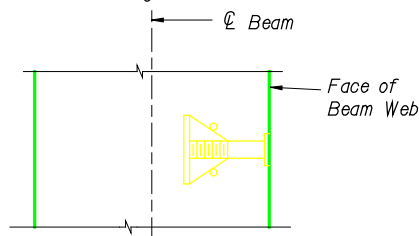
LOGO:
FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.

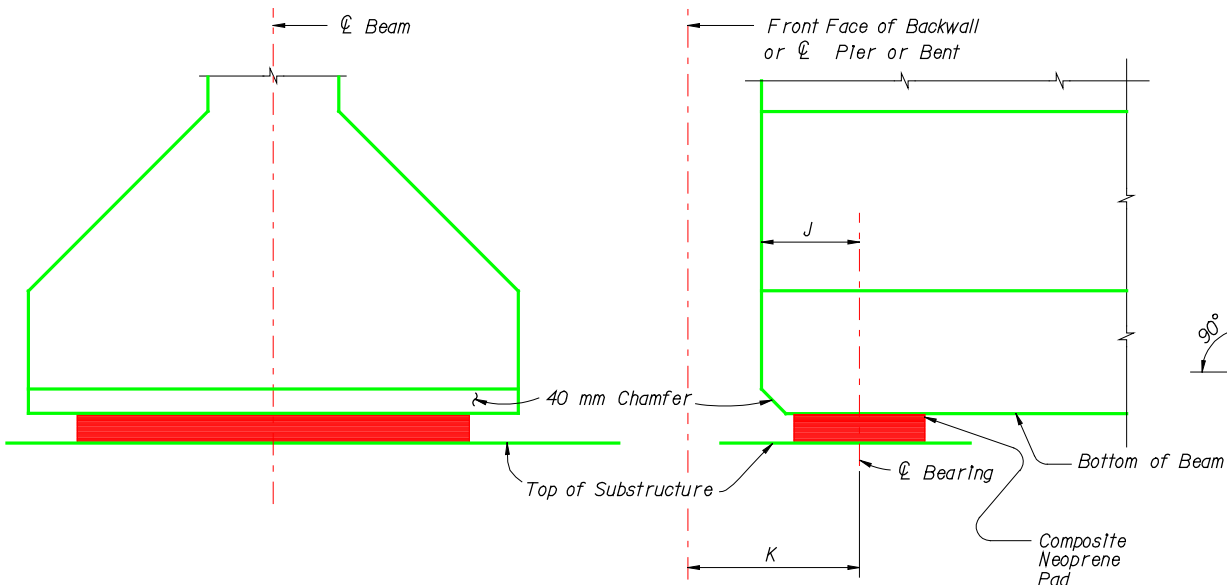
SHEET TITLE:		DRAWING NO.
TYPICAL NOTES AND DETAILS FOR AASHTO TYPE II, III AND IV PRESTRESSED BEAMS		1 of 1
PROJECT NAME:		INDEX NO.
		100



SECTION THRU BEAM WEB
(Showing Concrete Cover)



SECTION THRU BEAM WEB AT
INSERT FOR DIAPHRAGM REINFORCING
(When Intermediate Diaphragms are Required)



END ELEVATION
(Perpendicular to Beam)

SIDE ELEVATION
(Perpendicular to Bearing)

NOTES:

For both Plan Views Case 2 and Case 3, the first two Bars Z and K shall be placed parallel to the skewed end of the Beam. The remainder of the Bars Z & K shall be placed so as to transition from the skewed end to an axis perpendicular to the centerline of the beam. Bars D in the bottom flange shall be rotated along with Bars Z & K. Bar spacing may not agree with Beam Sheets. Bars M shall be placed the same as Bars Z and K.

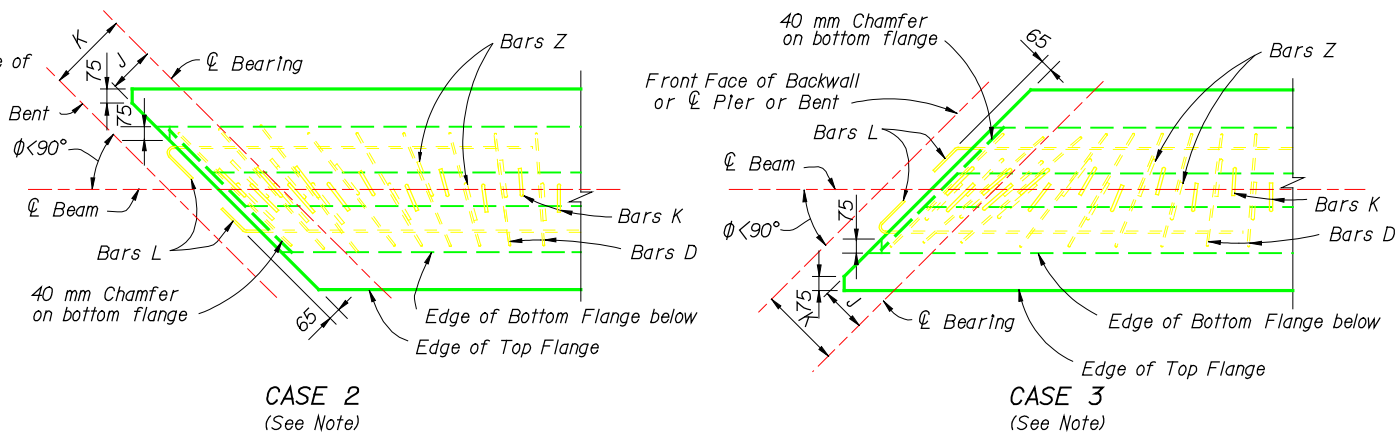
End of Beam Bearing Dimensions "J" and "K" are measured along the Bottom of the Beam.

Insert shall be 25.4 mm ϕ , zinc-electroplated, ferrule wing nut, UNC threads, 7.8 mm ϕ minimum wire, not more than 100 mm in depth and shall have a minimum ultimate tensile strength of 50.7 kN in 28 MPa concrete.

If Inserts are needed on both sides of web an assembly as long as the thickness of the web, consisting of two (2) ferrul Inserts attached by two (2) or more struts may be utilized. The connecting struts shall have a minimum ultimate tensile strength of 50.7 kN.

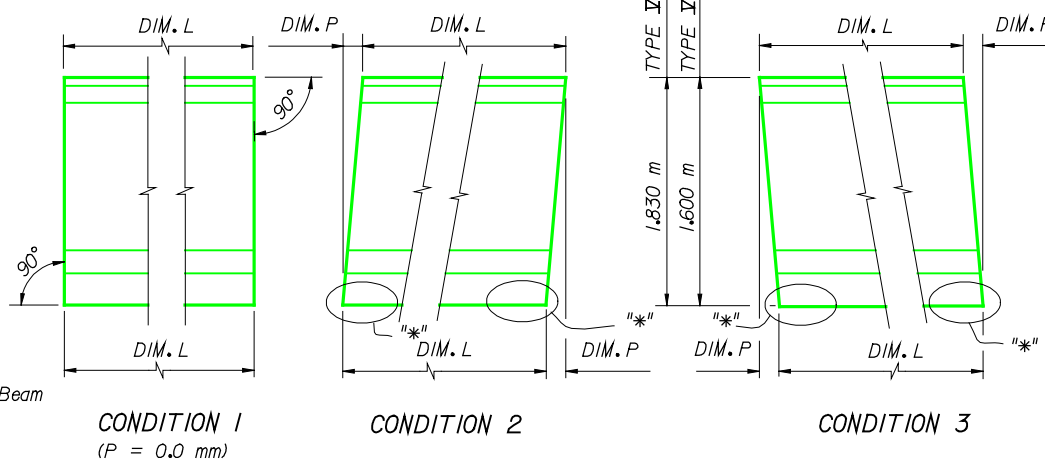
*If slope is equal to or less than 2%, see Index S-200.

If grade exceeds 2%, provide either bevelled plates or notches at beam ends to normalize loads to pedestals.



PLAN ENDS OF BEAMS

(Bars M in top flange omitted for clarity.)



END ELEVATIONS OF BEAMS
(Showing Vertical Bevel of Beam End)

BEAM NOTES

MORTAR LEAKAGE: Any mortar leakage that occurs and stains resulting from leakage shall be removed so that beams have a uniform appearance.

STRANDS: At the option of the Contractor, other types, sizes and/or configurations of strands may be used in lieu of the stranding shown on these sheets. Calculations shall be submitted showing the substitution meets the following requirements:

1. The strands meet all the requirements of ASTM A416/A416M of strands proposed.
2. The net compressive stress in the concrete due to prestressing acting alone, after all losses, is not less than that provided by the stranding shown on these sheets.
3. The ultimate strength of the structure with the proposed stranding is not less than the ultimate strength of the original design.
4. The proposed stranding complies in all respects with the Department's Structures Design Guidelines.

FINISH: The top surface of the beam shall be rough floated and then scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding. All beams shall receive a Class 3 surface finish.

SUBMITTALS: The Specifications stipulate the conditions for which Shop Drawings are not required. If each and every condition cannot be met, then a formal Shop Drawing submittal is required. Supplemental reinforcing provided by the Contractor to facilitate fabrication of prestressed beams do not require Shop Drawings.

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HANDLING: In the handling of beams, they must be maintained in an upright position at all times and must be picked up from points located a maximum distance of 1,000 m from the ends of the beam.

STORAGE AND TRANSPORTATION: Beams shall be stored on adequate dunnage and supported during transit within 500 mm from ends of beam.

STRAND EXTENSION: All strands shall extend 65 mm beyond ends of beams.

CONCRETE: Refer to Table of Beam Variables Sheets for the class of concrete, 28-day strength (f'c) and cylinder strength at transfer of the tensioning load (f'ci).

REINFORCING STEEL: All reinforcing steel shall be ASTM A615M-96, Grade 420.

BEARING PADS: The cost of installing bearing pads shall be included in the contract unit price of prestressed beams.

MISCELLANEOUS: The cost of Inserts for diaphragm tie bars shall be included in the contract unit prices for prestressed beams.

NOTES: Work this sheet with Individual beam sheets, Type V and VI only.

See "TABLE OF BEAM VARIABLES" Sheets for angle "phi"s and dimensions "J", "K", "L" and "P" (S-119).

For beams with vertically bevelled ends, such as conditions 2 & 3, the first two Bar K shall be placed parallel to the end bevel. Adjacent Bars Z and K shall be placed so as to transition from an axis parallel to the end bevel to a vertical axis. The spacing of Bars K and Z shown shall apply along the top flange of the beam and the spacing along the bottom of the beam shall be adjusted by not more than 15 mm (\pm) until the vertical position is attained.

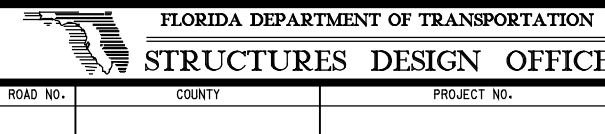
All dimensions are in millimeters (mm), except as noted.

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD,
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO.



SHEET TITLE:
**TYPICAL NOTES AND DETAILS FOR AASHTO
TYPE V AND VI PRESTRESSED BEAMS**

PROJECT NAME:

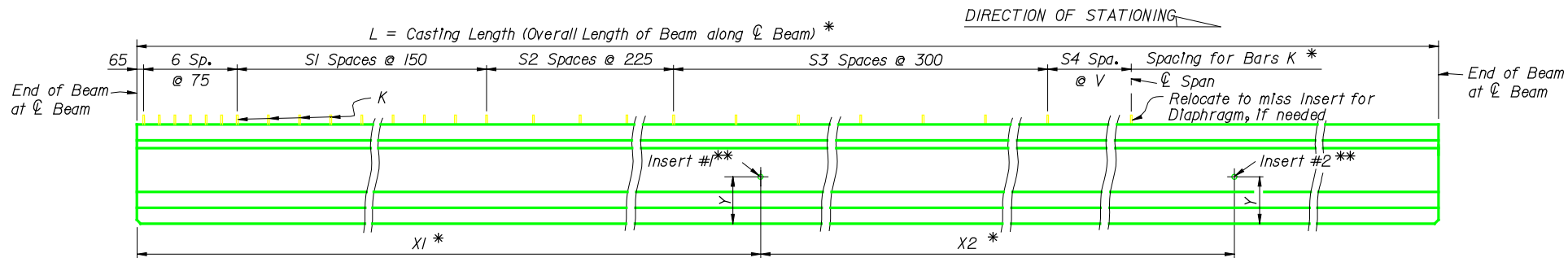
DRAWING NO.

1 of 1

INDEX NO.

101

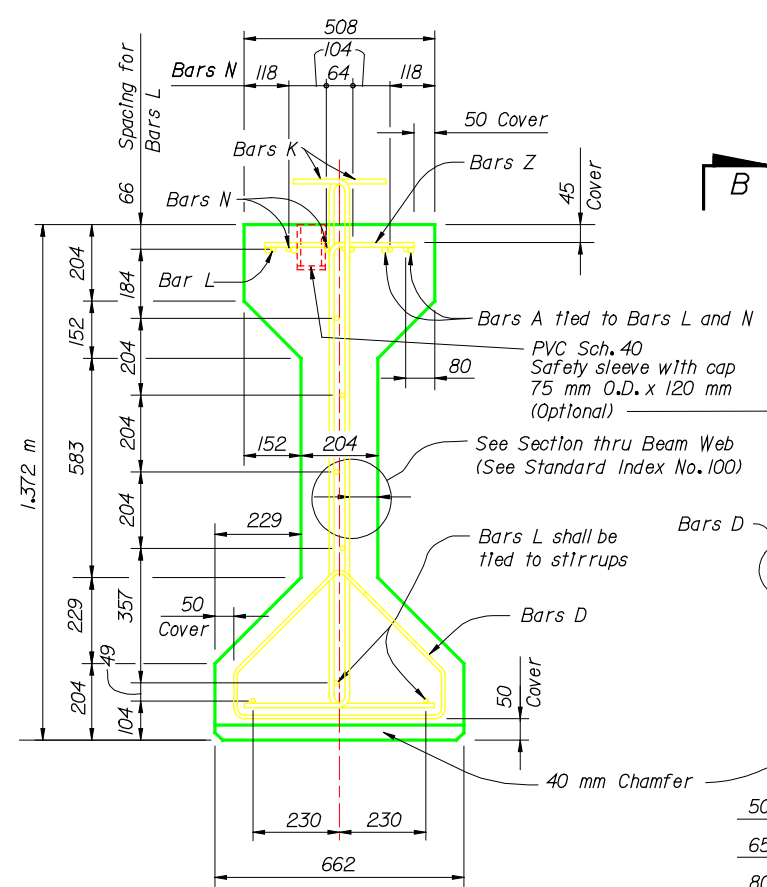
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NOTE: Dimension R has been Included in the lengths (L) of beams to compensate for elastic and time-dependent shortening effects.
Dimension G has been Included in the lengths (L) of beams to compensate for extra length of beams on grade.

ELEVATION

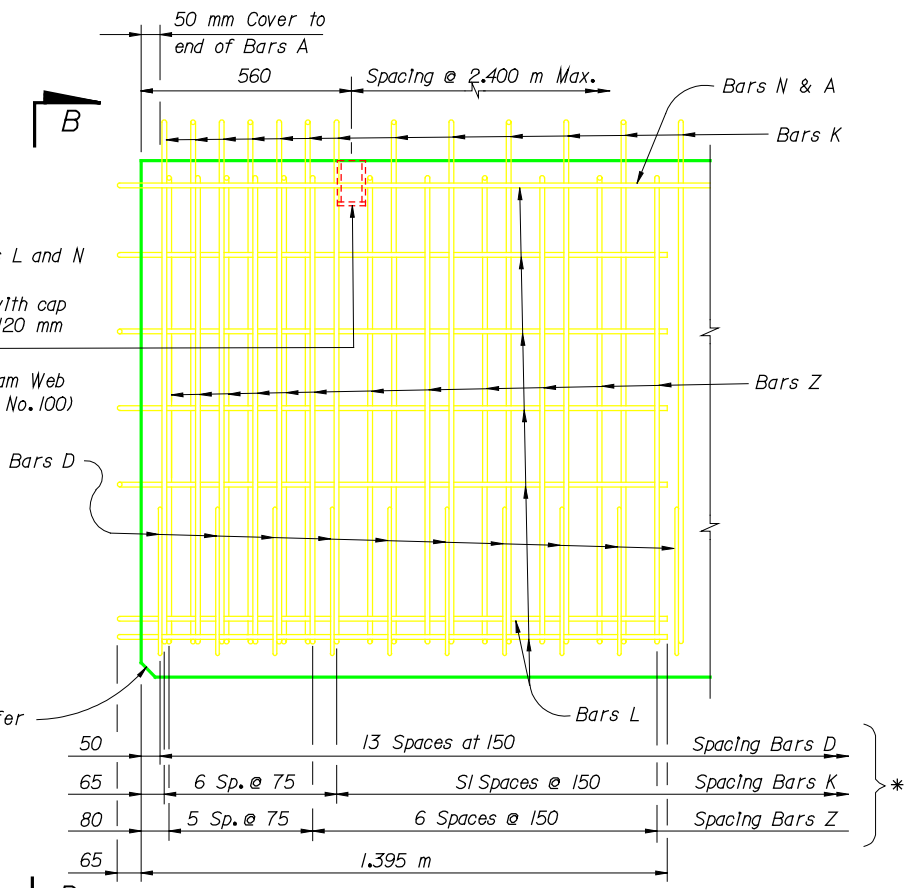
* Note: All longitudinal beam dimensions shown on this sheet with a single asterisk (*) are measured along the top of the beam at the centerline of beam.
** Note: Locations of Inserts in beam web for intermediate diaphragm reinforcing. When Inserts are required the dimensions and orientation will be shown in the Table. For Insert details, see the "Typical Notes and Details" sheet.



VIEW B-B

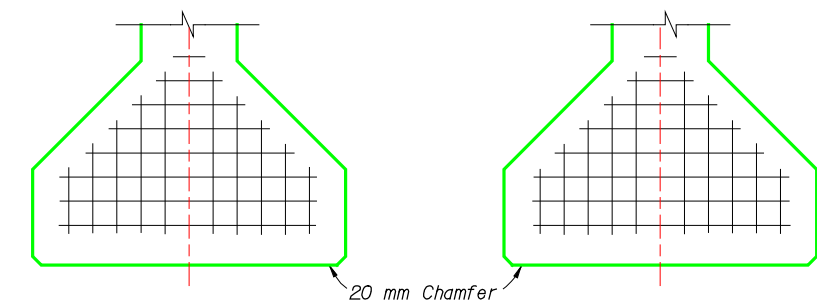
(With strands omitted, see Table for reference to strand pattern.)

NOTE: Place Bars K and Z one (1) each space (alternate).



DETAIL AT END OF BEAM

NOTE: Bars K & Z shall be placed and tied to the top of the fully bonded prestressing strands in the bottom row.

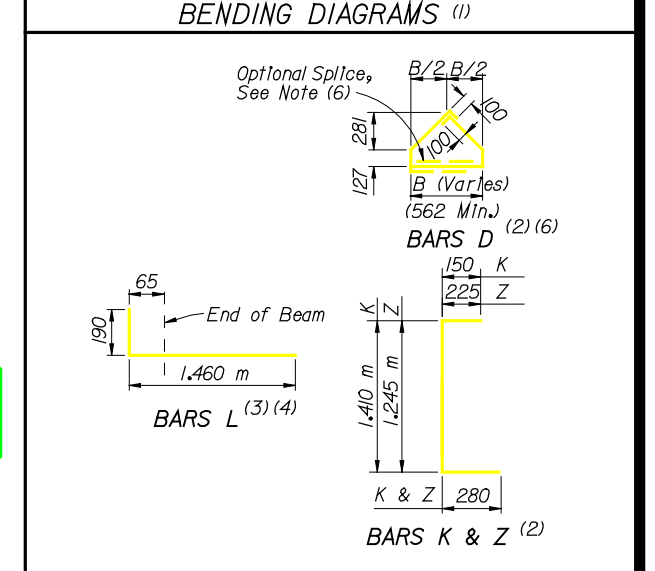


TYPE ①
TYPE ②
STRAND PATTERNS AND DEBONDING SCHEDULE

NOTE: ○ - Indicates fully bonded strands.
□ - Indicates referenced pair of strands to be debonded the length shown which is measured from the end of the beam. *

NOTE: Work this sheet with Standard Index No. 100.
All Dimensions are in millimeters (mm), except as noted.
See Table of Beam Variables on Index No. S-119.

BILL OF REINFORCING STEEL FOR ONE BEAM ONLY			
MARK	SIZE	NO. REQUIRED	LENGTH (1)
A	#16	8	See Table
D (2) (6)	#10	28	Varies (1.811 m Min.)
K (2)	#13	See Table	1.840 m
L (3) (4)	#13	18	1.650 m
N (5)	No. 9 Strand	4	See Table
Z (2)	#13	24	1.750 m




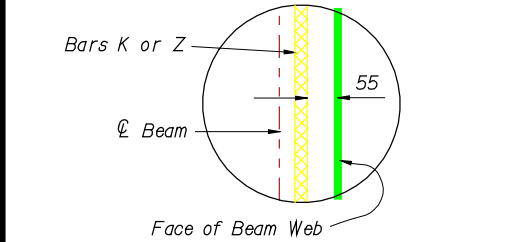
- NOTES:
- All bar dimensions are out-to-out.
 - Bars D, K, and Z shall be bent around pins having the following diameters for respective sizes:
Bar Size: #10, #13
Pin Diameters: 40 mm, 50 mm
 - Bars L shall be bent prior to the beam leaving the prestressing yard. For treatment of Bars L at skewed beam ends, see "Plan Ends of Beams".
 - Caution should be used with Bars L in the ends of exterior beams to assure that the bent portion of the bar is properly oriented so that the bar will be embedded in the diaphragm concrete.
 - Bars N shall be either ASTM A416/A416M, Grade 1725 or 1860, seven-wire strands size No. 9 or larger, stressed to 45 kN each.
 - The minimum dimension B and length of Bars D shown apply to one-piece Bars D placed perpendicular to the centerline of the beam. Dimension B and the length of Bars D for beams with skewed ends vary with the skew (See "Plan Ends of Beams").
At the Contractor's option, Bars D may be fabricated either as a two-piece bar with a 360 mm lap splice of the bottom legs or may be welded wire fabric, one or two-piece, provided the wire size and spacing furnishes the same steel area as the #10 Bars shown.
 - (NS) means Near Side and (FS) means Far Side, both referring to which face of the beam web is to receive the Insert for the dimensioned location. (NS) and (FS) are referenced to the DIRECTION OF STATIONING shown.
 - CONTRACTOR'S OPTION: Welded deformed wire fabric may be used in lieu of Bars D, K, L and Z provided that the wire sizes and spacing match those shown on this sheet for these bars. In this event, Bars K and Z may be fabricated with the omission of the lower outstanding leg provided that two longitudinal wires are placed (welded) at the lower end of the bar. The first (lower) wire shall be located 25 mm from the end of Bars K and Z and the second wire 50 mm minimum from the first wire, but no less than 1/4 of the beam depth from mid-depth of the beam. In addition, Bars Z may consist of pairs of bars with the cross sectional area of the pair equal to or greater than the shown conventional single bar.
 - Welded wire fabric shall conform to ASTM A497.

DATE: 11/11/11 TIME: 10:00 AM

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			98R														1 of 1				
												ROAD NO.		COUNTY		PROJECT NO.		PROJECT NAME		INDEX NO.	
																		AASHTO TYPE IV BEAMS		S-104	

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(Showing Cover on Stirrups)

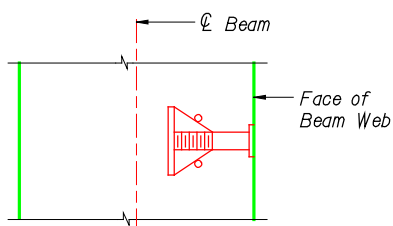


Diagram illustrating the cross-section of a beam. The beam has a central rectangular core (red) and an outer shell (green). The top edge of the beam is labeled "Beam". The bottom edge of the green shell is labeled "Top". A vertical dashed red line indicates the centerline of the beam.

REFERENCES



(Bars M in top flange omitted for clarity.)

For both Plan Views Case 2 and Case 3, the two first Bars Z and K shall be placed parallel to the skewed end of the Beam. The remainder of the Bars Z & K shall be placed so as to transition from the skewed end to an axis perpendicular to the centerline of the beam. Bars D in the bottom flange shall be rotated along with Bars Z & K. Bar spacing may not agree with Beam sheets. Bars M shall be placed the same as Bars Z and K. End of Beam Bearing Dimensions "J" and "K" are measured along the bottom of the Beam.

Insert shall be 25.4 mm ϕ , zinc-electroplated, ferrule wing nut, UNC threads, 7.8 mm ϕ min. wire, not more than 100 mm in depth and shall have a minimum ultimate tensile strength of 50.7 kN in 28 MPa concrete.

If Inserts are needed on both sides of web an assembly as long as the thickness of the web, consisting of two (2) ferrule Inserts attached by two (2) or more struts may be utilized. The connecting struts shall have a minimum ultimate tensile strength of 50.7 kN.

"*" If slope is equal to or less than 2%, see Index S-200. If grade exceeds 2%, provide either bevelled plates or notches at beam ends to normalize loads to pedestals.



MORTAR LEAKAGE: Any mortar leakage that occurs and stains resulting from leakage shall be removed so that beams have a uniform appearance.

STRANDS: At the option of the Contractor, other types, sizes and/or configurations of strands may be used in lieu of the stranding shown on these sheets. Calculations shall be submitted showing the substitution meets the following requirements:

1. The strands meet all the requirements of ASTM A416/A416M for the grade of strands proposed.
2. The net compressive stress in the concrete due to prestressing acting alone, after all losses, is not less than that provided by the stranding shown on these sheets.
3. The ultimate strength of the structure with the proposed stranding is not less than the ultimate strength of the original design.
4. The proposed stranding complies in all respects with the Department's Structures Design Guidelines.

FINISH: The top surface of the beam shall be rough floated and then scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding. All beams shall receive a Class 3 surface finish.

SUBMITTALS: The Specifications stipulate the conditions for which Shop Drawings are not required. If each and every condition cannot be met, then a formal Shop Drawing submittal is required. Supplemental reinforcing provided by the Contractor to facilitate fabrication of prestressed beams do not require Shop Drawings.

STRAND DETENSIONING: Strand detensioning shall be based upon the following priority, from first to last:

1. Top dormant strands (Bars N)
2. Fully bonded strands
3. Partially debonded (shielded) strands

FORMS AND PALLETS: All beams shall be cast on concrete based pallets and in metal forms.

HANDLING: In the handling of beams, they must be maintained in an upright position at all times and must be picked up from points located a maximum distance of 1,000 m from the ends of the beam.

STORAGE AND TRANSPORTATION: Beams shall be stored on adequate dunnage and supported during transit within 500 mm from ends of beam.

STRAND EXTENSION: All strands shall extend 65 mm beyond ends of beams.

CONCRETE: Refer to Table of Beam Variables Sheets for the class of concrete, 28-day strength (f'_c) and cylinder strength at transfer of the tensioning load (f'_{ci}).

REINFORCING STEEL: All reinforcing steel shall be ASTM A615M-96, Grade 420.

BEARING PADS: The cost of installing bearing pads shall be included in the contract unit price of prestressed beams.

MISCELLANEOUS: The cost of inserts for diaphragm tie bars shall be included in the contract unit prices for prestressed beams.

NOTES: Work this sheet with individual beam sheets, Bulb-T 54, 63, 72 & 78.

See "TABLE OF BEAM VARIABLES" sheets for angle " ϕ "s and Dimensions "J", "K", "L" and "P" (S-119).

For beams with vertically bevelled ends, such as conditions 2 & 3, the first two Bar K shall be placed parallel to the end bevel. Adjacent Bars Z and K shall be placed so as to transition from the end bevel to a vertical axis. The spacing of Bars K and Z shown shall apply along the top flange of the beam and the spacing along the bottom of the beam shall be adjusted by not more than 15 mm (\pm) until the vertical position is attained.

All dimensions are in millimeters (mm), except as noted.

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						CHECKED BY	WEH 1-89
						APPROVED BY	RFN

ENGINEER OF RECORD,
STRUCTURES DESIGN OFFICE
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605 Suwannee Street, MS 33
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	ROAD NO


FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: TYPICAL NOTES AND DETAILS FOR
FLORIDA BULB-T 54, 63, 72 & 78
PRESTRESSED BEAMS

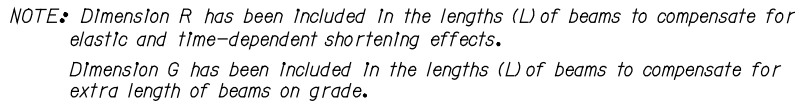
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DRAWING NO.

1 of 1

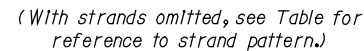
INDEX NO.

110 |



**** Note:** Locations of Inserts In beam web for Intermediate diaphragm reinforcing. When Inserts are required the dimensions and orientation will be shown In the Table. For Inserts details, see the "Typical Notes and Details" Sheet.

NOTE: ○ -Indicates fully bonded strands.
□ -Indicates referenced pair of strands to be debonded the length shown which is measured from the end of the beam. *



NOTE: Bars K & Z shall be placed and tied to the top of the fully bonded prestressing strands in the bottom row.

*All Dimensions are in millimeters (mm), except as noted.
See Table of Beam Variables on Index No. S-119.*



(1) All bar dimensions are out-to-out.

(2) Bars D_K , and Z shall be bent about pns having the following diameters for respective sizes:

Bar Size	Pn Diameters
#10	40 mm
#13	50 mm

(3) Bars L shall be bent prior to the beam leaving the prestressing yard. For treatment of Bars L at skewed beam ends, see "Plan Ends of Beams".

(4) Caution should be used with Bars L in the ends of exterior beams to assure that the bent portion of the bar is properly oriented so that the bar will be embedded in the diaphragm concrete.

(5) Bars N shall be either ASTM A416/A416M, Grade 1725 or 1860, seven-wire strands size No. 9 or larger, stressed to 45 kN each.

(6) The minimum Dimension B and length of Bars D shown apply to one-piece Bars D placed perpendicular to the centerline of the beam. Dimension B and the length of Bars D for beams with skewed ends vary with the skew (See "Plan Ends of Beams").

At the Contractor's option, Bars D may be fabricated either as a two-piece bar with a 360 mm lap splice of the bottom legs or may be welded wire fabric, one or two-piece, provided the wire size and spacing furnishes the same steel area as the #10 Bars shown.

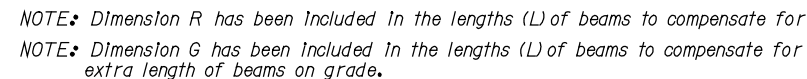
(7) (NS) means Near Side and (FS) means Far Side, both referring to which face of the beam web is to receive the insert for the dimensioned location. (NS) and (FS) are referenced to the DIRECTION OF STATIONING shown.

(8) CONTRACTOR'S OPTION: Welded deformed wire fabric may be used in lieu of Bars D, K , L and Z provided that the wire sizes and spacing match those shown on this sheet for these bars. In this event, Bars K and Z may be fabricated with the omission of the lower outstanding leg provided that two longitudinal wires are placed (welded) at the lower end of the bar. The first (lower) wire shall be located 25 mm from the end of Bars K and Z and the second wire 50 mm minimum from the first wire, but no less than $1/4$ of the beam depth from mid-depth of the beam. In addition, Bars Z may consist of pairs of bars with the cross sectional area of the pair equal to or greater than the shown conventional single bar.

(9) Welded wire fabric shall conform to ASTM A497.

(10) Bars M vary at the ends of sharply skewed beams. Place first two bars parallel to skewed end of beam and the remainder so as to transition from skewed end to an axis perpendicular to centerline of beam.

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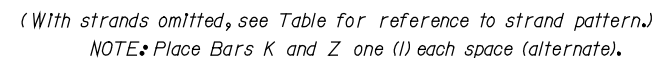
* **Note:** All longitudinal beam dimensions shown on this sheet with a single asterisk (*) are measured along the top of the beam at the centerline of beam.

** **Note:** Locations of Inserts In beam web for Intermediate diaphragm reinforcing. When Inserts are required the dimensions and orientation will be shown In the Table. For Insert details, see the "Typical Notes and Details" sheet.

BENDING DIAGRAMS ⁽¹⁾



- (1) All bar dimensions are out-to-out.
- (2) Bars D, K, and Z shall be bent around pins having the following diameters for respective sizes:
- | Bar Size | Pin Diameters |
|----------|---------------|
| #10 | 40 mm |
| #13 | 50 mm |
- (3) Bars L shall be bent prior to the beam leaving the prestressing yard.
For treatment of Bars L at skewed beam ends, see "Plan Ends of Beams".
- (4) Caution should be used with Bars L. In the ends of exterior beams to assure that the bent portion of the bar is properly oriented so that the bar will be embedded in the diaphragm concrete.
- (5) Bars N shall be either ASTM A416/A416M, Grade 1725 or 1860, seven-wire strands size No. 9 or larger, stressed to 45 kN each.
- (6) The minimum Dimension B and length of Bars D shown apply to one-piece Bars D placed perpendicular to the centerline of the beam. Dimension B and the length of Bars D for beams with skewed ends vary with the skew (See "Plan Ends of Beams").
At the Contractor's option, Bars D may be fabricated either as a two-piece bar with a 360 mm lap splice of the bottom legs or may be welded wire fabric, one or two-piece, provided the wire size and spacing furnishes the same steel area as the #10 Bars shown.
- (7) (NS) means Near Side and (FS) means Far Side, both referring to which face of the beam web is to receive the Insert for the dimensioned location. (NS) and (FS) are referenced to the DIRECTION OF STATIONING shown.
- (8) CONTRACTOR'S OPTION: Welded deformed wire fabric may be used in lieu of Bars D, K, L and Z provided that the wire sizes and spacing match those shown on this sheet for these bars. In this event, Bars K and Z may be fabricated with the omission of the lower outstanding leg provided that two longitudinal wires are placed (welded) at the lower end of the bar. The first (lower) wire shall be located 25 mm from the end of Bars K and Z and the second wire 50 mm minimum from the first wire, but no less than $1/4$ of the beam depth from mid-depth of the beam. In addition, Bars Z may consist of pairs of bars with the cross sectional area of the pair equal to or greater than the shown conventional single bar.
- (9) Welded wire fabric shall conform to ASTM A497.
- (10) Bars M vary at the ends of sharply skewed beams. Place first two bars parallel to skewed end of beam and the remainder so as to transition from skewed end to an axis perpendicular to centerline of beam.



NOTE: Bars K & Z shall be placed and tied to the top of the fully bonded prestressing strands in the bottom row.

NOTE: Work this sheet with Standard Index No. 110.

All Dimensions are in millimeters (mm), except as noted.

See Table of Beam Variables on Index No. S-119.

SHEET TITLE:	DRAWING NO:
FLORIDA BULB-T 72 BEAMS	1 of 1

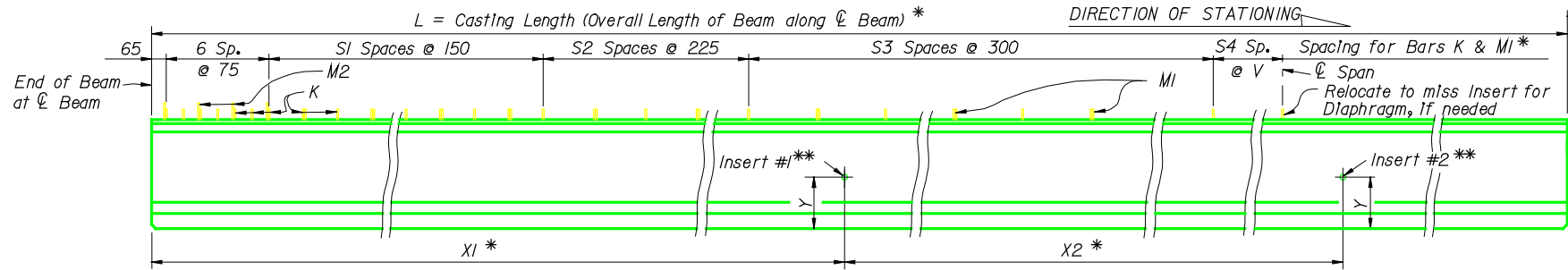
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1 of 1

INDEX NO.

S-113

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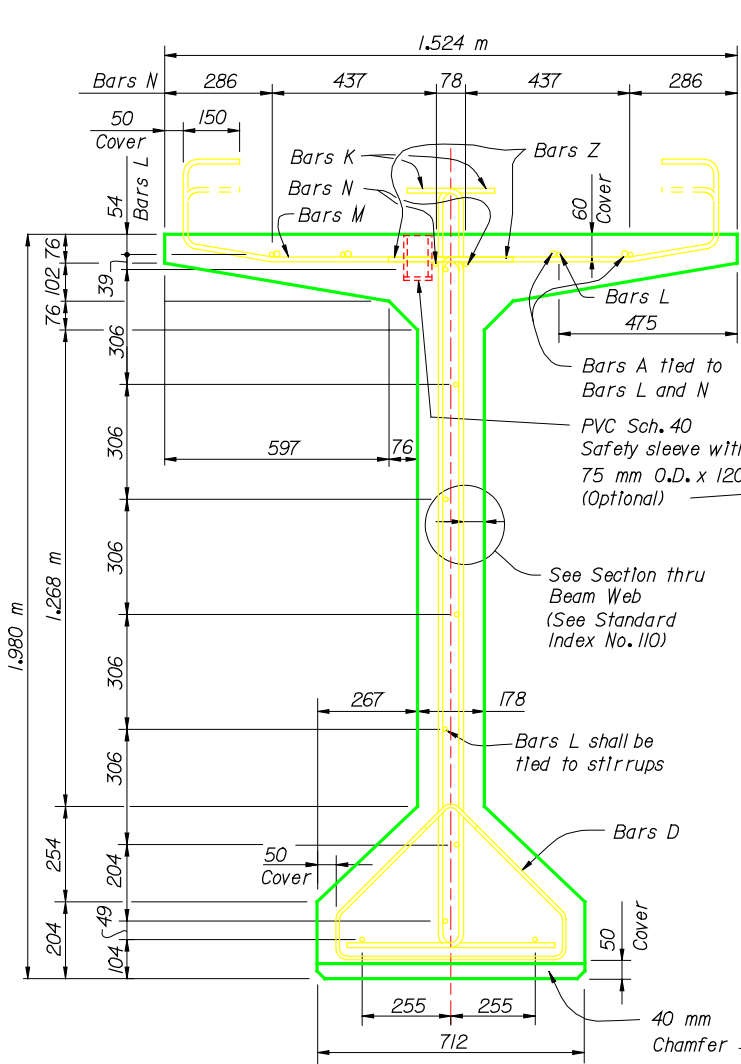


NOTE: Dimension R has been Included In the lengths (L) of beams to compensate for elastic and time-dependent shortening effects.

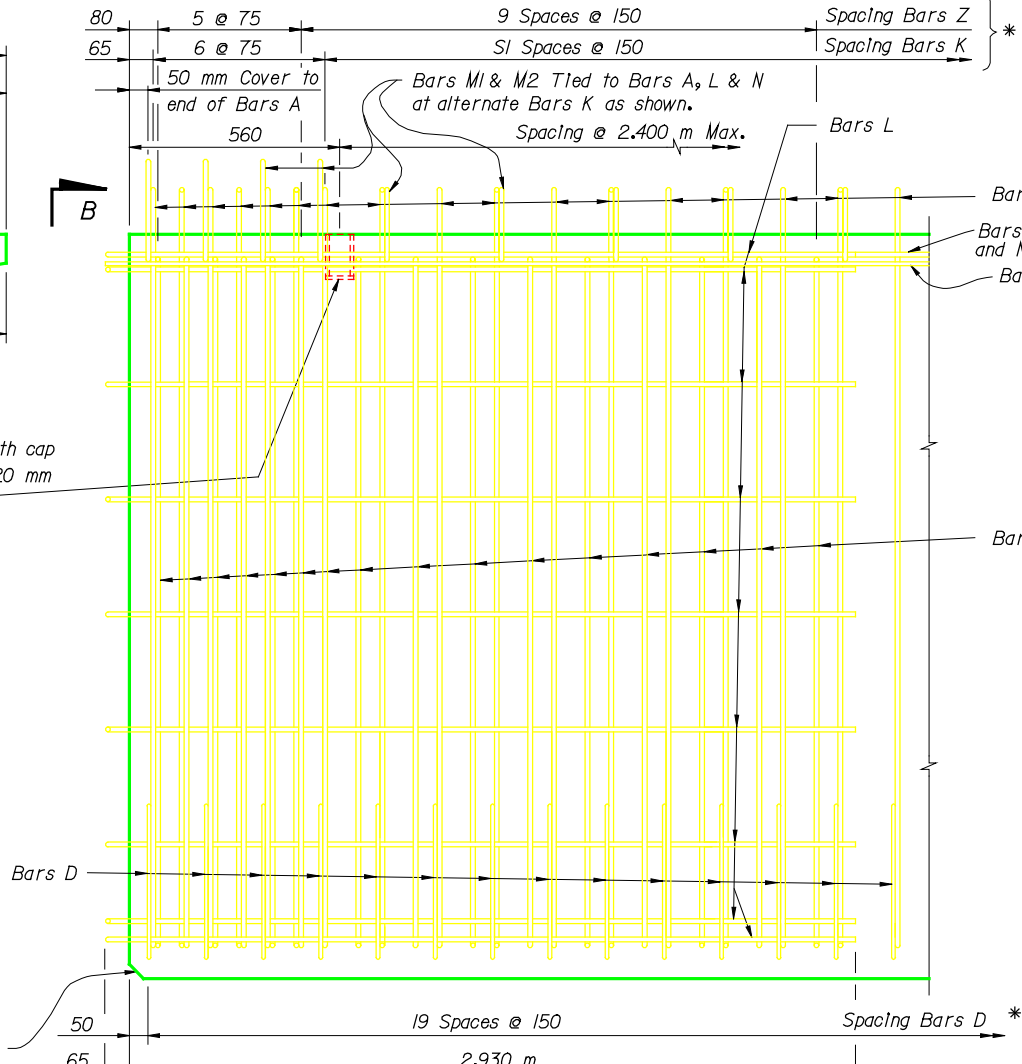
ELEVATION

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

** Note: Locations of Inserts in beam web for intermediate diaphragm reinforcing. When Inserts are required the dimensions and orientation will be shown in the Table. For Insert details, see the "Typical Notes and Details" sheet.



(With strands omitted, see Table for reference to strand pattern.)
NOTE: Place Bars K and Z one (1) each space (alternate).



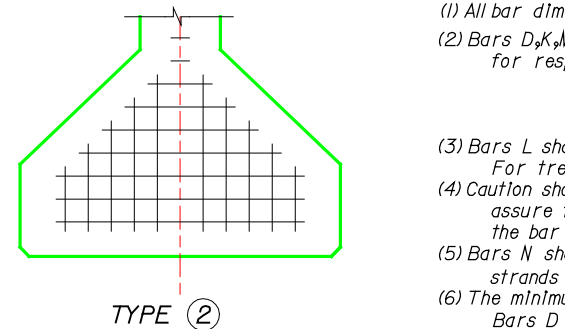
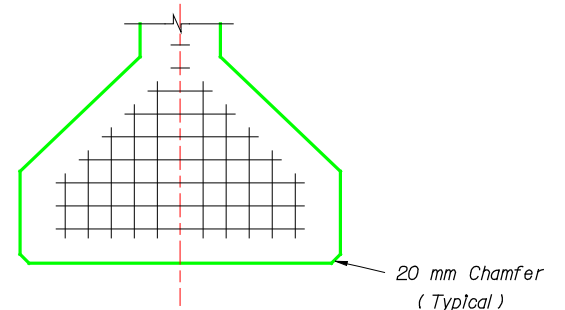
NOTE: Bars K & Z shall be placed and tied to the top of the fully bonded prestressing strands in the bottom row.

NOTE: Work this sheet with Standard Index No. 110.

All Dimensions are in millimeters (mm), except as noted.

See Table of Beam Variables on Index No. S-119.

NOTE: \bigcirc - Indicates fully bonded strands.
 \square - Indicates referenced pair of strands to be debonded the length shown which is measured from the end of the beam. *

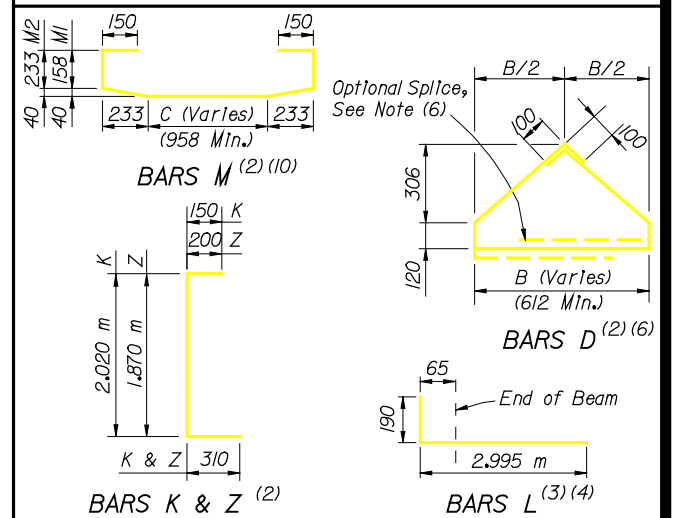


STRAND PATTERNS AND DEBONDING SCHEDULE

BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

MARK	SIZE	NO. REQUIRED	LENGTH (1)
A	#16	8	See Table
D (2) (6)	#10	40	Varies (1.882 m Min.)
K (2)	#13	See Table	2.480 m
L (3) (4)	#13	22	3.485 m
M1 (2) (10)	#13	See Table	Varies, 2.047 m Min.
M2 (2) (10)	#13	8	Varies, 2.197 m Min.
N (5)	No. 9 Strand	4	See Table
Z (2)	#13	30	2.380 m

BENDING DIAGRAMS (1)



NOTES:

- (1) All bar dimensions are out-to-out.
- (2) Bars D, K, M and Z shall be bent around pins having the following diameters for respective sizes:
Bar Size
#10 40 mm
#13 50 mm
- (3) Bars L shall be bent prior to the beam leaving the prestressing yard. For treatment of Bars L at skewed beam ends, see "Plan Ends of Beams".
- (4) Caution should be used with Bars L in the ends of exterior beams to assure that the bent portion of the bar is properly oriented so that the bar will be embedded in the diaphragm concrete.
- (5) Bars N shall be either ASTM A416/A416M, Grade 1725 or 1860, seven-wire strands size No. 9 or larger, stressed to 45 kN each.
- (6) The minimum Dimension B and length of Bars D shown apply to one-piece Bars D placed perpendicular to the centerline of the beam. Dimension B and the length of Bars D for beams with skewed ends vary with the skew (See "Plan Ends of Beams").
At the Contractor's option, Bars D may be fabricated either as a two-piece bar with a 360 mm lap splice of the bottom legs or may be welded wire fabric, one or two-piece, provided the wire size and spacing furnishes the same steel area as the #10 Bars shown.
- (7) (NS) means Near Side and (FS) means Far Side, both referring to which face of the beam web is to receive the Insert for the dimensioned location. (NS) and (FS) are referenced to the DIRECTION OF STATIONING shown.
- (8) CONTRACTOR'S OPTION: Welded deformed wire fabric may be used in lieu of Bars D, K, L and Z provided that the wire sizes and spacing match those shown on this sheet for these bars. In this event, Bars K and Z may be fabricated with the omission of the lower outstanding leg provided that two longitudinal wires are placed (welded) at the lower end of the bar. The first (lower) wire shall be located 25 mm from the end of Bars K and Z and the second wire 50 mm minimum from the first wire, but no less than $\frac{1}{4}$ of the beam depth from mid-depth of the beam. In addition, Bars Z may consist of pairs of bars with the cross sectional area of the pair equal to or greater than the shown conventional single bar.
- (9) Welded wire fabric shall conform to ASTM A497.
- (10) Bars M vary at the ends of sharply skewed beams. Place first two bars parallel to skewed end of beam and the remainder so as to transition from skewed end to an axis perpendicular to centerline of beam.

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ROAD NO.	COUNTY	PROJECT NO.

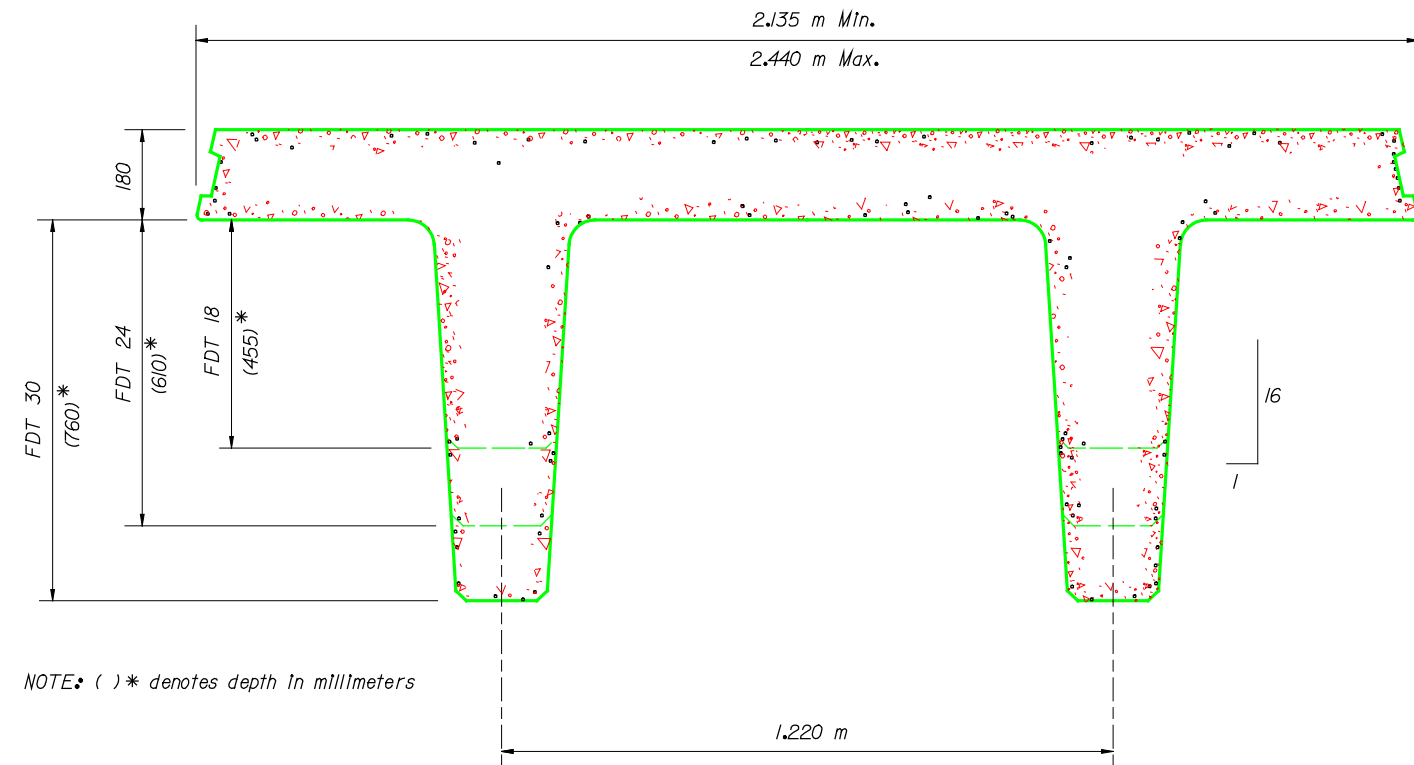
FLORIDA BULB-T 78 BEAMS		DRAWING NO.
PROJECT NAME:		1 of 1
INDEX NO.		S-114

TABLE OF BEAM VARIABLES

CROSS REFERENCES:
Work this Sheet with Sheet Nos. X-XXX and X-XXX.
All dimensions are in millimeters (mm), except as noted.

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY					 STRUCTURES DESIGN OFFICE	ROAD NO.	COUNTY	PROJECT NO.	TABLE OF BEAM VARIABLES	1 of 1		
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FLORIDA DOUBLE – TEE



NOTE: () * denotes depth in millimeters

LIST OF DRAWINGS

Index No.	
I-120	Florida Double-Tee General Instructions
I-121	Florida Double-Tee Bridge Sections
I-122	Florida Double-Tee Tabulated Strand Patterns
I23	Florida Double-Tee Notes and Miscellaneous Details (3 Sheets)
I24	FDT18 Typical Section
I25	FDT24 Typical Section
I26	FDT30 Typical Section
I27	Florida Double-Tee Plan, Joint and Diaphragm
S-I28	FDT18 Table of Variables and Strand Patterns
S-I29	FDT24 Table of Variables and Strand Patterns
S-I30	FDT30 Table of Variables and Strand Patterns

NOTE: All dimensions are in millimeters (mm), except as noted.

DOUBLE-TEE GENERAL INSTRUCTIONS

This FDOT Standard is intended for use in preparing construction plans for bridges on straight alignment and skew angles 30° or less. The standard is also limited to simply supported spans, over water or railroad tracks.

Three different cross-sections are provided: the Florida Double-Tee FDT18, the FDT24, and the FDT30.

Fabricators may acquire a set of forms for the FDT30 beam, and utilize these to fabricate the other sections by blocking out the lower portion of the stems.

The detailed 180 mm slab (flange) thickness provides 15 mm for grinding to improve the riding quality of the bridge if needed. Therefore, the designs should be based on a 165 mm thick structural flange.

The width of the flange may vary as shown and the 180 mm thickness may be increased to accommodate a bridge crown (crowned beam).

Designs using No. 13 (1860 MPa) low-relaxation strands and concrete with a 28-day compressive strength of 35 MPa are tabulated on Index I-122. The designs include allowances of 720 N/m² for future surfacing and 1.0 kN/m² for railing barriers.

The designs provided are applicable for all Environmental Classifications. Some details, such as concrete class and protective treatment of strands at the end of the stem depend on the environment. Therefore, the designer shall include in the general notes for the bridge the environmental classification and call for all applicable dependent requirements.

Three types of drawings are included: instructional drawings, semi-

standard drawings, and the standard drawings. The instructional drawings are provided to assist designers in preparing the contract drawings. These drawings help explain how the semi-standard drawings should be completed, provide required design information, and list the standard drawings that should be included in the contract set.

In most applications, the drawings provided in this standard (and other standards) when supplemented by a plan view of the superstructure and a typical section thru the bridge should suffice in defining the bridge superstructure. In all cases, however, the designer is responsible for providing additional drawings necessary to complete the superstructure drawings, and for designing and detailing substructure units and other bridge components.

INSTRUCTIONAL DRAWINGS:

The instructional drawings show the three (3) double-tee cross-sections, typical bridge sections, strand pattern designs, and provide general instructions.

STANDARD DRAWINGS:

The standard drawings are complete except for the title blocks. Only the applicable FDT standard drawings shall be included in the contract drawings. The standard drawings provide Double-Tee Notes, Construction Notes, Neoprene Pad details and general standard details for the beams.

SEMI-STANDARD DRAWINGS:

The semi-standard drawings are incomplete drawings. These drawings must be completed by the designer to suit the particular design. A table of beam variables is provided in the semi-standard drawings. The designer shall complete the table by providing all applicable information. The designer shall obtain strand patterns from Index I-122 or from his own calculations and show patterns in the strand pattern grids provided.

DOUBLE-TEE DESIGN EXAMPLE:

As a design example a single span bridge is designed using the instructional drawings, standard drawings and semi-standard drawings. The following information is provided for the bridge:

Begin Bridge: Sta. 00+00.000
End Bridge: Sta. 00+18.000
Cross Slope: 2 %
Skew Angle: 0 degrees (φ = 90°)
Bridge Width: 12.0 m clear roadway
Sidewalks: none

From this information, the design span length is:
 $(18 - 2(170 + 40)/1000) = 17.580$ m (ℓ - ℓ bearings). Instructional Drawing I-122 shows that a FDT30 with twenty-eight (28) strands is required. The strand patterns should be drawn on semi-standard Drawing S-I30. The strand pattern Case 2 applies. The strand patterns Types 1 and 2 also apply. The strand pattern at the end should be drawn in the section, for Type 1, and the pattern between hold downs (center) should be drawn in the section of the stem for Type 2. The total number of strands required, in this case 28, should be written within the circles.

The bridge plans shall include the following drawings: Index No. I23, I26, I27, & S-I30

The table of variables should be filled as follows:
Since Bridge Width (o-o) = 12 + 2(475/1000) = 12.950 m
The number of tees required = 12950/2440 = 6, and
W = (12.950/6) = 2.158 m

Note: Neglect the 6 mm gap between beams.
Clear roadway width and overall superstructure width should be denoted as 12.000 m and 12.950 m, respectively.
 $A = (2/58 - 1220) 0.5 = 469$ mm
 $L = 18.000 - 0.080 = 17.920$ m
 $[L - 2(0.530)] / 1.370 = 13$; THEREFORE,
N1 = 14
 $SI = [L - 2(0.530)] / 13 = 1.297$ m
 $(L - 0.700) / 0.200 = 86$; THEREFORE,
N2 = 87
 $S2 = (L - 0.700) / 86 = 200$ mm

TABLE OF VARIABLES

SPAN NO.	BEAM TYPE	NO. OF BEAMS	φ	DIMENSIONS						POST-TENSIONING DUCT DATA		CONCRETE DATA (MPa)		REINF. STEEL DATA		STRAND PATTERN		
				A	DI	L	W	X	Y	N1	SI	f'c	f'ci	N2	S2	CASE	TYPE	
1	2	4	90°	469	—	17.920 m	2.158 m	—	—	14	1.297 m	35	29	—	—	2	1	2
1	4	2	90°	469	—	17.920 m	2.158 m	—	—	14	1.297 m	35	29	87	200	2	1	2

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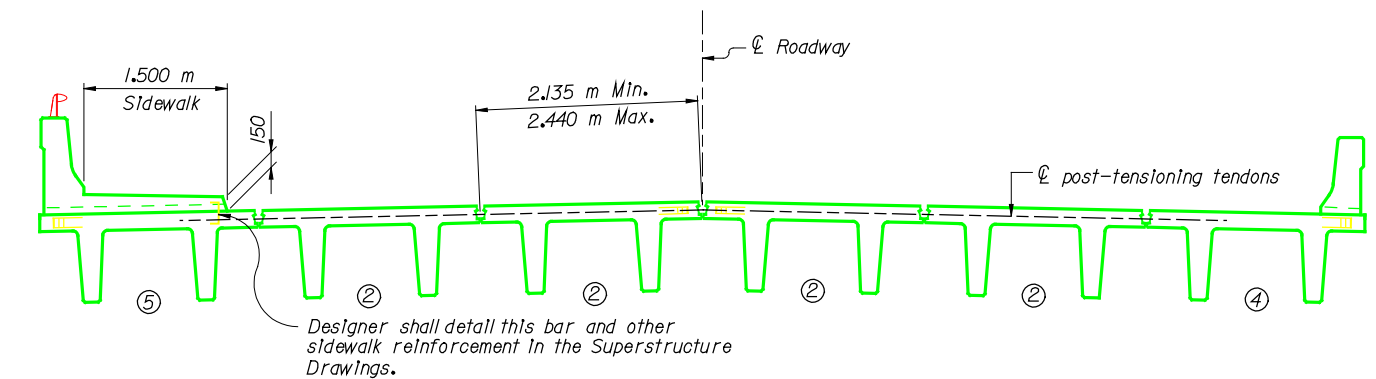
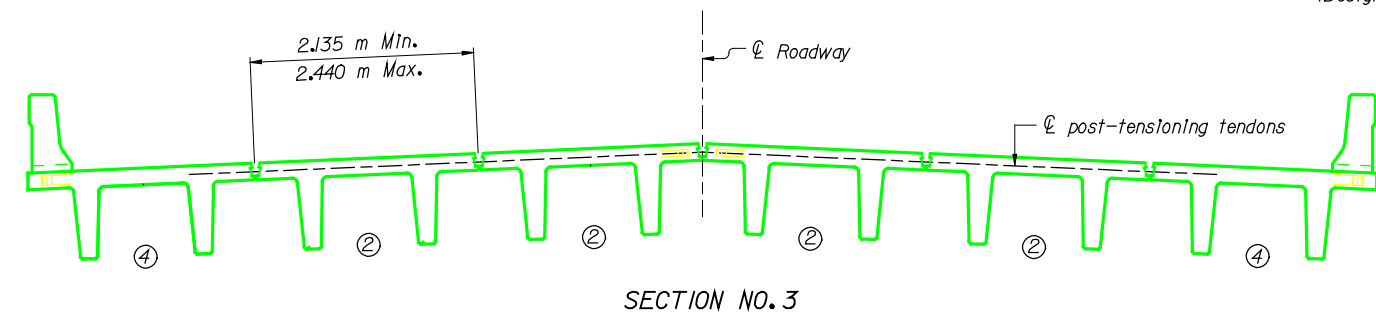
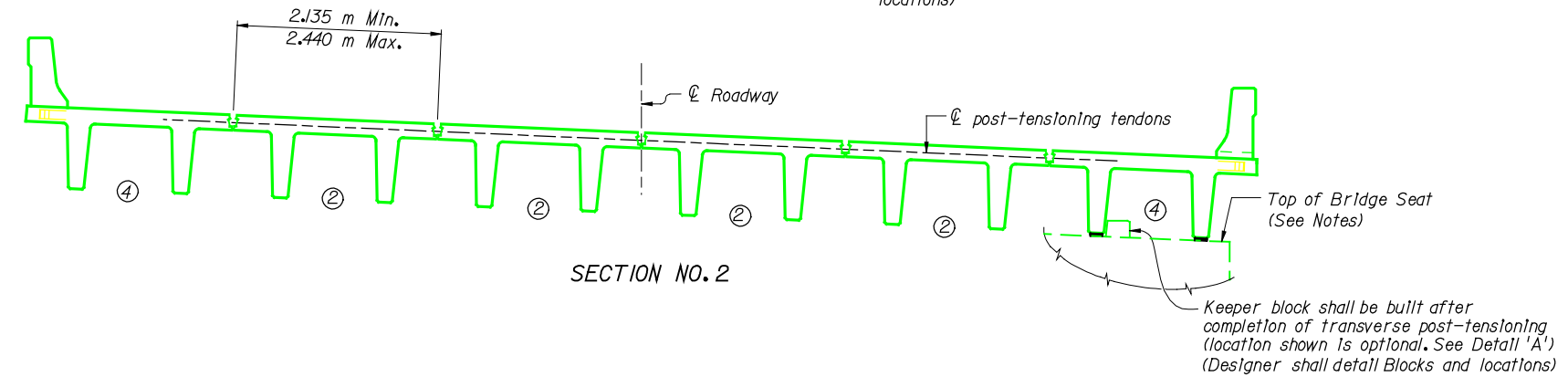
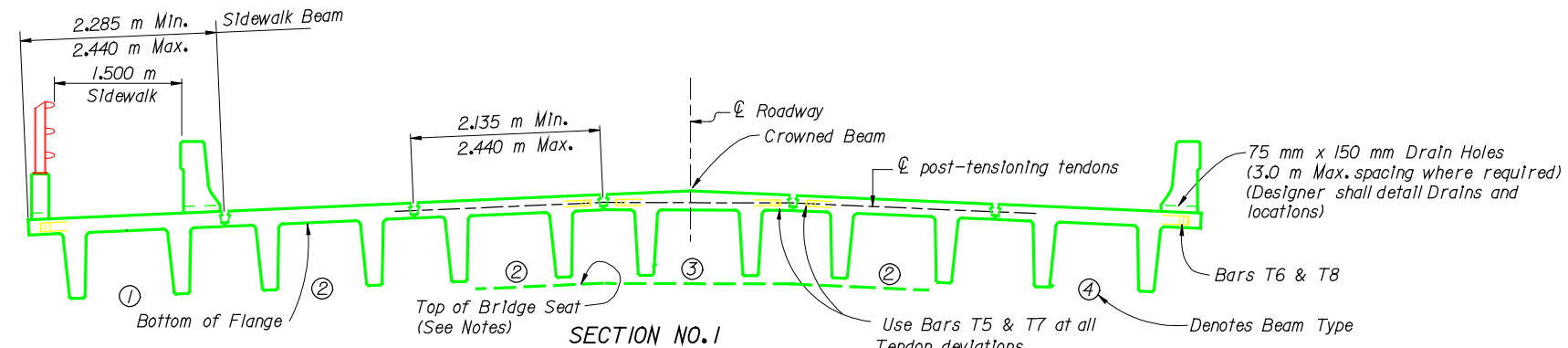
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DESIGNED BY	AJG	6-90
CHECKED BY	TJB	6-90
APPROVED BY	AJG	

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Tallahassee, Florida 32399-0450

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SHEET TITLE:	FLORIDA DOUBLE-TEE GENERAL INSTRUCTIONS	DRAWING NO.	1 of 1
PROJECT NAME:		INDEX NO.	I-120



SECTION NO. 4
BRIDGE SECTIONS

NOTES

The bridge sections depicted on this sheet show several possible applications of double tee beams.

SECTION NO. 1 shows a non-symmetrical bridge section with crowned and sidewalk beams. These beams require additional detailing. The width of the sidewalk beam is sized to accommodate traffic railing reinforcement.

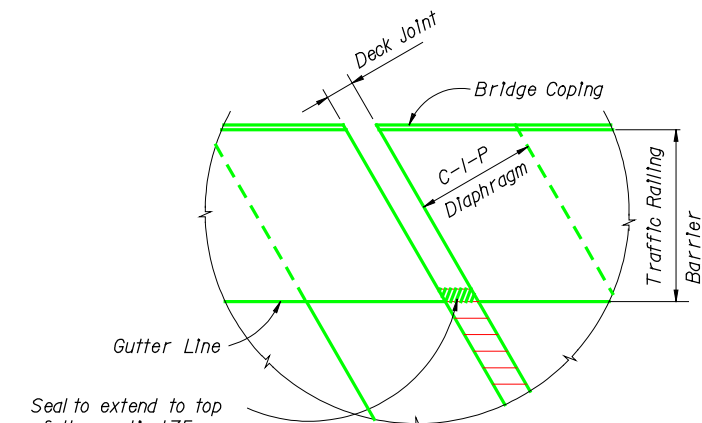
SECTION NO. 2 represents a symmetrical bridge section with constant cross slope.

SECTION NO. 3 represents a symmetrical crowned bridge section. The section shown uses an even number of beams. If the number of beams is odd, a crowned beam is required similar to that shown in Section No. 1.

SECTION NO. 4 represents a variation of SECTION NO. 1. In this case, the sidewalk is raised above the traffic riding surface.

Normally, the cross slope of bridge seat is parallel to the bottom of the beam flange.

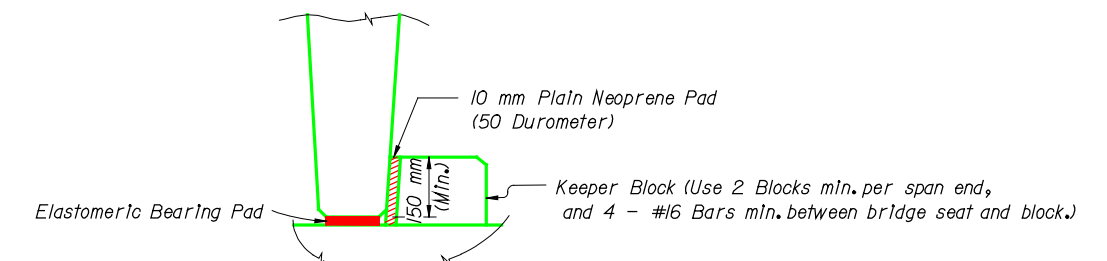
All Dimensions are in millimeters (mm), except as noted.



Seal to extend to top of the vertical 75 mm dimension (See Index 700) For Strip Seals see Indices No. 400 to 403.

PART PLAN
DETAIL 'B'

Note: Detail 'B' shows Traffic Railing Barrier treatment at a skewed Intermediate Bent. Parapets for pedestrian rails and raised sidewalks shall be treated similarly. The skewed joint is also applicable at End Bents. This treatment is intended only for Double-Tee construction.



DETAIL 'A'

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WEH	6-90
AJG	6-90
TJB	6-90
AJG	6-90
AJG	

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605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

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FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

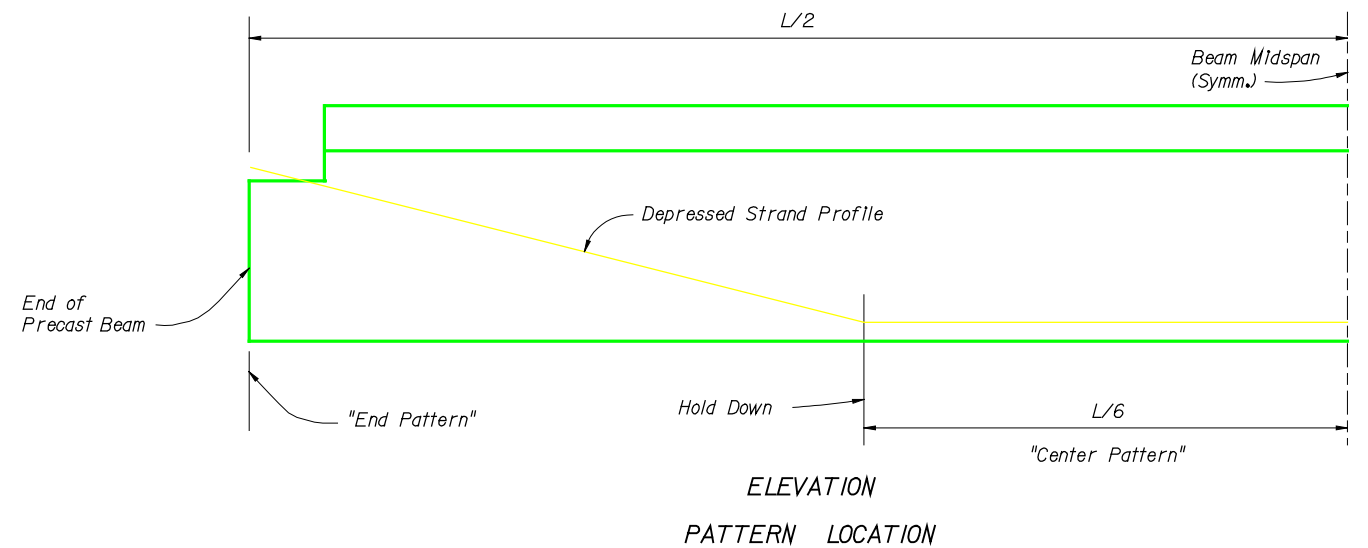
SHEET TITLE:		DRAWING NO.
FLORIDA DOUBLE-TEE BRIDGE SECTIONS		1 of 1
PROJECT NAME:		INDEX NO.
		1-121




PERMITTED STRAND LOCATIONS

* NOTE: Designs are based on $f'c = 35$ MPa min.; If the environment is moderately aggressive or extremely aggressive use $f'c = 38$ MPa in the "TABLE OF VARIABLES".

NOTE: All dimensions are in millimeters (mm), except as noted.



REVISIONS						NAMES		DATES		ENGINEER OF RECORD. STRUCTURES DESIGN OFFICE CENTRAL OFFICE 605 Suwannee Street, MS 33 Tallahassee, Florida 32399-0450		LOGO.		<div>FLORIDA DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN OFFICE</div>			SHEET TITLE:		DRAWING NO.	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	WEH	6-90	PROJECT NAME:											
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						DESIGNED BY	TJB	6-90												
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						APPROVED BY	AJG										1-122			

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DOUBLE-TEE NOTES

General Specifications: Florida Department of Transportation
Standard Specifications for Road and Bridge Construction
current edition with approved Supplements thereto.

Design Specifications: American Association of State Highway and
Transportation Officials (AASHTO) Standard Specifications
for Highway Bridges, current edition with approved revisions
thereto. FDOT Structures Design Guidelines.

Design Loads:

Live Load: MS18 Modified for Military loading as required.

Self weight (concrete): Based on 2400 kg per cubic meter

Superimposed Dead Load: See General Notes

Future wearing surface: 720 N/m²

Live Load Distribution of Axle Loads:

Span (m)	Factor
9.1 - 12.5	0.70
12.5(+) - 15.5	0.69
15.5(+) - 18.6	0.68

Concrete Class: See General Notes

Environment: See General Notes

Material Properties:

Concrete Strength: Precast Double Tees f'c = See Table of Variables

C-I-P Diaphragms f'c = See General Notes

Reinforcing Steel: ASTM A615M-96, Grade 420.

Welded Wire Fabric: ASTM A185 and ASTM A497.

Prestressing and Post-Tensioning Strands: No. 13 ASTM A416M, Grade
1860, Low Relaxation.

Strand Detensioning: Detensioning shall be performed after the
concrete has reached the required release strength f'ci (See Table
of Variables). The strands shall be detensioned in a sequence
that keeps the maximum eccentricity about the vertical axis of
the stem to one (1) strand, and the difference between the
number of strands between stems to a maximum of two (2). The
transfer of stresses shall be done in accordance with the
specifications.

Strand Cutting: If the Environment of the Superstructure is classified as
Slightly Aggressive Environment, the strands below Diaphragm Blockout
shall be cut flush with the Concrete Surface of the Stem, and the
exposed Stem surface shall be coated with an approved Epoxy Mortar
3 mm thick to prevent Strand corrosion.

If the Environment is classified as Moderately Aggressive Environment
or Extremely Aggressive Environment, use a 25 mm deep recess around
Strand or Strand group. The Strands shall be cut flush with the bottom
of the formed recess and immediately after cutting Strands, the recess
shall be filled with an approved Mortar under pressure. After the
Mortar has cured, the exposed Stem surface shall be coated with an
approved Epoxy Mortar 3 mm thick.

Bars for Barrier or Railing : The spacing of the bars may be
adjusted to clear the post-tensioning blockouts.
However, the number of bars shall not be reduced. The
Contractor shall show the proposed spacing for the bars on the
shop drawings.

Camber: Camber is the amount of rise that occurs at midspan of the
beam due to the prestressing force. The camber will increase
due to creep during storage unless precautions are taken.
Therefore, the contractor shall avoid the development of
additional differential camber between beams, for any span,
during storage by loading or other approved methods.

Surface Finish: The tops of all precast units shall be finished smooth by
floating and brooming. All other surfaces of the beam
shall receive a Class 3 Surface Finish. The edges of the top
surface of the units shall be finished by use of a small
radius tool.

Mortar Leakage: Any mortar leakage that occurs and stains resulting
from leakage shall be removed so that all beams have a uniform
appearance.

Forms and Pallets: All beams shall be cast on concrete based
pallets and in metal forms.

Handling: Prestressed beams must be maintained in an upright
position. The beams must be picked up from points located between
600 mm and 1.0 m from the ends.

Storage and Transportation: All beams must be stored on adequate
dunnage. The beams must be supported no closer than 150 mm
from the end nor further than 450 mm from the end.

Marking: Each beam shall be marked showing bridge number, casting
date, and identification letters and numbers. Markings shall
be made on the face of the stem near the end, so located that
the marking will be exposed after the end diaphragms have
been cast. Outside beams shall be marked on an inside
face of the stem. All markings shall be stencilled and
clearly legible.

Shim Plates: Shim plates for bearings shall be hot dip galvanized
in accordance with requirements of ASTM A123. The
contractor shall have an adequate number of shim plates
available at the job site for use if required.

Diaphragm: The diaphragms shall be cast-in-place after the
transverse post-tensioning has been completed. The cost of
materials and labor required for the construction of diaphragms
shall be included in the cost of concrete and reinforcing steel for
the superstructure.

Neoprene Bearing Pad: Composite Neoprene Bearing Pads shall be
provided in accordance with details in this standard and the
Department's specifications. The pads are considered to be
incidental to the cost of the precast double-tee beams;
therefore, no separate payment will be made.

Post-Tensioning: The work and materials required for post-
tensioning shall conform to the special provisions. This work
is considered to be incidental to the cost of the precast
double-tee beams; therefore, no separate payment will be
made.

Each post-tensioning tendon shall consist of three (3) No. 13 strands.

The post-tensioning design assumptions are as follows:

anchor set	= 10 mm
friction coefficient	= 0.0
wobble coefficient	= 0.00066/m

The jacking force required before anchor set is 138.0 kN for
each strand.

Ducts, couples, transitions (trumpets) shall be fabricated
from virgin high density polyethylene. The ducts shall be
flat corrugated ducts in accordance with the plans. During
casting of the beams, the ducts shall be held in proper
alignment by a rigid mandrel sufficient to prevent
displacement. Ducts shall have a grouting vent at each
anchorage. Duct splices shall be watertight.

Exterior blockouts shall be filled with an approved non-
shrink, non-metallic grout after completion of the post-
tensioning operation. Prior to grouting blockouts, all
concrete surfaces in contact with the grout shall be
roughened, and the metallic anchorage devices and strands
shall be cleaned to the satisfaction of the engineer; and
immediately before grouting, the blockout concrete surfaces
and anchorage devices shall be coated with an approved bonding
compound.

Shop Drawings: Shop drawings for double-tee beams shall show a
complete detensioning schedule so as to minimize tension in
the concrete during release of the strands. Detailed concrete
stresses during each stressing operation of detensioning shall
be submitted with the Shop Drawings. Shop Drawings shall show
complete details of the beams including reinforcing steel.
The contractor shall also include in the shop drawings the
post-tensioning information required by the special
provisions.

Payment: The cost of Double-Tee Beams shall be paid for at the
unit price per linear meter and shall include all materials
required for the fabrication of the precast beams as well
as erection of the beams. The unit price shall also include
the cost of all incidental materials and work such as: neoprene
bearing pads, shim plates, transverse post-tensioning
(including hardware), and grouting. Payment shall be made on the
quantity complete in place and accepted. Grinding of the top
surface, if needed, to provide a smooth riding surface is also
considered to be incidental work. Final pay lengths shall be
the plan quantity which is based on the casting lengths (Ls)
of the beams.

Pay Item numbers are as follows:

2450-I-118 Prestressed Beam (Florida Double-Tee Beam) (FDT18)
2450-I-124 Prestressed Beam (Florida Double-Tee Beam) (FDT24)
2450-I-130 Prestressed Beam (Florida Double-Tee Beam) (FDT30)


REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
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	NAMES	DATES
DRAWN BY	DCP/JSP	6-90
CHECKED BY	AJG	6-90
DESIGNED BY	AJG	6-90
CHECKED BY	TJB	6-90
APPROVED BY	AJG	

ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
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 FLORIDA DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: **FLORIDA DOUBLE-TEE NOTES
AND MISCELLANEOUS DETAILS**

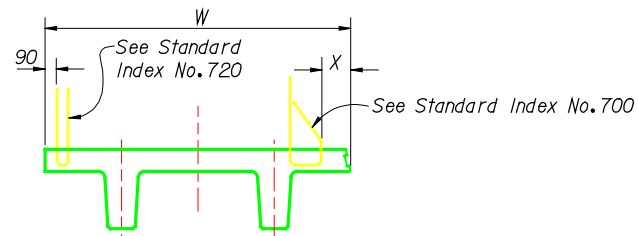
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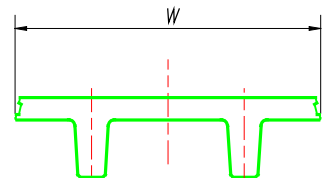
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INDEX NO.

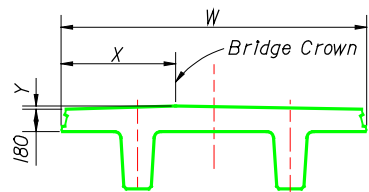
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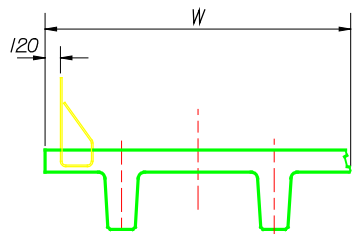
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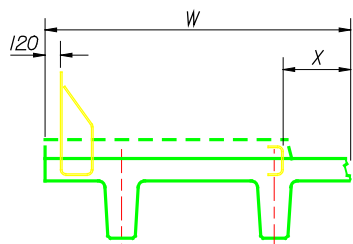
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TYPE 3



TYPE 4

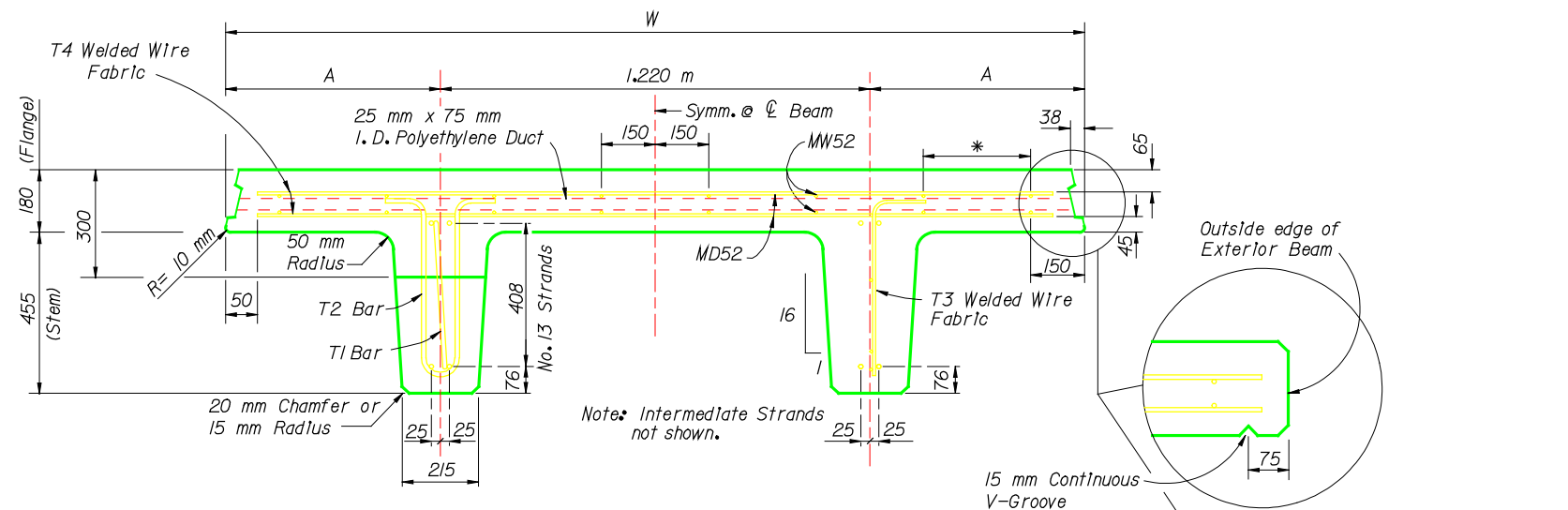


TYPE 5

NOTE: Reinforcement for Barrier Transition shall be provided in accordance with NOTE 'A' of Standard Index No. 700.

NOTE: For Dimensions "A", "L", "W", "X" & "Y", and Strand Pattern, see FDT18 Table of Variables & Strand Patterns Sheet.

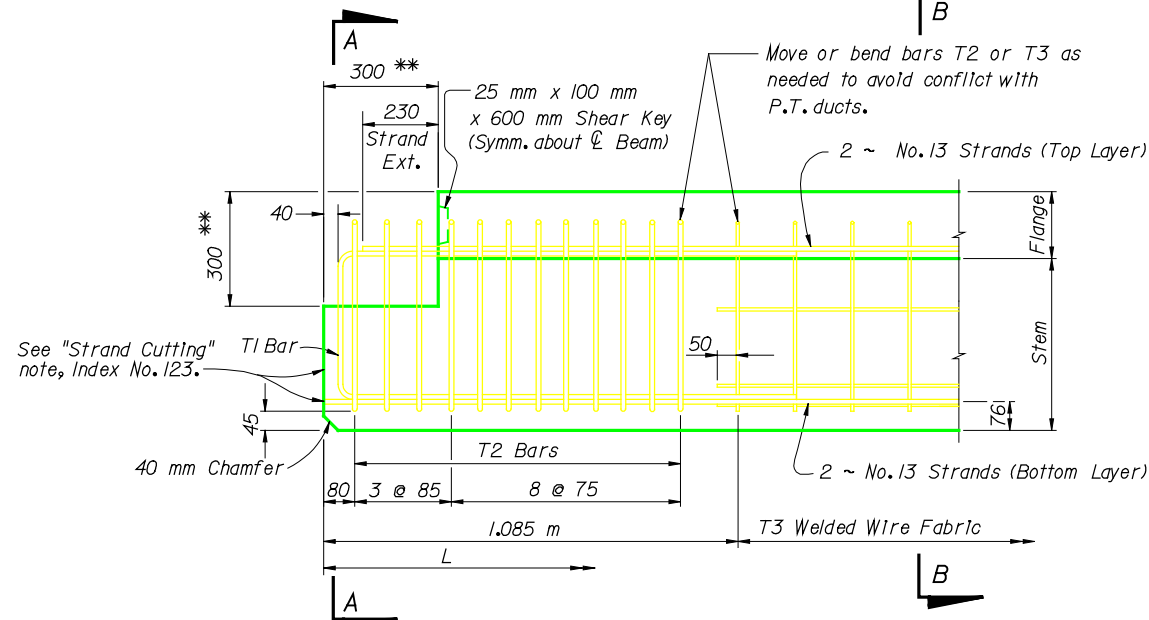
* Adjust outermost spacing to suit "W", i. e. Spacing = $\frac{1}{2}(W-1,800)$.



HALF SECTION A-A

** Blockout concrete to accept C. I. P. Diaphragm. See Index 127 for orientation of the horizontal 300 mm dimension.

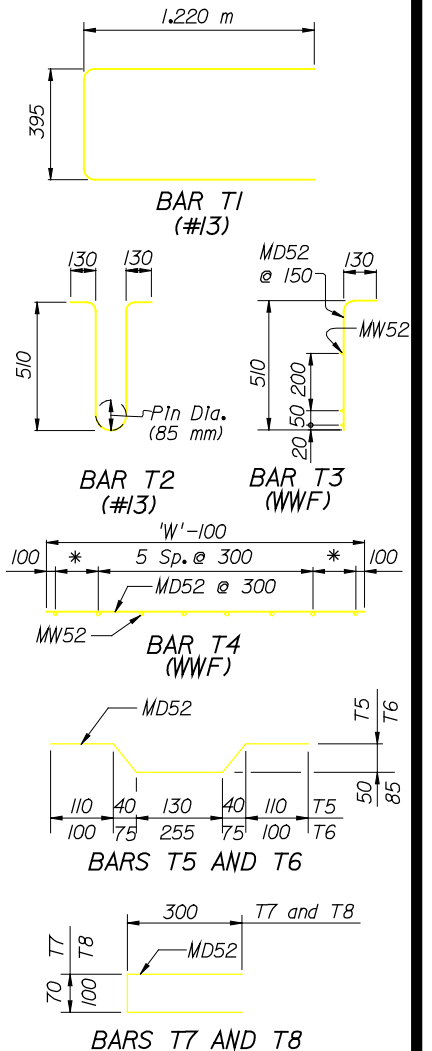
HALF SECTION B-B



PARTIAL ELEVATION

(Flange Reinforcing and P.T. Ducts not shown)
(Intermediate Strands not shown)

BENDING DIAGRAM



NOTES:

All bar bends shall be made with a 50 mm diameter pin unless otherwise noted.

The Welded Wire Fabric (T4) shall consist of eight (8) longitudinal MW52 wires welded to transverse MD52 wires spaced at 300 mm. The MW52 wires shall be spaced as shown above and their length, in the finished beam, shall be equal to the length of the precast flange plus 300 mm. Sufficient material to include splices shall be provided. Splices, if needed, shall be 360 mm minimum.

The longitudinal MW52 wires for the welded wire fabric (T3) do not require splicing.

MW52 wires shall conform to ASTM A185.
MD52 wires shall conform to ASTM A497.

Six (6) Bars 'T6' and two (2) Bars 'T8' are required at each P/T anchorage location.

Three (3) Bars 'T5' and two (2) Bars 'T7' are required at each P/T duct location where the tendon's path deviates from a straight course.

Four (4) Bars 'T1' are required per Beam.
Forty-eight (48) Bars 'T2' are required per Beam.

NOTE: All dimensions are in millimeters (mm), except as noted.

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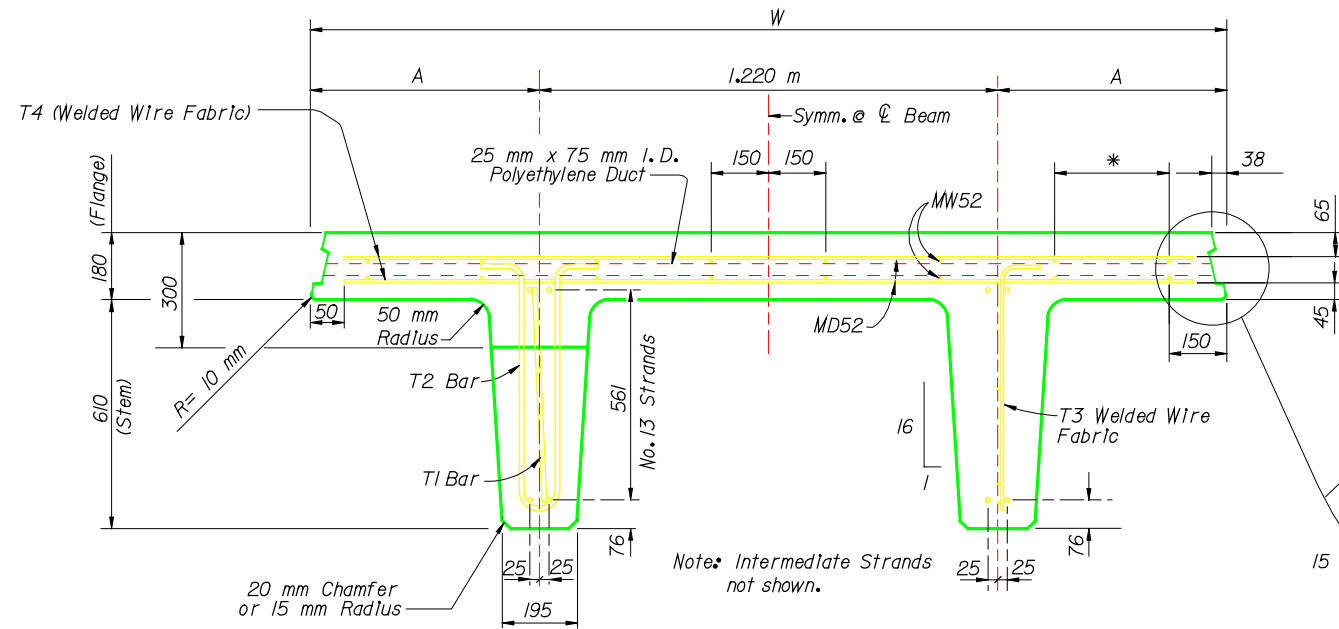
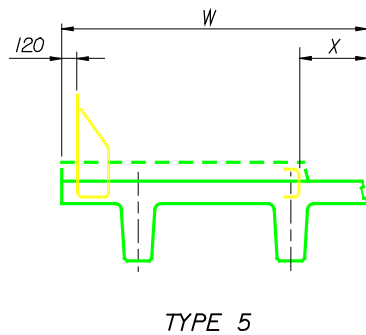
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ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
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605 Suwannee Street, MS 33
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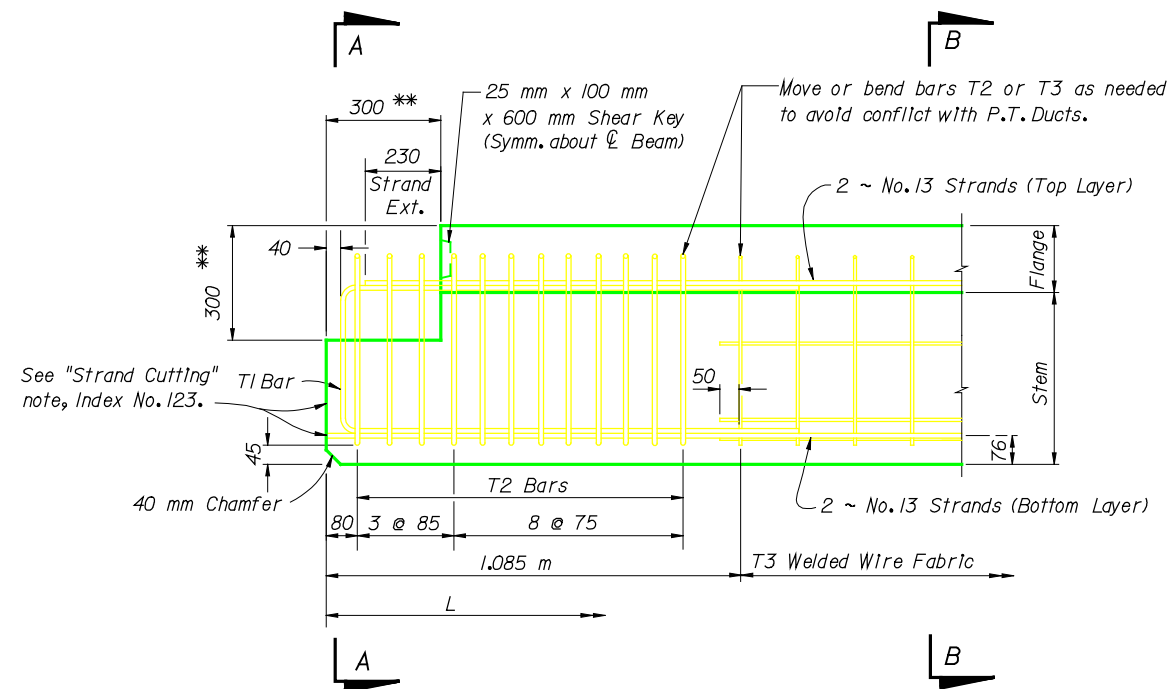
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STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: FDT 18 TYPICAL SECTION		DRAWING NO. 1 of 1
PROJECT NAME:		INDEX NO. 124

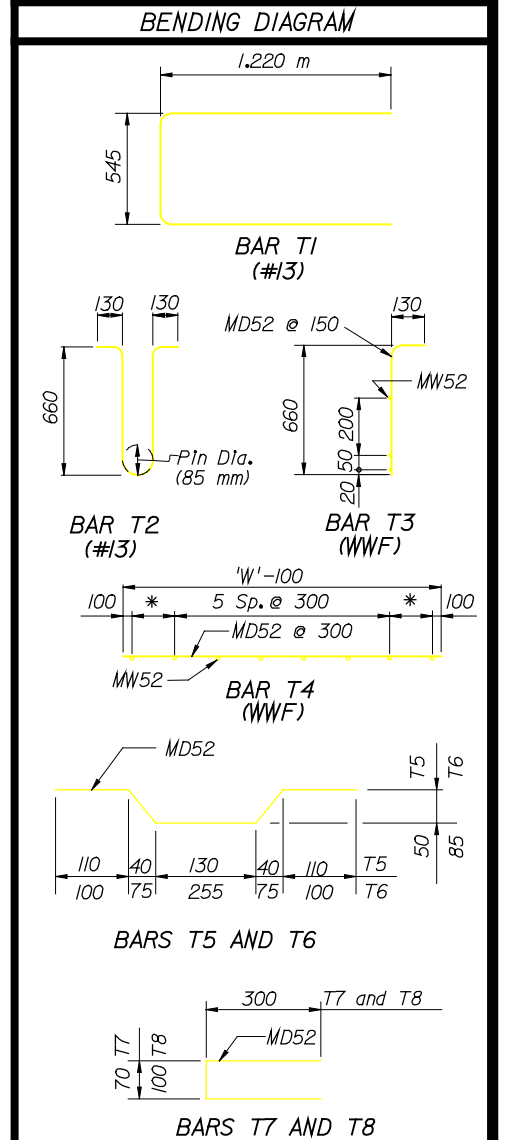
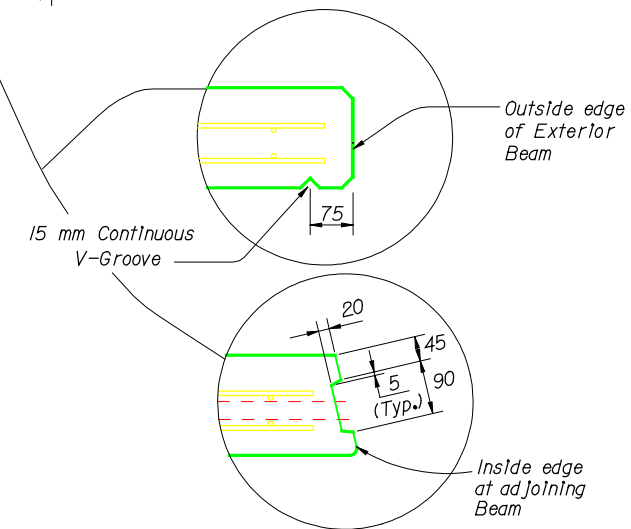


*Adjust outermost spacing to suit
"W", i. e. : Spacing = $\frac{1}{2}$ (W-1.800).

HALF SECTION B-B



PARTIAL ELEVATION
(Flange Reinforcing and P.T. Ducts not shown)
(Intermediate Strands not shown)



NOTES:

All bar bends shall be made with a 50 mm diameter pin unless otherwise noted.

The Welded Wire Fabric (T4) shall consist of eight (8) longitudinal MW52 wires welded to transverse MD52 wires spaced at 300 mm. The MW52 wires shall be spaced as shown above and their length, in the finished beam, shall be equal to the length of the precast flange plus 300 mm. Sufficient material to include splices shall be provided. Splices, if needed, shall be 360 mm minimum.

The longitudinal MW52 wires for the welded wire fabric (T3) do not require splicing.

MW52 wires shall conform to ASTM A185.
MD52 wires shall conform to ASTM A497.


Six (6) Bars 'T6' and two (2) Bars 'T8' are required at each P/T anchorage location.

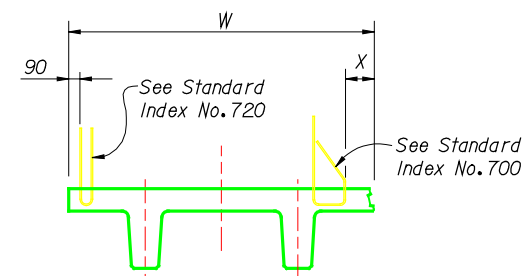
Three (3) Bars 'T5' and two (2) Bars 'T7' are required at each P/T duct location where the tendon's path deviates from a straight course.

Four (4) Bars 'Tl' are required per Beam.

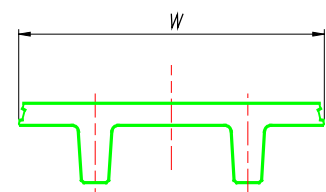
Forty-eight (48) Bars 'T2' are required per Beam.

NOTE: All dimensions are in millimeters (mm),
except as noted.

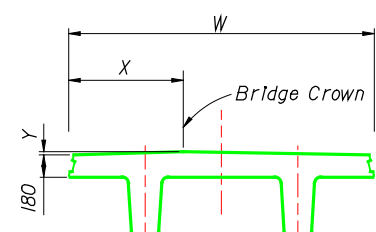
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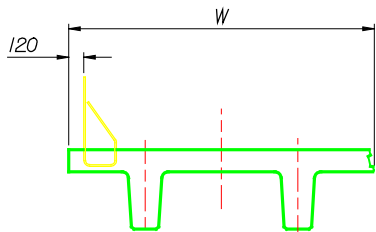
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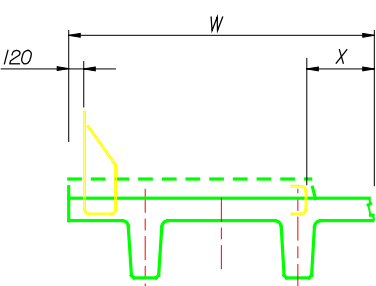
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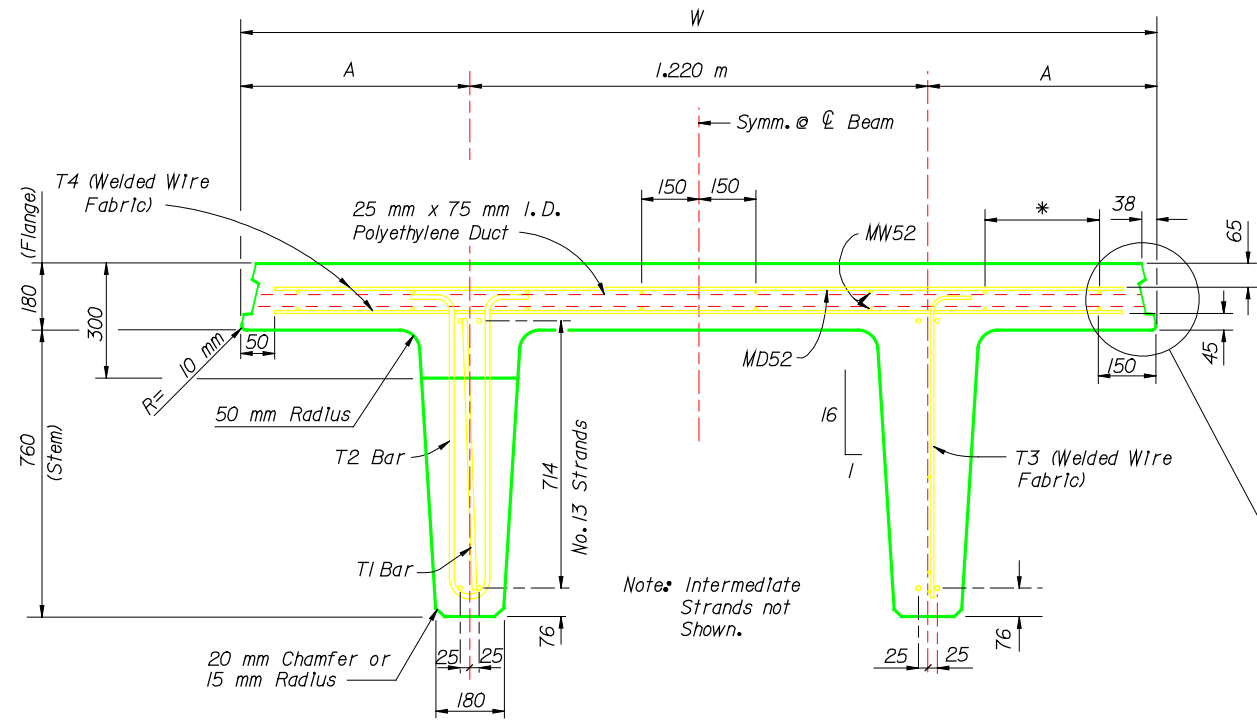
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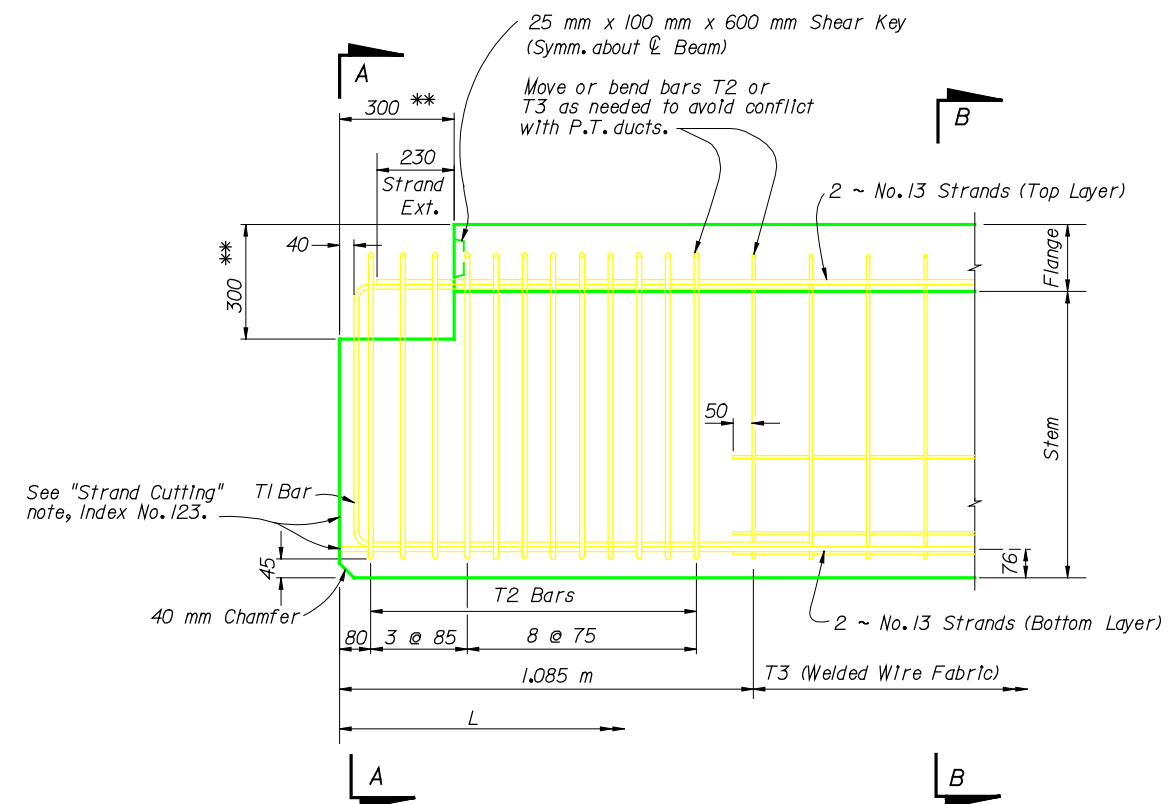


TYPE 5



HALF SECTION A-A

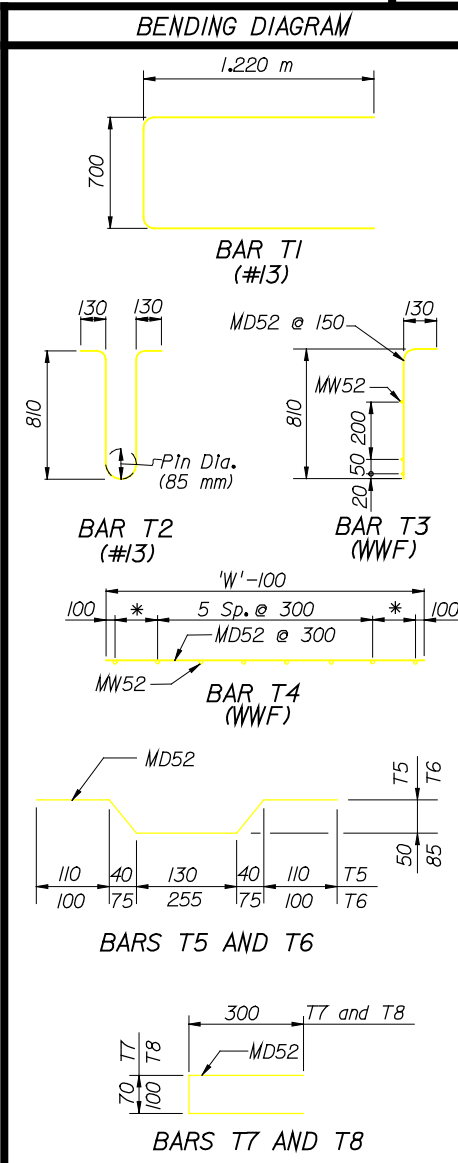
HALF SECTION B-B



PARTIAL ELEVATION

(Flange Reinforcing and P.T. Ducts not shown)
(Intermediate Strands not shown)

NOTE: For dimensions "A", "L", "W", "X" & "Y", and Strand Patterns, see FDT30 Table of Variables & Strand Patterns Sheet.
*Adjust outermost spacing to suit "W", i.e. Spacing = $1/2(W-1,800)$.
**Blockout concrete to accept C.I.P. Diaphragm.
See Index 127 for orientation of the horizontal 300 mm dimension.



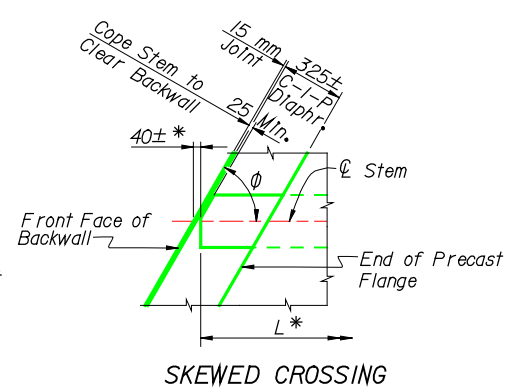
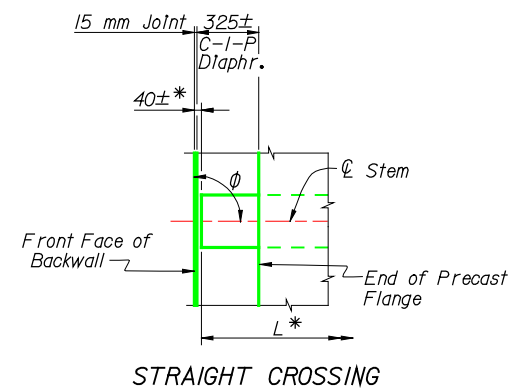
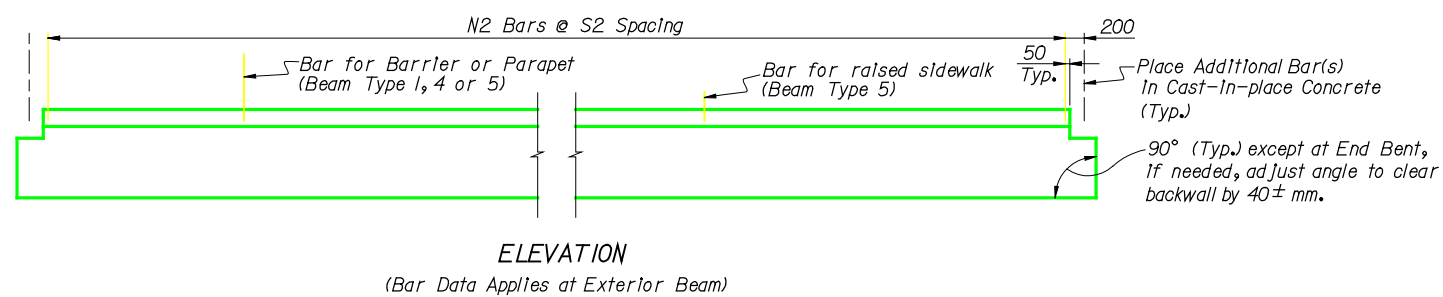
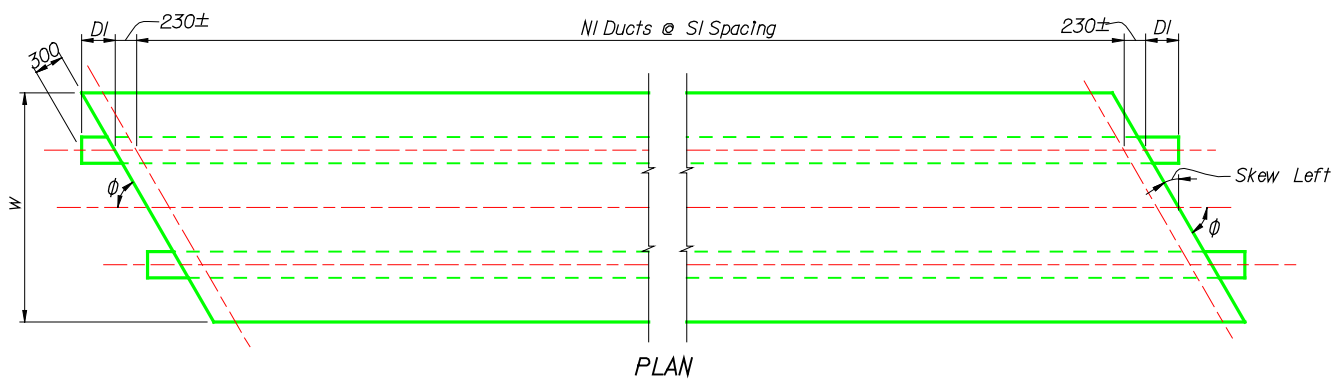
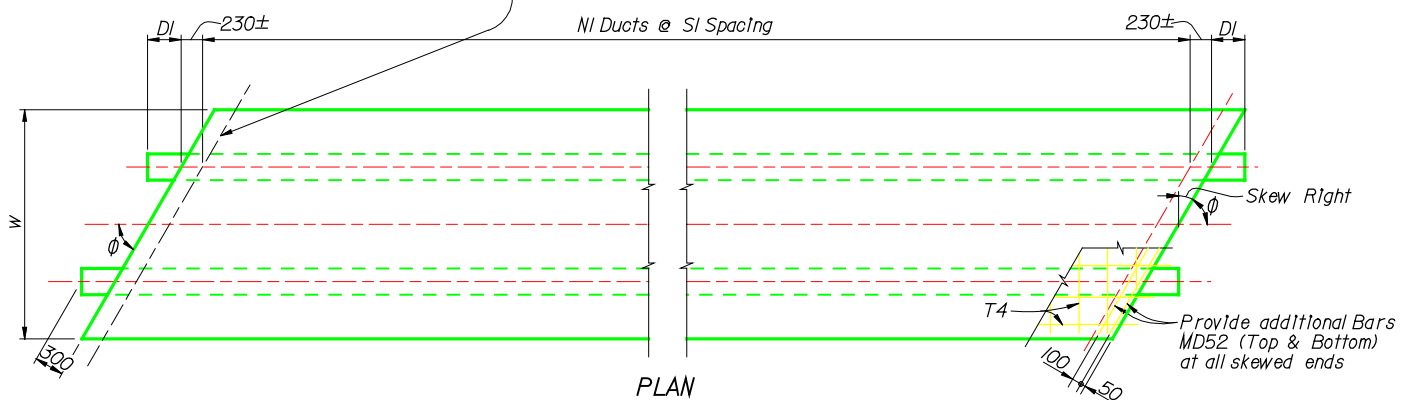
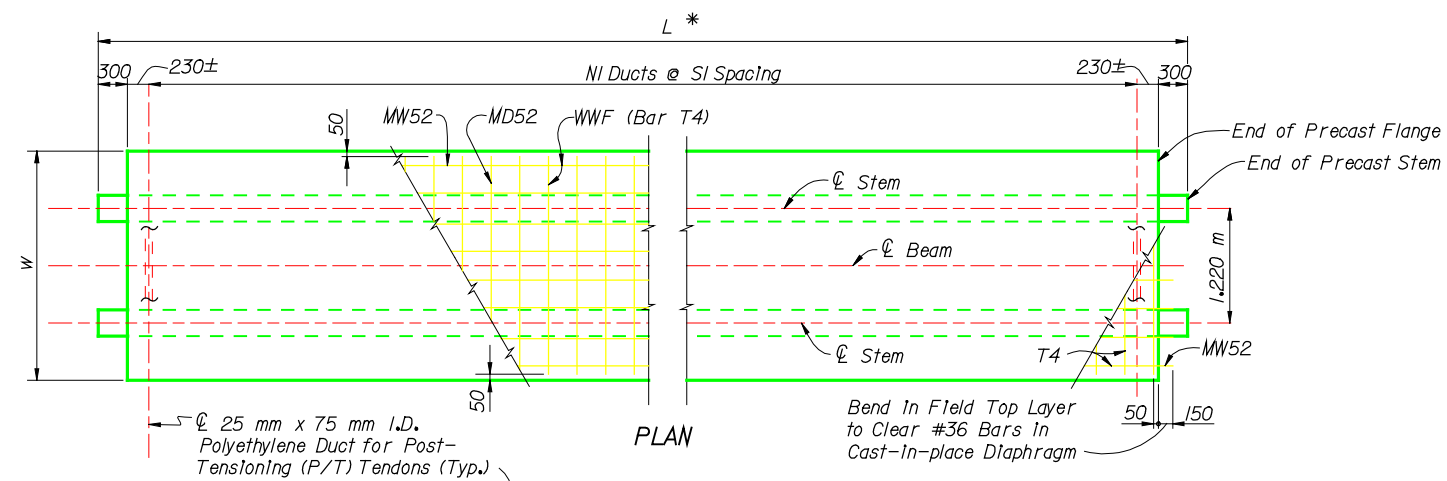
NOTES:
All bar bends shall be made with a 50 mm diameter pin unless otherwise noted.
The Welded Wire Fabric (T4) shall consist of eight (8) longitudinal MW52 wires welded to transverse MD52 wires spaced at 300 mm. The MW52 wires shall be spaced as shown above and their length, in the finished beam, shall be equal to the length of the precast flange plus 300 mm. Sufficient material to include splices shall be provided. Splices, if needed, shall be 360 mm minimum.
The longitudinal MW52 wires for the welded wire fabric (T3) do not require splicing.
MW52 wires shall conform to ASTM A185.
MD52 wires shall conform to ASTM A497.
Six (6) Bars 'T6' and two (2) Bars 'T8' are required at each P/T anchorage location.
Three (3) Bars 'T5' and two (2) Bars 'T7' are required at each P/T duct location where the tendon's path deviates from a straight course.
Four (4) Bars 'T1' are required per Beam.
Forty-eight (48) Bars 'T2' are required per Beam.

NOTE: All dimensions are in millimeters (mm), except as noted.

DATE: 11/11/11 TIME: 10:00 AM

REVISIONS				DRAWN BY				ENGINEER OF RECORD				FLORIDA DEPARTMENT OF TRANSPORTATION				DRAWING NO.			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DATE	BY	DESCRIPTION	DATE	ROAD NO.	COUNTY	PROJECT NO.	PROJECT NAME	INDEX NO.	INDEX NO.	INDEX NO.	INDEX NO.
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				DESIGNED BY				605 Suwannee Street, MS 33											
				CHECKED BY				Tallahassee, Florida 32399-0450											
				APPROVED BY															

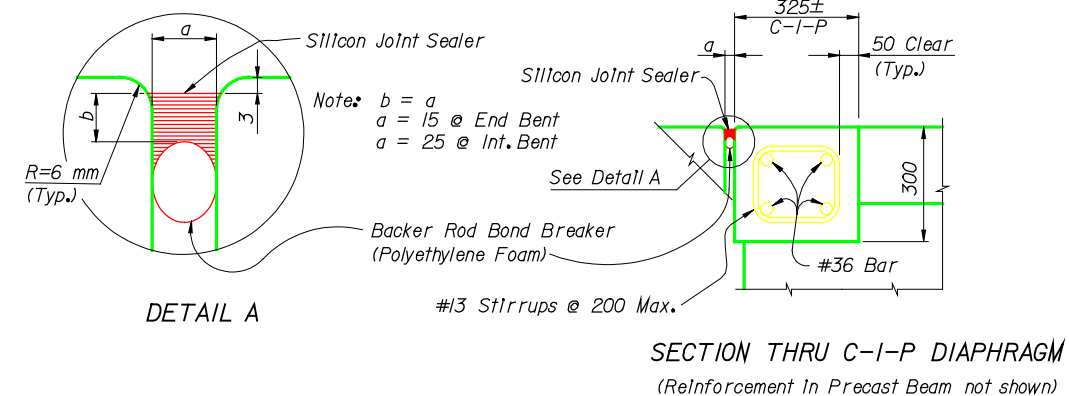
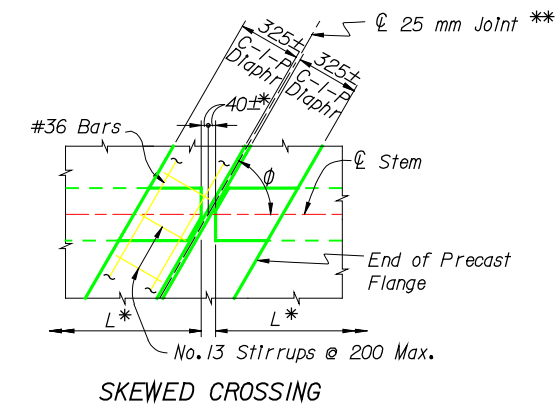
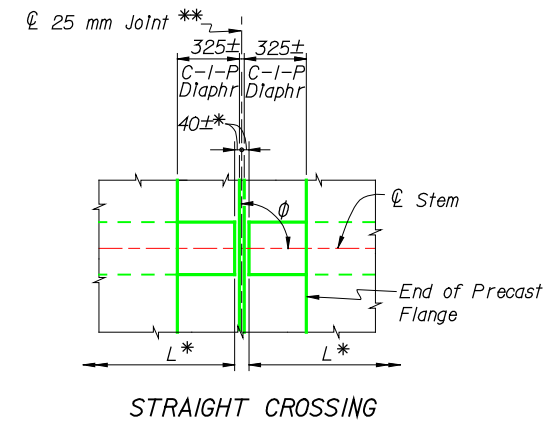
NOTE: For variable dimensions, angles, & numbers, see "Table of Variables and Strand Patterns" Sheet.



INSTRUCTIONS TO DESIGNER: SI (In meters) < 1.370 ($\sin \phi$)
 $S2 \leq 200$ mm
 $\phi \geq 60^\circ$

The Cast-In-place diaphragms are not included in the bid price for Double-Tee beams; therefore, the required concrete and steel quantities must be shown in the plans prepared by the designer.
 PLEASE ERASE THIS NOTE WHEN COMPLETING THIS DRAWING.

* Dimension applies along bottom of Stem.
 $L = (\text{Front Face to Front Face of Backwall}) - 80$ mm
 $L = (\text{Front Face of Backwall to } \phi \text{ Int. Bent}) - 80$ mm
 $L = (\phi \text{ to } \phi \text{ Intermediate Bent}) - 80$ mm
 ** ϕ Joint may not coincide with ϕ Bent.



NOTE: All dimensions are in millimeters (mm), except as noted.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
			98		

DRAWN BY	NAMES	DATES
CHECKED BY	AJG	6-90
DESIGNED BY	TJB	6-90
CHECKED BY	AJG	6-90
APPROVED BY	AJG	

ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
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 605 Suwannee Street, MS 33
 Tallahassee, Florida 32399-0450

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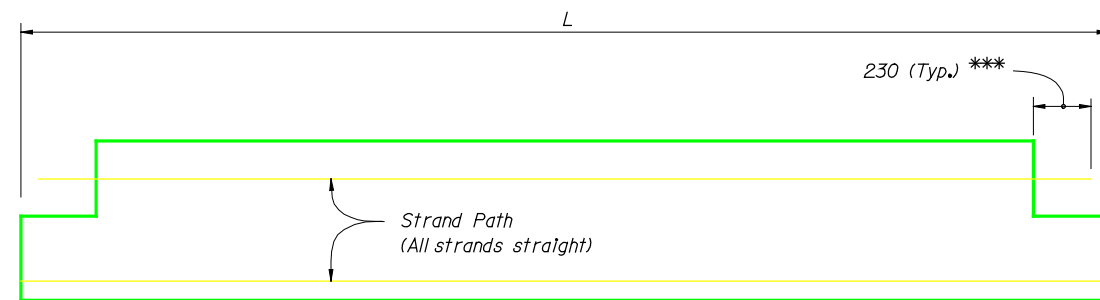
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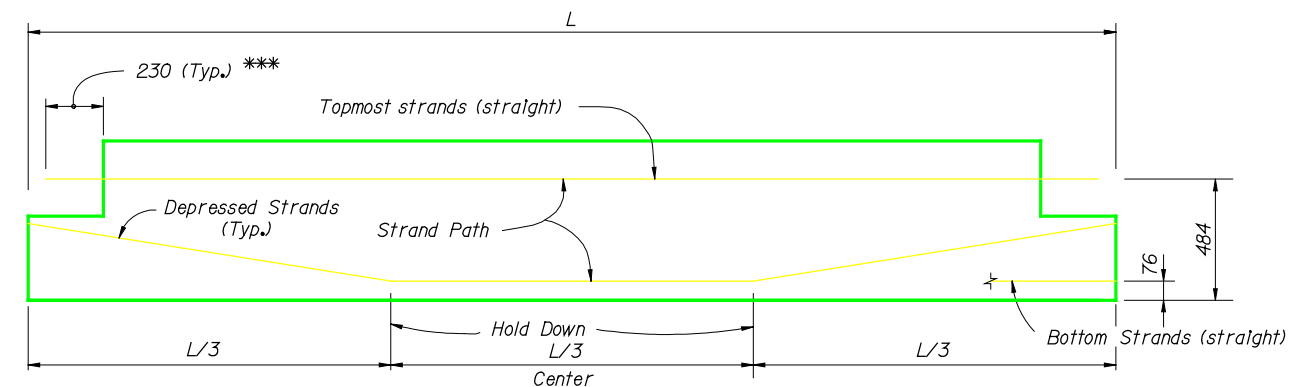
NOTE: All strands shall be No. 13 Low Relaxation Strands conforming to ASTM A416M, Grade 1860. Dimension "L" applies along bottom of Stem. This dimension requires no correction for elastic and time-dependent shortening effects; however, at End Bents of skewed bridges the stem end may require coping to clear backwall, See Index 127.

All dimensions are in millimeters (mm), except as noted.



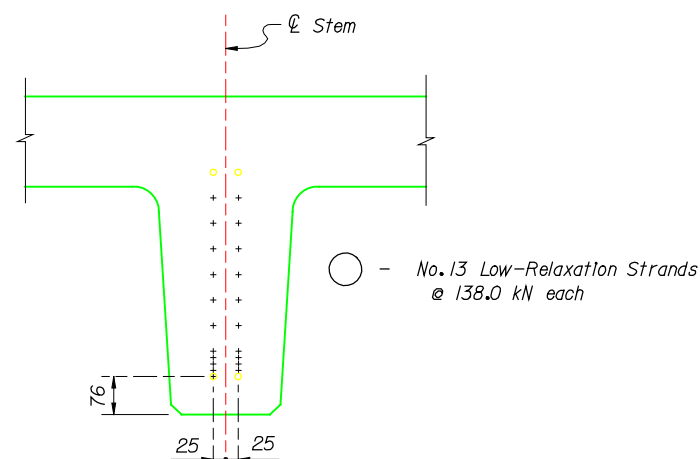
*** Strands terminating within Diaphragm blackout

CASE 1

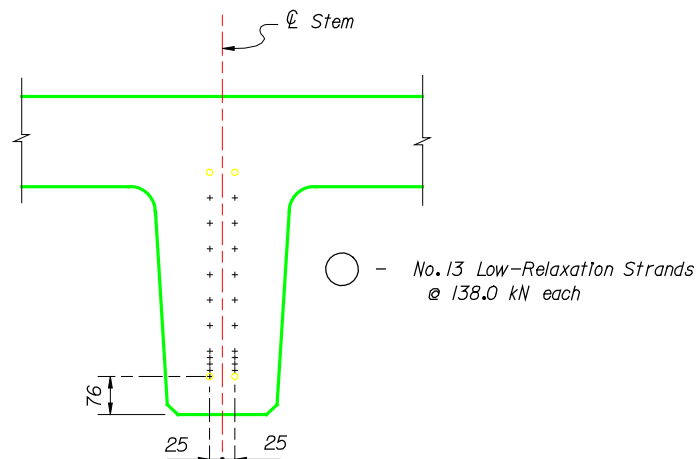


CASE 2

STRAND PATTERN CASE
(Side Elevation)

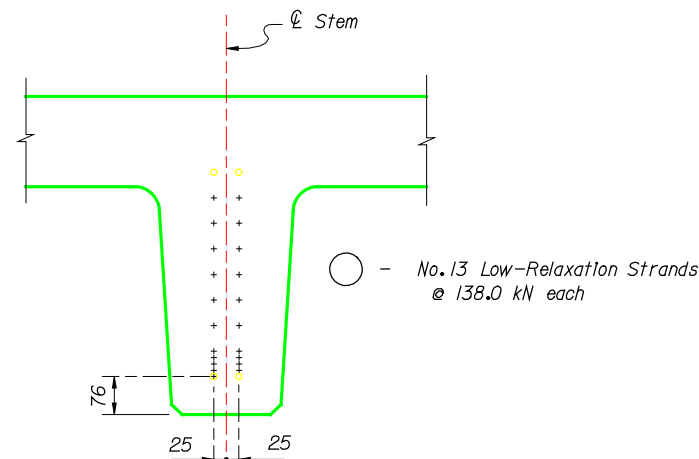


TYPE I

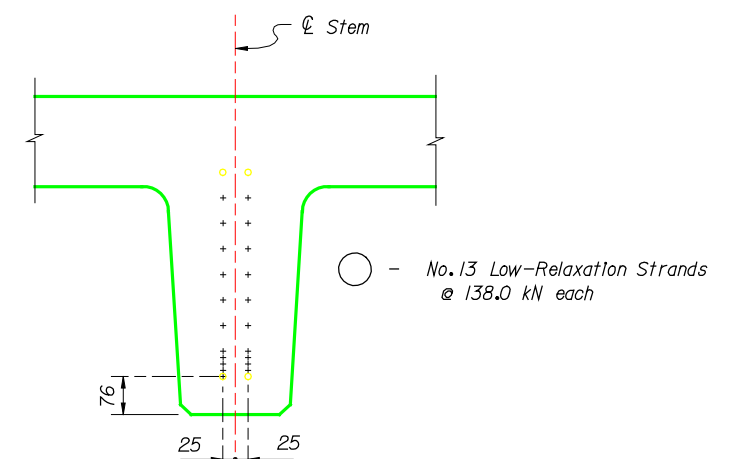


TYPE 2

STRAND PATTERN TYPE



TYPE 3



TYPE 4

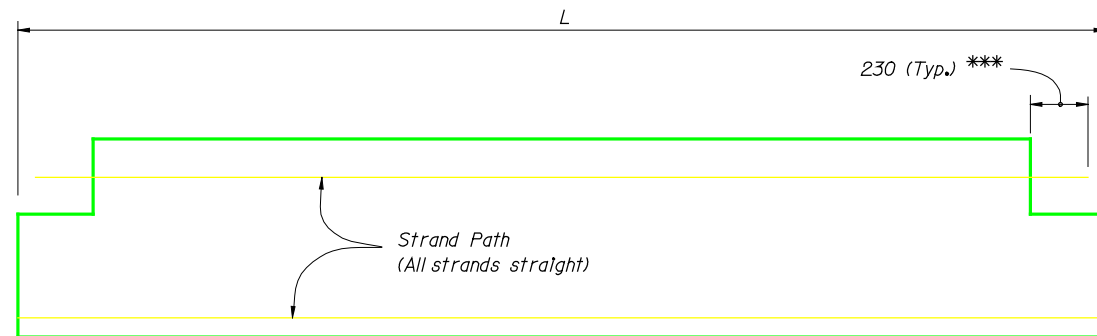
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[illegible]

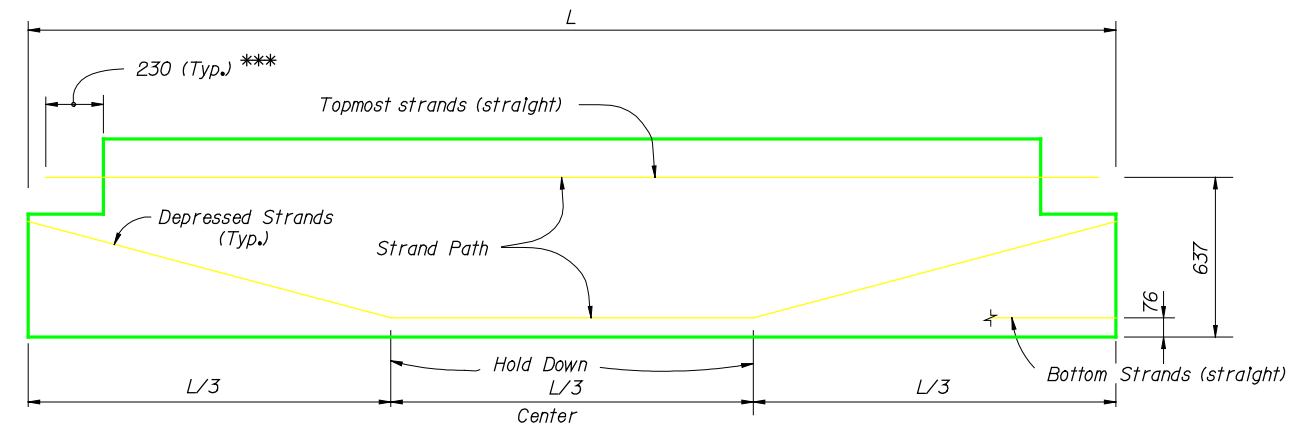
PLEASE ERASE THIS NOTE WHEN COMPLETING THIS DRAWING.

**** NOTE:** Strand Pattern Type at "End" applies at the extreme end of the beam. The pattern at the "Center" applies between hold down points.

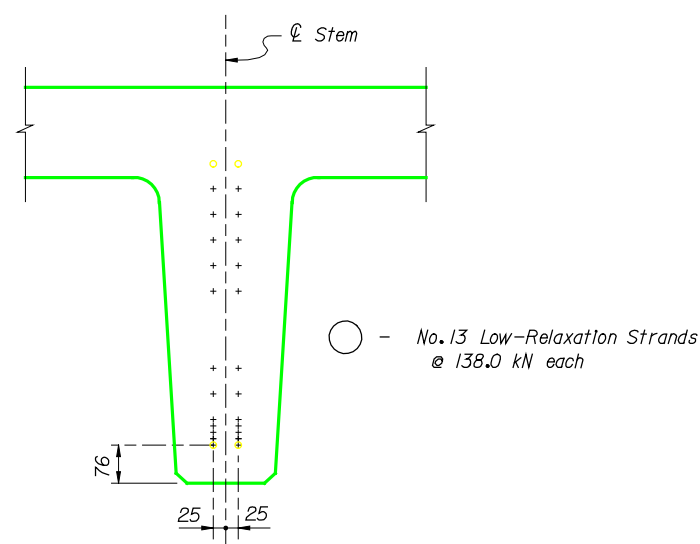
All dimensions are in millimeters (mm), except as noted.



*** Strands terminating within Diaphragm blackout



STRAND PATTERN CASE
(Side Elevation)



Stem

No. 13 Low-Relaxation Strands
@ 138.0 kN each

76

25 25


Stem

○ - No. 13 Low-Relaxation Strands
@ 138.0 kN each

76

25

STRAND PATTERN TYPE

REVISIONS						DRAWN BY		CHECKED BY		DESIGNED BY		CHECKED BY		APPROVED BY		NAMES		DATES		ENGINEER OF RECORD.		LOGO.		<div><div></div><div>FLORIDA DEPARTMENT OF TRANSPORTATION</div><div>STRUCTURES DESIGN OFFICE</div></div>			SHEET TITLE. FDI 24 TABLE OF VARIABLES AND STRAND PATTERNS		DRAWING NO. 1 of 1	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION																				ROAD NO.	COUNTY	PROJECT NO.	PROJECT NAME.	INDEX NO. S-129	
			98R																											

[illegible]

INSTRUCTIONS TO DESIGNER:

Show all strands within the stem at the indicated locations, and provide dimensions. Delete locations (+)s not used. Show the total number of strands within circle.

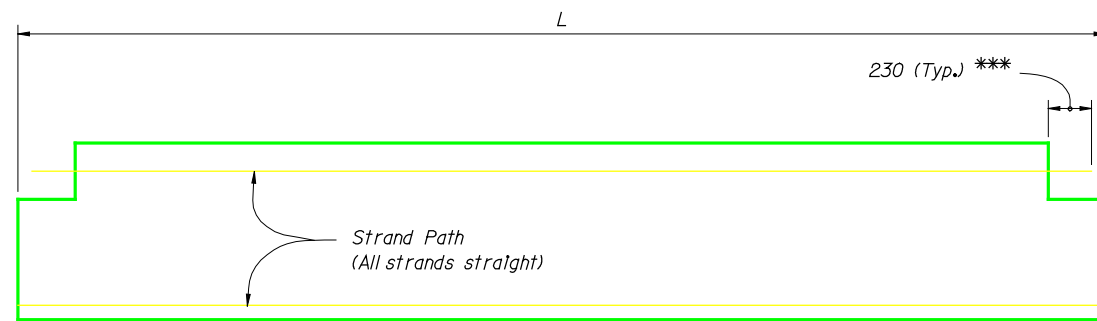
PLEASE ERASE THIS NOTE WHEN COMPLETING THIS DRAWING.

* NOTE: Reinf. Steel Data refers to reinforcement for superimposed cast-in-place elements such as Barriers, etc.

**** NOTE:** Strand Pattern Type at "End" applies at the extreme end of the beam. The pattern at the "Center" applies between hold down points.

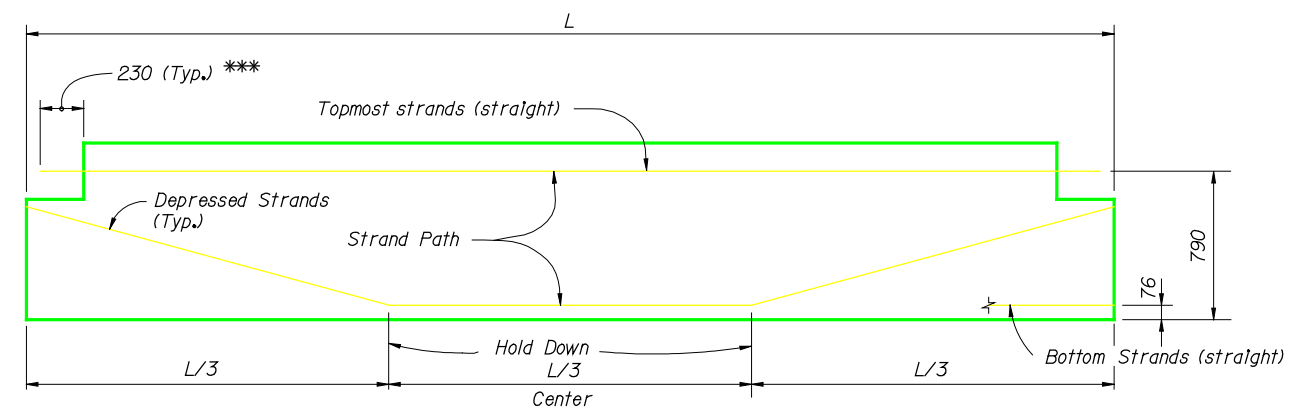
NOTE: All strands shall be No. 13 Low Relaxation Strands conforming to ASTM A416M, Grade 1860. Dimension "L" applies along bottom of Stem. This dimension requires no correction for elastic and time-dependent shortening effects; however, at End Bents of skewed bridges the stem end may require coping to clear backwall, See Index 127.

All dimensions are in millimeters (mm), except as noted.



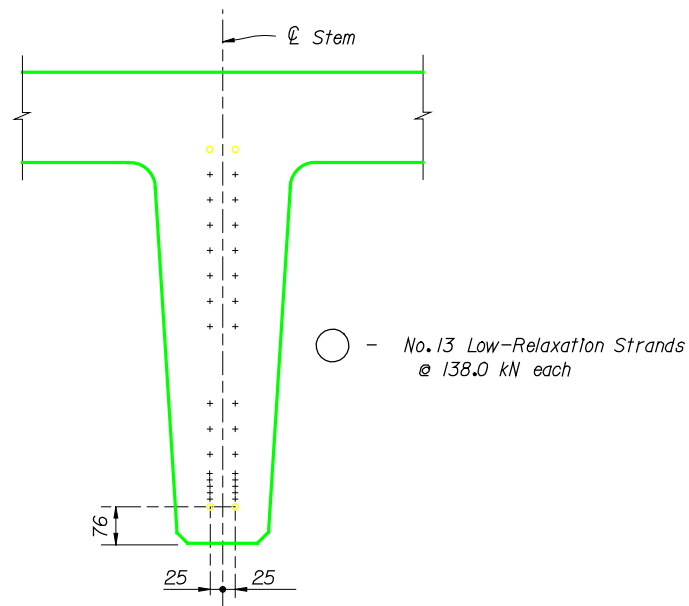
CASE 1

*** Strands terminating within Diaphragm blackout

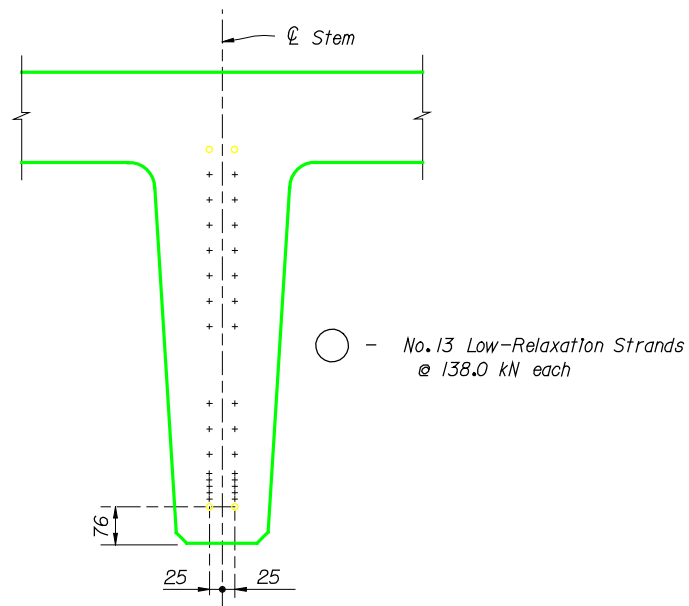


CASE 2

STRAND PATTERN CASE
(Side Elevation)

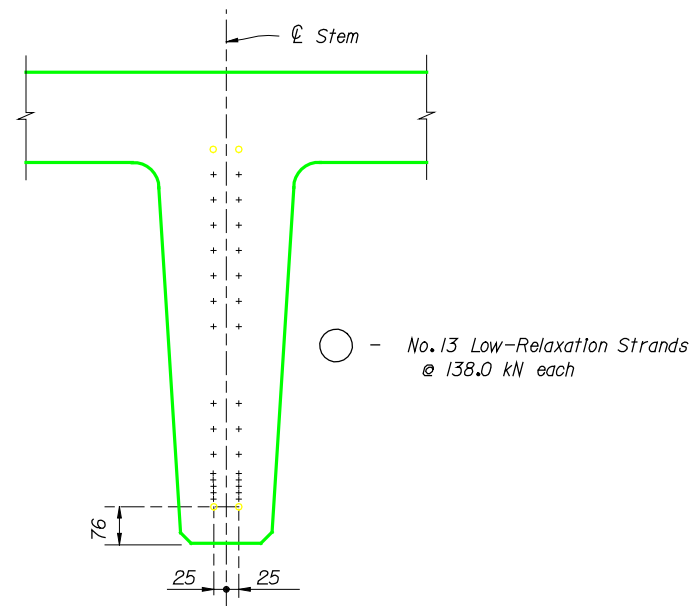


TYPE I

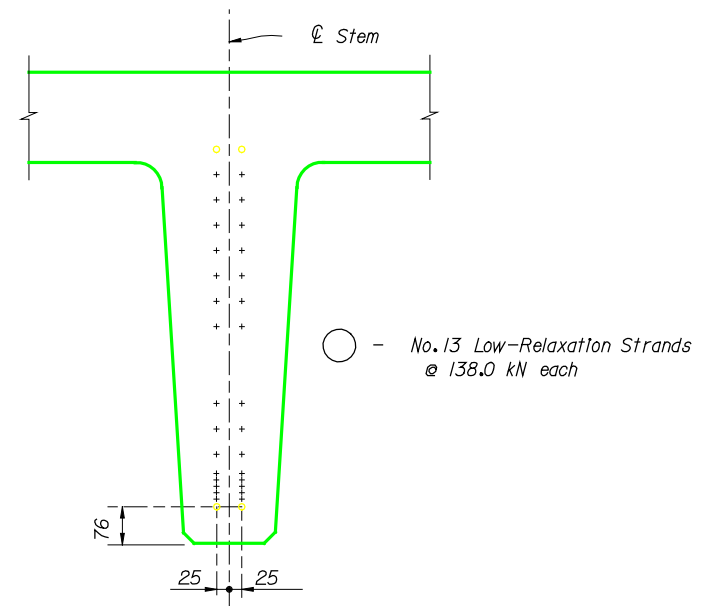


TYPE 2


STRAND PATTERN TYPE

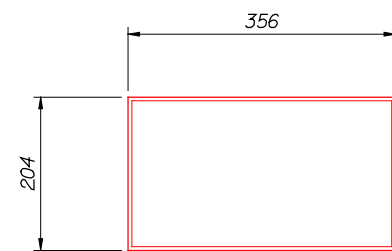


TYPE 3

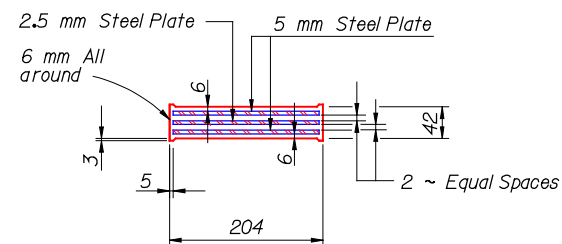


TYPE 4

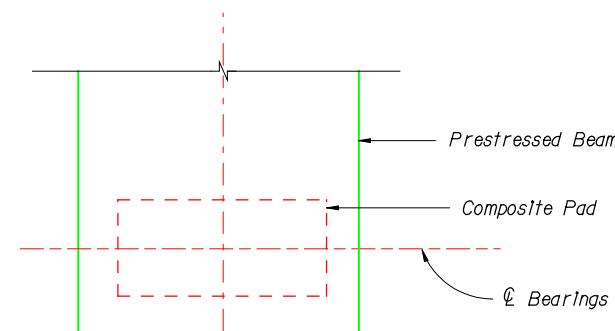
REVISED						NAMES		DATES		ENGINEER OF RECORD.		LOGO.		FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET TITLE.		DRAWING NO.	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY									STRUCTURES DESIGN OFFICE	FDI 30 TABLE OF VARIABLES AND STRAND PATTERNS		1 of 1	
			98R			CHECKED BY										PROJECT NAME.		INDEX NO.	
						DESIGNED BY												S-130	
						CHECKED BY													
						APPROVED BY													



PLAN

COMPOSITE PAD
TYPE II

TYPICAL SECTION



STRAIGHT BRIDGE

PART PLAN

BEARING PAD NOTES

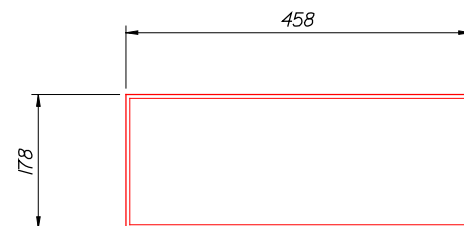
Neoprene in all Bearing Pads shall have a Grade 50 durometer hardness.

Steel Plates in composite pads shall conform to ASTM A36M or ASTM A570M Grade 250.

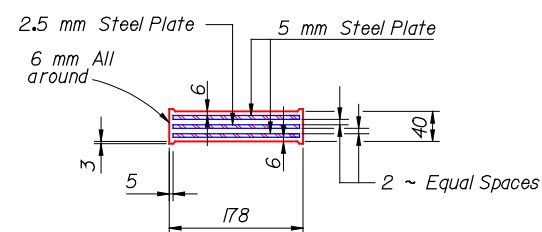
Variations in pad dimensions will be allowed provided revised pads will meet the current specifications and are approved by the Engineer.

When Slope is equal to or less than 2% the beam bearing areas shall be finished parallel to the beam slope and the underside of the beam shall be a flat surface. If Slope is greater than 2% see "End Elevation of Beams" on Indices 100, 101 and 110 for bearing treatment.

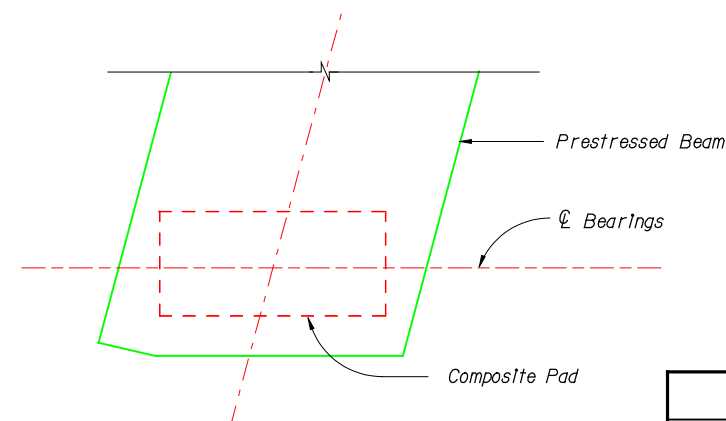
NOTE: All dimensions are in millimeters (mm), except as noted.



PLAN

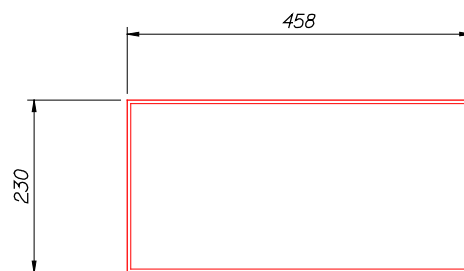
COMPOSITE PAD
TYPE III

TYPICAL SECTION

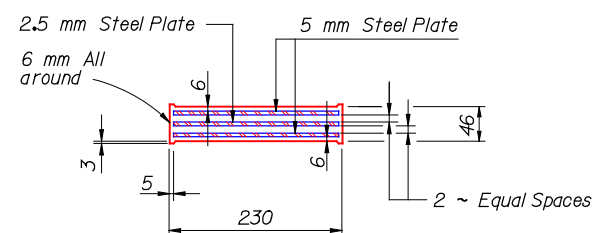


SKEWED BRIDGE

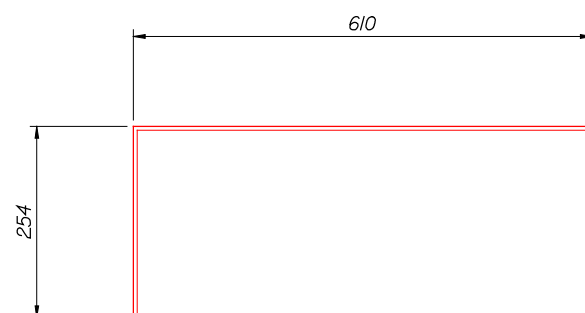
PART PLAN



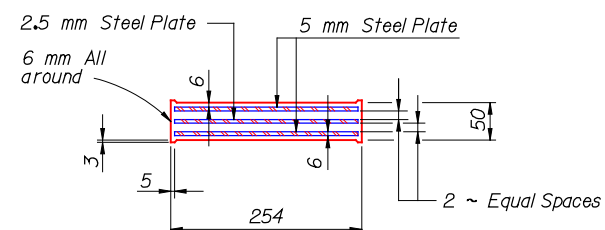
PLAN

COMPOSITE PAD
TYPE IV

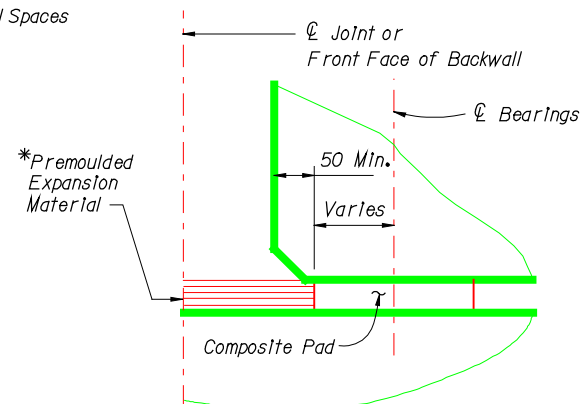
TYPICAL SECTION



PLAN

COMPOSITE PAD
TYPE V

TYPICAL SECTION



TYPICAL PAD DETAIL

PART ELEVATION

*Premoulded Expansion Material is required for Cast-In-Place Beam Extension.

TABLE OF REQUIRED PADS

BRIDGE NO.	NO. OF PADS REQUIRED			
	TYPE II	TYPE III	TYPE IV	TYPE V

INSTRUCTIONS TO DESIGNER:

The bearing pads shown were designed in accordance with the AASHTO Specifications Method 'B', and shall be utilized as follows:

PAD TYPE	BEAM TYPE	MAX. REACTION (DL + LL)	SHEAR DEFLECTION MAX.
II	II (AASHTO)	400 kN	15 mm
III	III (AASHTO)	512 kN	14 mm
IV	IV (AASHTO)	578 kN	17 mm
V	V & VI (AASHTO) AND FLORIDA BULB-T	854 kN	19 mm

The pads may also be utilized for steel beams provided, of course, that the designer verifies the design.

PLEASE ERASE THESE INSTRUCTIONS WHEN COMPLETING THIS DRAWING

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

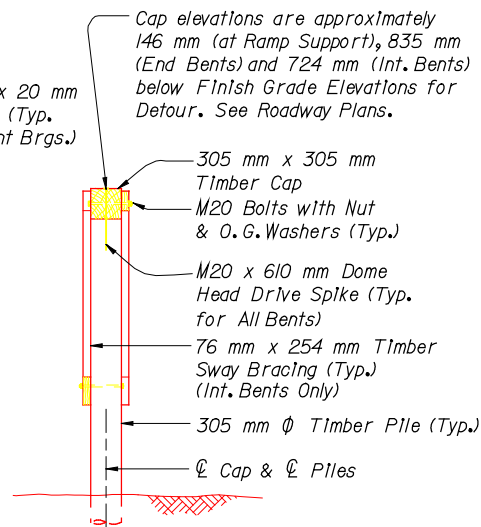
DRAWN BY	NAMES	DATES
CHECKED BY		
DESIGNED BY		
CHECKED BY		
APPROVED BY		

ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

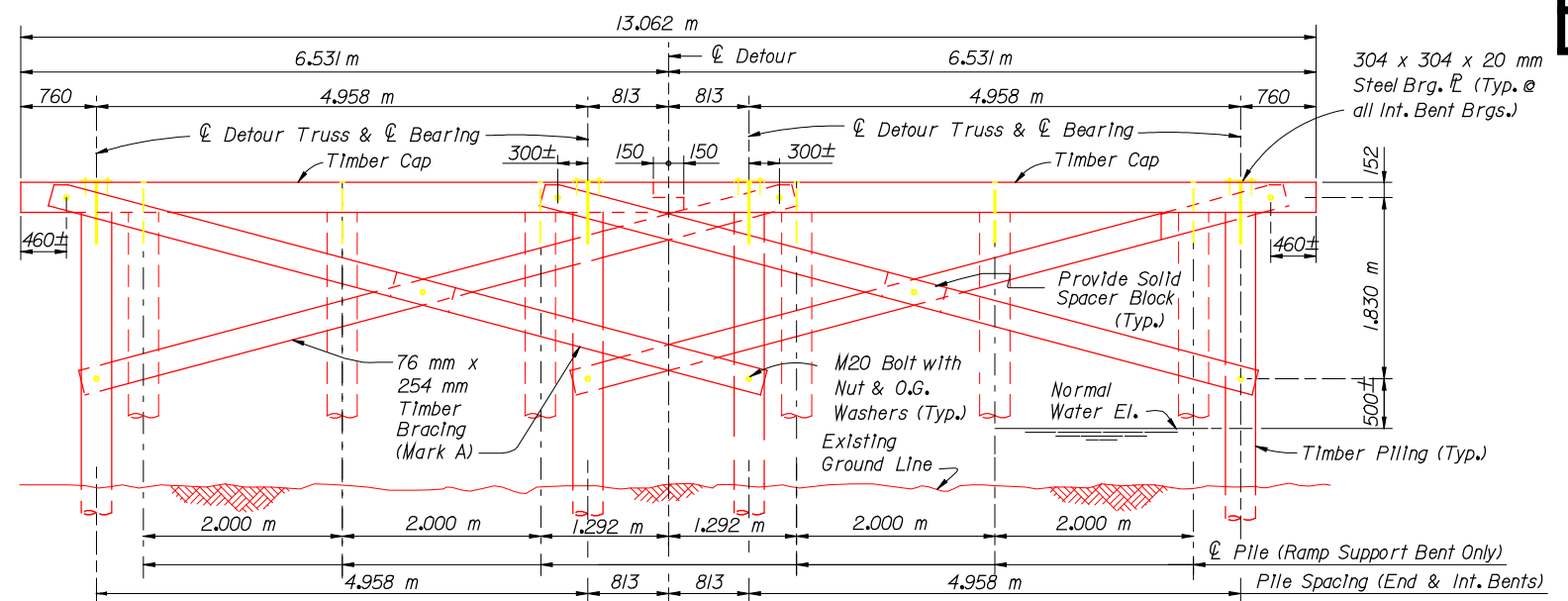
LOGO.

FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE:	DRAWING NO.
COMPOSITE NEOPRENE BEARING PADS	1 of 1
PROJECT NAME:	INDEX NO.
	S-200



TIMBER PILE BENT ELEVATIONS



NOTE: 6 Piles are required for each Ramp Support Bent.
4 Piles are required for each End or Int. Bent.

305 mm x 305 mm Mud Sill (Same as Cap)

25

127

12 mm Bearing Pl (See Detail)

Timber Pile

305 mm x 305 mm Cap

Ramp Span

Bridge Support Bent

NOTE: Provide Slope Protection (Mark B) from bottom of Mud Sill down 1,200 m to keep fill clear of bearings. (Fasten with 2-Fasteners at each Pile location as directed by the Engineer)

DETAIL A

9.144 m

1.524 m

762

762

114

130

1.5

1,500 m Min.

520

20 mm Bearing (See Detail)

9.144 m

Begin or End Ramp Span

Ramp Span

Begin or End Detour Bridge

Existing Ground Line

End Bent and Bearing Shoes (Fasten Bearing Shoes to Cap with 6 mm Lag Bolts)

Intermediate Bent

PART ELEVATION



NOTE: FDOT shall provide all Bearing Plates.

REVISIONS						NAME	DATE
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	
			98R			CHECKED BY	JSP/SHM JMD 4-94
						DESIGNED BY	
						CHECKED BY	
						APPROVED BY	A/G

ENGINEER OF RECORD.

STRUCTURES DESIGN OFFICE

CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO:



ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: **TIMBER BENTS FOR ACROW BRIDGE**
(ONE & TWO LANE SINGLE SINGLE EXTRA WIDE)

PROJECT NAME:

DRAWING NO.
1 of 1

INDEX NO.
300

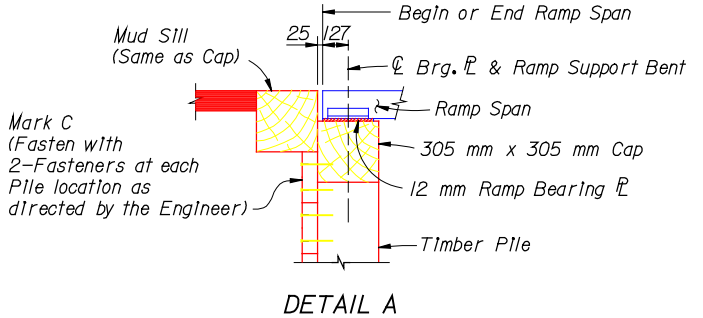
LIST OF STRUCTURAL TIMBER *								
ITEM	SIZE	LENGTH	NO. REQ'D.			CUBIC METERS		
			RAMP SUP.	END BENT	INT. BENT	RAMP SUP.	END BENT	INT. BENT
CAP & MUD SILL	305 x 305	5.480 m	4	2	2	2.039	1.020	1.020
MARK A	76 x 254	5.500 m	—	—	2	—	—	0.212
MARK B	76 x 254	5.650 m	—	—	2	—	—	0.218
MARK C	100 x 200	5.500 m	12	—	—	1.320	—	—
SPACER BLOCKS	254 x 305	600	—	—	2	—	—	0.093
TOTAL						3.359	1.020	1.543

*Quantities shown are for one bent only.

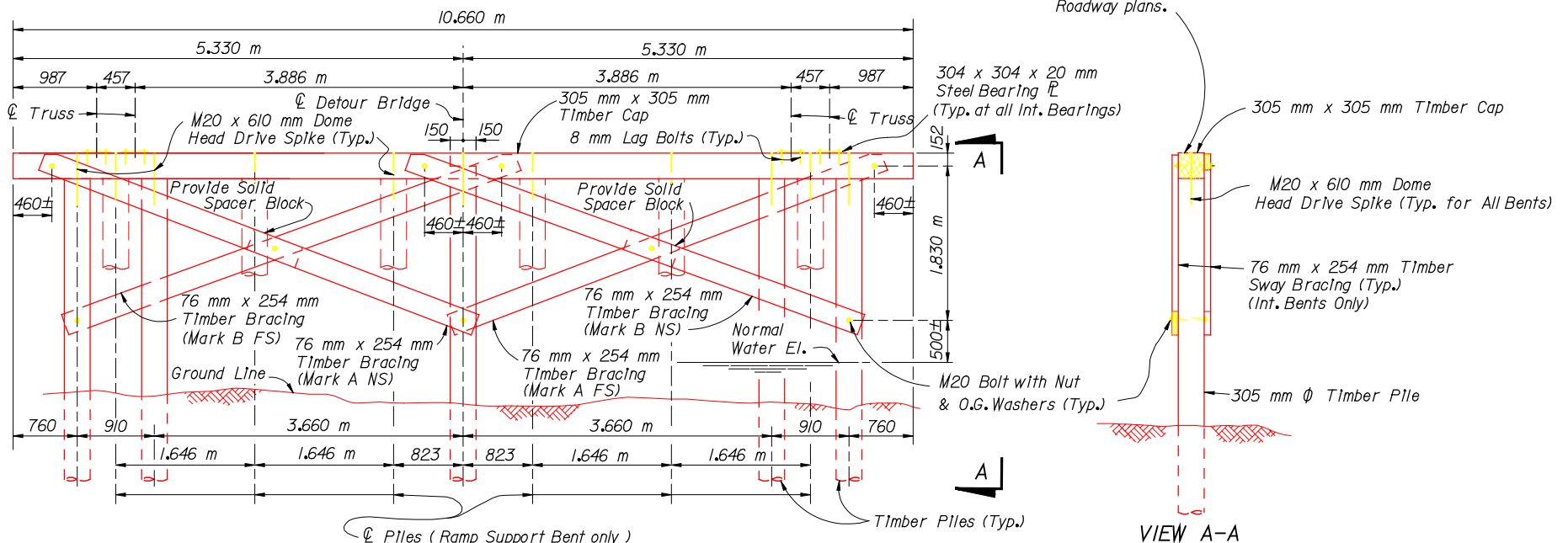
NOTES

- DESIGN LOAD FOR PILES: 180 kN
LOADING: M18
STRUCTURAL TIMBER: Timber piles and structural timber may be treated or untreated at the option of the contractor. The contractor shall provide all structural timber and piles.
SPAN LENGTH: 9.144 m Maximum
PAYMENT: See Roadway Plans
ERECTION: The contractor shall erect the detour bridge in accordance with the specifications, these plans, and the "Acrow Panel Bridge Technical Handbook". Steel grid bridge flooring will be furnished. The steel grid bridge flooring shall be brought into full contact with each transom and then securely fastened at each transom. The Engineer shall approve final assembly of Acrow Bridge components prior to placing traffic on the bridge.
AVAILABILITY: Contractor shall pick-up and return all Acrow Bridge components to the storage facility designated by the State Maintenance Office in Tallahassee.
DAMAGE: Contractor shall be responsible for damage to the Acrow Bridge components which occurs while in his possession. FDOT Inspection of Acrow Bridge components will be upon return of the components to the above FDOT Structures Shop.
ADDITIONAL INFORMATION: For additional information refer to the Specifications.
NOTE: All dimensions are in millimeters (mm), except as noted.

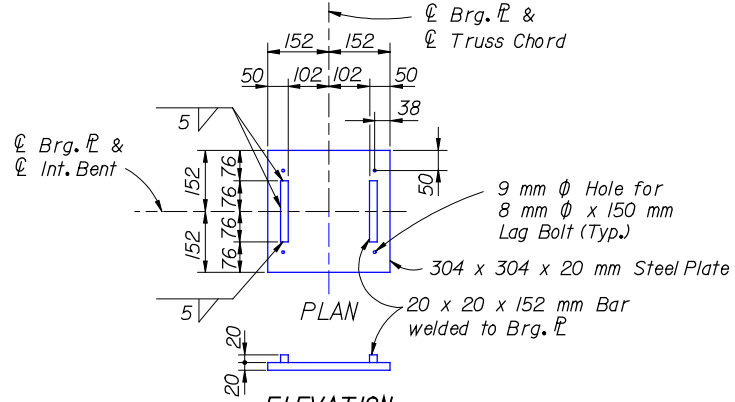
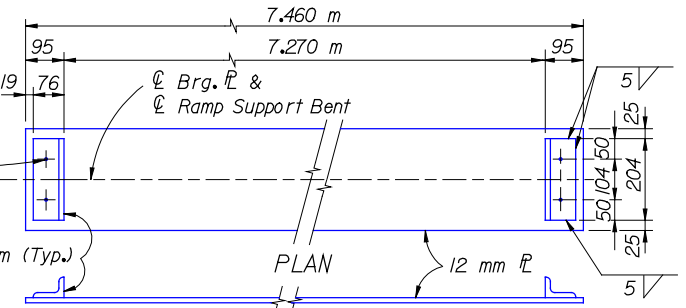
INSTRUCTIONS TO DESIGNER: Tall Bents and/or scour conditions may require additional piles or bracing or different kind of piles; therefore, the stability of the proposed bent shall be checked before implementing the design on this standard drawing. Also, if piling longer than 15 m is required, timber piling shall not be used unless authorized by the District Structures Engineer. PLEASE, ERASE THIS NOTE WHEN COMPLETING THIS DRAWING.



Cap elevations are approximately 146 mm (at Ramp Support), 835 mm (End Bents) and 724 mm (Int. Bent) below Finish Grade Elevations for Detour. See Roadway plans.



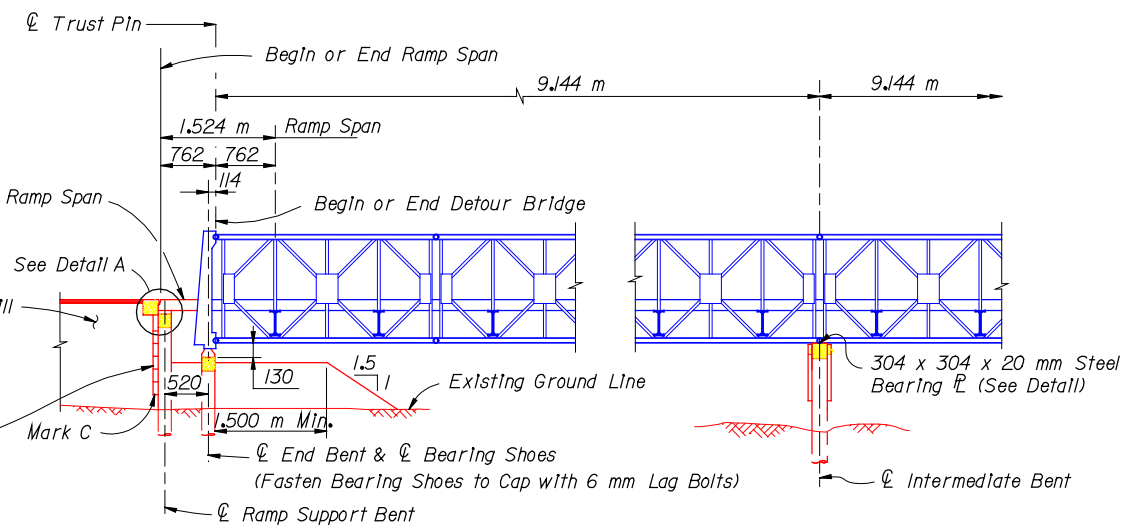
NOTE: 6 Piles are required for each Ramp Support Bent and 5 Piles are required for each End or Int. Bent.



NOTE: FDOT shall provide all Bearing Plates.

NOTE: Fasteners not included as Acrow bridge components shall be provided by Contractor, shall conform to ASTM A307 and shall be galvanized per ASTM A153.

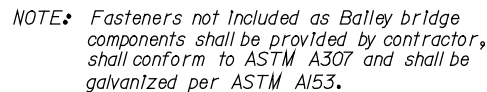
NOTE: Provide slope protection material (Mark C) from bottom of Mud Sill down 1,200 mm to keep fill clear of bearings.



PART ELEVATION

DATE: 11/11/11 TIME: 11:11 AM

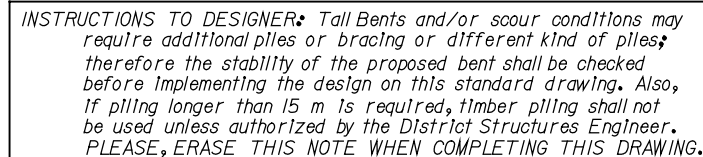
REVISIONS		NAMES		DATES		ENGINEER OF RECORD		LOGO		FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET TITLE		DRAWING NO.	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	JSP/SHM	4-94	CHECKED BY	JMD	4-94	STRUCTURES DESIGN OFFICE	TIMBER BENTS FOR ACROW BRIDGE	1 of 1	
						DESIGNED BY						CENTRAL OFFICE	(TWO LANE DOUBLE SINGLE DOUBLE WIDE)		
						CHECKED BY						605 Suwannee Street, MS 33			
						APPROVED BY	AJG					Tallahassee, Florida 32399-0450			
										ROAD NO.		COUNTY	PROJECT NO.	PROJECT NAME	
														INDEX NO.	
														301	



END VIEW
(Bent Only)



PART ELEVATION
(One 9.144 m Span)



3.048 m

1.448 m

445

127 mm Grd Deck


ELEVATION
(One 3.048 m Unit)

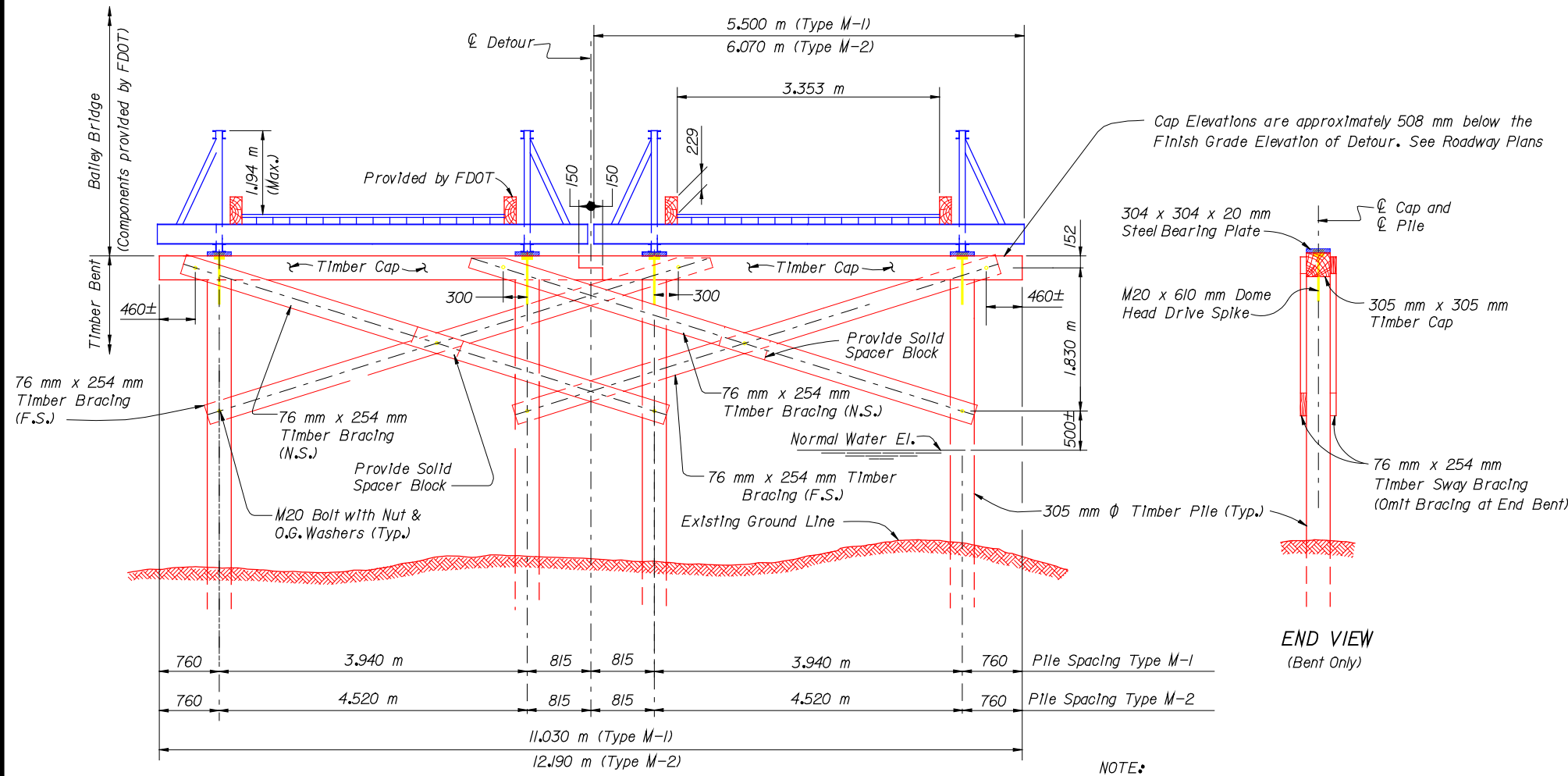
* Quantities are for one bent only.

WIDE LOAD SIGNS: Contractor shall erect wide load signs (Maximum Width Load 3.350 m) at each end of the detour bridge and approaching Intersections. Payment shall be included in the Contract Bid Price for detour. Contractor shall contact FDOT Road Use Permits Engineer in writing, informing him of the beginning and ending dates the detour will be in use. This information should be addressed to: Road Use Permits Engineer, Florida Department of Transportation, Mail Station 62, 605 Suwannee Street, Tallahassee, Florida 32399-0450.

INSTRUCTIONS TO DESIGNER: Tall Bents and/or scour conditions may require additional piles or bracing or different kind of piles; therefore the stability of the proposed bent shall be checked before implementing the design on this standard drawing. Also, if piling longer than 15 m is required, timber piling shall not be used unless authorized by the District Structures Engineer. PLEASE ERASE THIS NOTE WHEN COMPLETING THIS DRAWING.

NOTE: All dimensions are in millimeters (mm), except as noted.

REVISED				NAMES		DATES		ENGINEER OF RECORD:		LOGO:		FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET TITLE:		DRAWING NO.	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	JSP/SHM	4-94	STRUCTURES DESIGN OFFICE CENTRAL OFFICE 605 Suwannee Street, MS 33 Tallahassee, Florida 32399-0450	 STRUCTURES DESIGN OFFICE	ROAD NO.	COUNTY	PROJECT NO.	PROJECT NAME:	TIMBER BENTS FOR BAILEY BRIDGE (ONE LANE SINGLE SINGLE)(TYPE M-1 OR M-2)	1 of 1	
					CHECKED BY	JMD	4-94										
					DESIGNED BY												
					CHECKED BY												
					APPROVED BY		A/G										



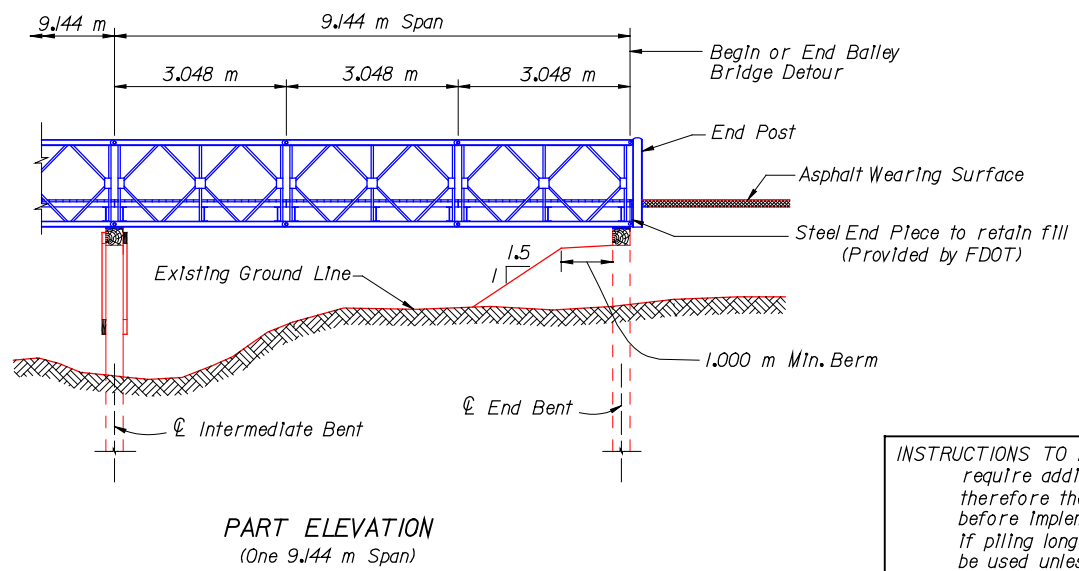
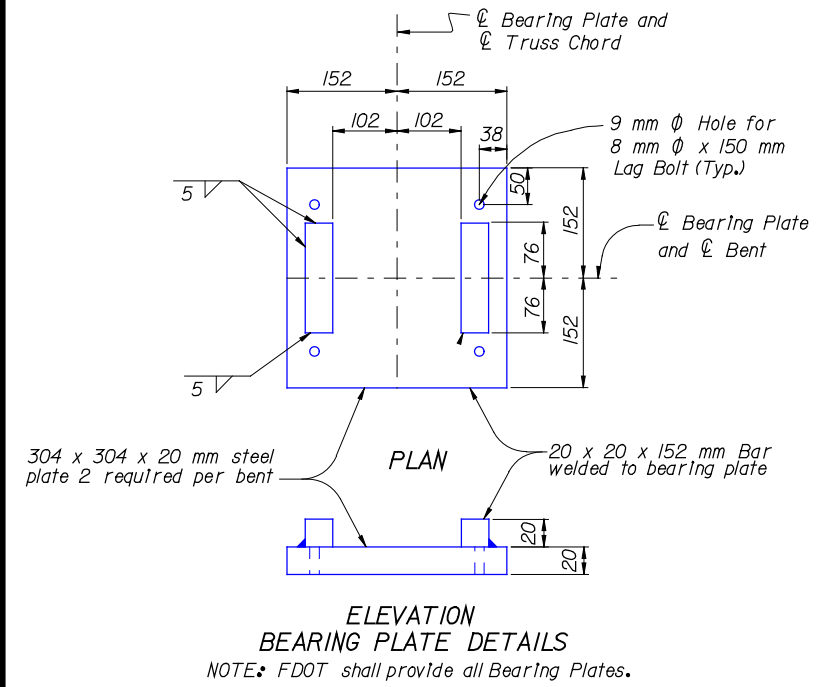
LIST OF STRUCTURAL TIMBER *								
ITEM	SIZE	LENGTH		NO.	CUBIC METERS		CUBIC METERS	
		M-1	M-2		TYPE M-1		TYPE M-2	
					END BENT	INT. BENT	END BENT	INT. BENT
CAP	305 x 305	5.665 m	6.245 m	2	1.054	1.054	1.162	1.162
SWAY BRACING	76 x 254	6.550 m	7.010 m	4	—	0.506	—	0.541
SPACER BLOCK	254 x 305	600	600	2	—	0.093	—	0.093
TOTAL					1.054	1.653	1.162	1.796

* NOTE: Quantities are for one bent only.

NOTES

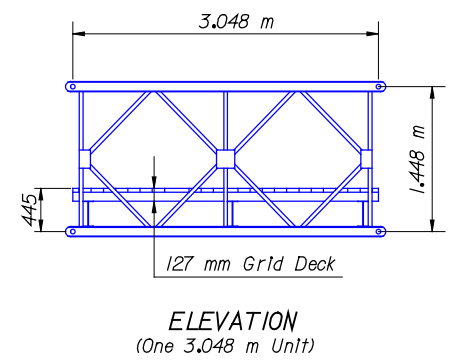
- DESIGN LOAD FOR PILES: 180 kN
LOADING: M18
STRUCTURAL TIMBER: Timber piles and structural timber may be treated or untreated at the option of the contractor. The contractor shall provide all structural timber and piles.
SPAN LENGTH: 9.144 m Maximum
PAYMENT: See Roadway Plans
ERECTION: The contractor shall erect the detour bridge in accordance with the specifications, these plans, and the "Bailey Uniflote Handbook". Steel grid bridge flooring will be furnished in lieu of Bailey Bridge flooring. Steel grid bridge flooring shall be brought into full contact with each transom and then securely fastened at each transom. The Engineer shall approve final assembly of Bailey Bridge components prior to placing traffic on the bridge.
AVAILABILITY: Contractor shall pick-up and return all Bailey Bridge components at the FDOT maintenance yard located at 45 West Park Street, DeFuniak Springs, Florida 32433.
DAMAGE: Contractor shall be responsible for damage to the Bailey Bridge components which occurs while in his possession. FDOT inspection of Bailey Bridge components will be upon return of the components to the FDOT maintenance yard.
DETOUR BRIDGE TYPE: The contractor shall be responsible for contacting the District Structures Engineer prior to driving piles or purchasing timber to determine if a Type M-1 or a Type M-2 Bailey Bridge will be furnished for this project.

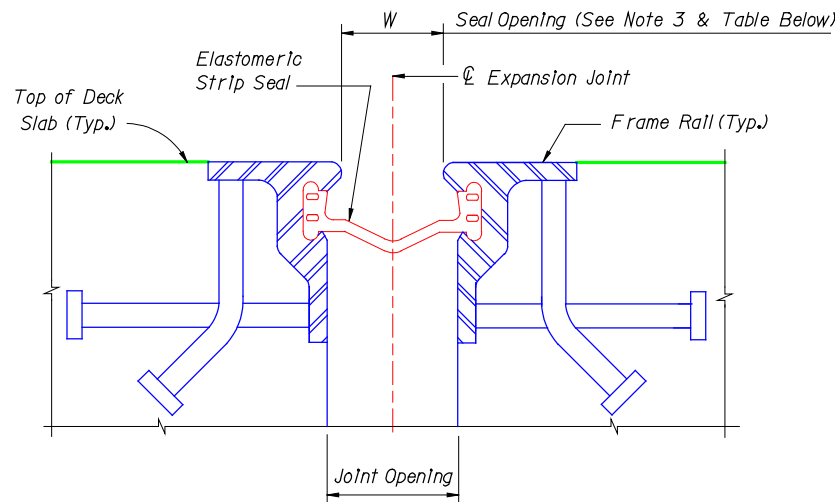
WIDE LOAD SIGNS: Contractor shall erect wide load signs (Maximum Width Load 3.350 m) at each end of the detour bridge and approaching intersections. Payment shall be included in the Contract Bid Price for detour. Contractor shall contact FDOT Road Use Permits Engineer in writing, informing him of the beginning and ending dates the detour will be in use. This information should be addressed to: Road Use Permits Engineer, Florida Department of Transportation, Mail Station 62, 605 Suwannee Street, Tallahassee, Florida 32399-0450.



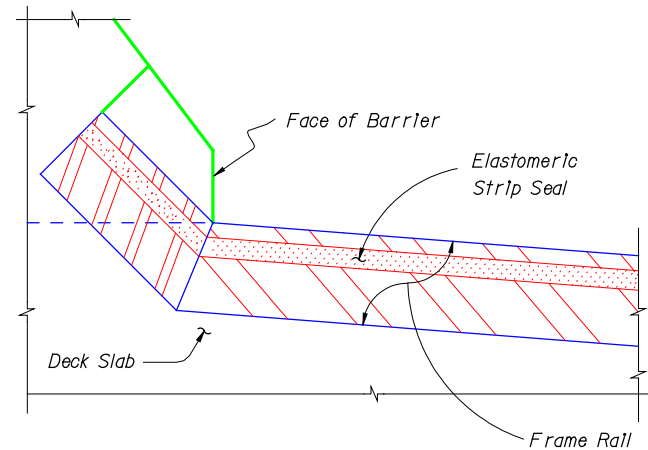
INSTRUCTIONS TO DESIGNER: Tall Bents and/or scour conditions may require additional piles or bracing or different kind of piles; therefore the stability of the proposed bent shall be checked before implementing the design on this standard drawing. Also, if piling longer than 15 m is required, timber piling shall not be used unless authorized by the District Structures Engineer. PLEASE, ERASE THIS NOTE WHEN COMPLETING THIS DRAWING.

NOTE: All dimensions are in millimeters (mm), except as noted.

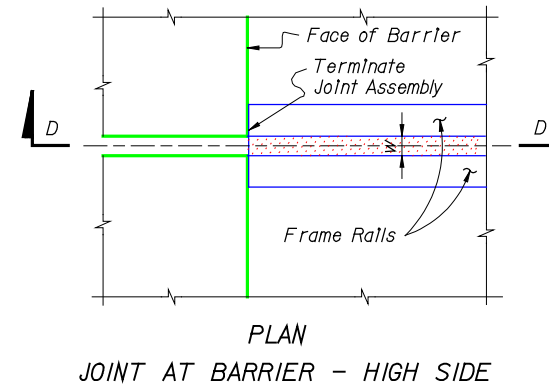




SECTION THRU EXPANSION JOINT
(Actual Section may vary, see Index 400)

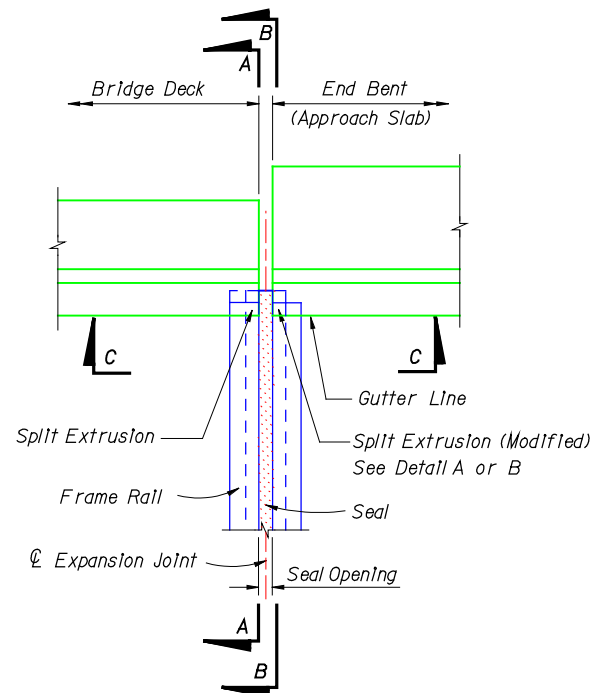


SECTION D-D

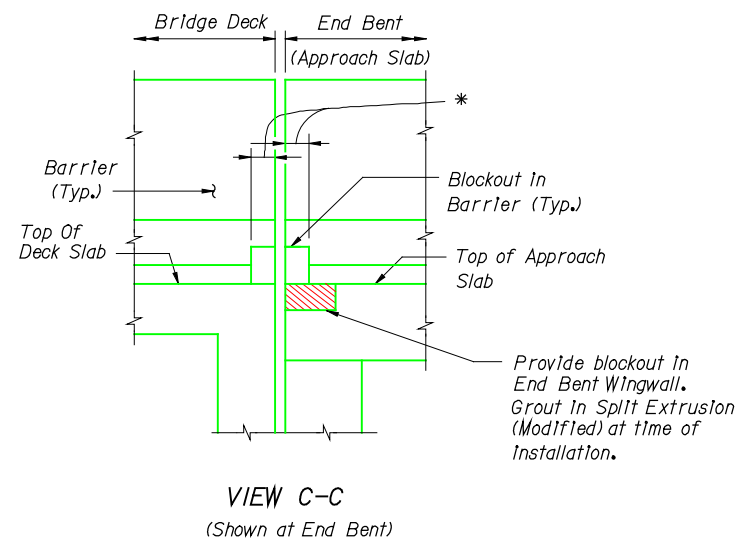


ELASTOMERIC STRIP SEAL NOTES:

1. The cost of all labor and materials for the construction of the elastomeric strip seal joints in bridge decks and approach slabs shall be included in the Contract Unit Price for Expansion Joint Seal (Strip Elast.), Item No. 2460-7-4. Length quantities provided in the table are meters of expansion joint measured along center-line of joint from gutter line to gutter line, or the face of pedestrian/bicycle railing when applicable. The cost of providing the upturned sections of the seal outside of the gutter line shall be included in the Contract Unit Price for Expansion Joint Seal.
2. The Contractor shall submit shop drawings showing all expansion joint materials including seal manufacturer, seal model number, seal movement range, proposed method of installation, and details of steel extrusion assemblies with all sizes and dimensions shown. The seal selected shall be a heavy duty bridge seal sized to perform satisfactorily for the seal opening range indicated in accordance with the manufacturer's recommendations. All contact surfaces between the strip seal and the frame rail shall be thoroughly coated with a lubricant adhesive before setting seal in place.
3. For joint construction at temperatures other than 21° C, adjust seal opening according to the temperature adjustment shown in the table. For temperatures above 21° C diminish opening and for temperatures below 21° C increase opening.

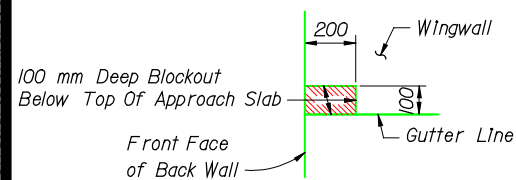


PARTIAL PLAN AT GUTTER LINE
(Shown at End Bent)

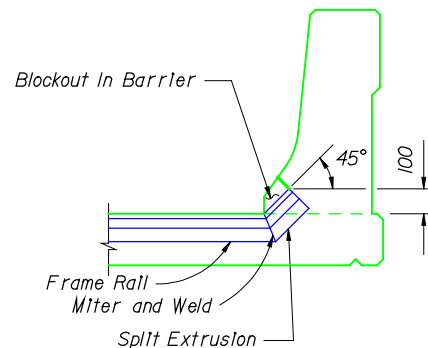


NOTE: Frame Rails and seal not shown for clarity. Reinforcing Steel in the Barriers shall be Interrupted at 50 mm all around the Blockout.

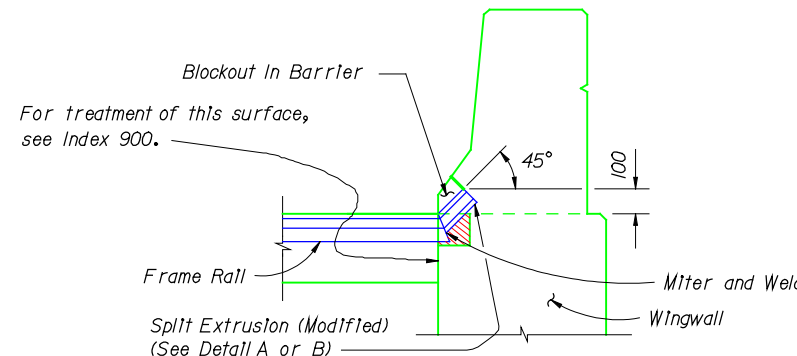
* The Concrete Blockout side limits shall extend to the full cross-section width of the Frame Rail.



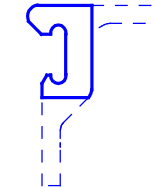
PLAN
BLOCKOUT DETAIL AT END BENT WINGWALL



SECTION A-A - THRU BRIDGE DECK
(Showing joint only)



SECTION B-B - THRU APPROACH SLAB
(Showing joint only)



DETAIL A - SPLIT EXTRUSION
(Modified)



DETAIL B - SPLIT EXTRUSION
(Modified)

NOTE: At the Approach Slab side only of the End Bent joint, the Split Extrusion (Modified) Frame Rail with No Horizontal/Vertical Leg shall be utilized.

NOTES:

This sheet shows Blockouts with open end only. In case cover plates are used, see Index 403 for details.
Work this Drawing with Indices 400 and 403.
All dimensions are in millimeters (mm) unless otherwise noted.

EXPANSION JOINT DATA					
LOCATION	SEAL OPENING @ 21° C (W, mm)	MINIMUM SEAL OPENING (mm)	MAXIMUM SEAL OPENING (mm)	TEMPERATURE ADJUSTMENT (mm/°C)	PAY LENGTH OF JOINT (m)

Total Pay Length of Joint(s) = ____ m

DATE: 11/11/2010 TIME: 10:00 AM

REVISIONS				DRAWN BY		NAMES		DATES		ENGINEER OF RECORD		LOGO	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	CHECKED BY	DESIGNED BY	CHECKED BY	APPROVED BY			

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FLORIDA DEPARTMENT OF TRANSPORTATION				STRUCTURES DESIGN OFFICE			
ROAD NO.		COUNTY		PROJECT NO.			

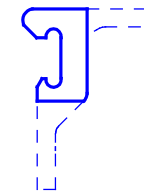
DRAWING NO. 1 of 1				INDEX NO. S-401			
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SECTION THRU EXPANSION JOINT
(Actual Section may vary, see Index 400)

SECTION D-D

PLAN
JOINT AT BARRIER - HIGH SIDE

GEOMETRIC DETAIL



DETAIL A - SPLIT EXTRUSION
(Modified)



PARTIAL PLAN AT GUTTER LINE
(Shown at End Bent)

* The Concrete Blockout side limits shall extend to the full cross-sectional width of the Frame Rail.

VIEW C-C

(Shown at End Bent)

NOTE: Frame Rails and seal not shown for clarity. Reinforcing Steel in the Barriers shall be interrupted at 50 mm all around the Blockout.

PLAN
BLOCKOUT DETAIL AT END BENT WINGWALL

SECTION A-A - THRU BRIDGE DECK
(Showing Joint only)

* *Varies (100 mm max.)*

SECTION B-B - THRU APPROACH SLAB
(Showing Joint only)

NOTE: At the Approach Slab side only of the End Bent Joint, the Split Extrusion (Modified: Frame Rail with No Horizontal/Vertical Leg) shall be utilized.

NOTES:


This sheet shows Blockouts with open end only. In case cover plates are used, see Index 403 for details.

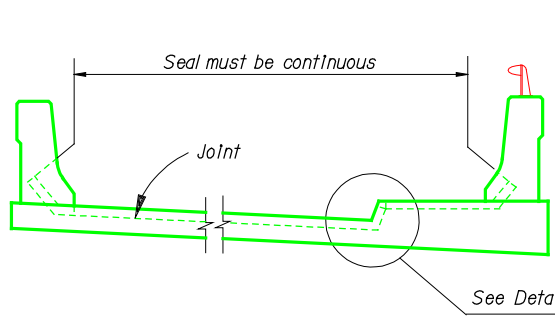
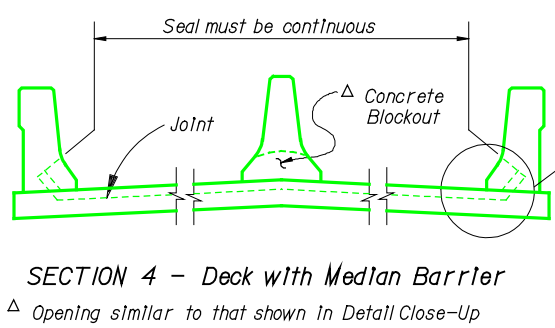
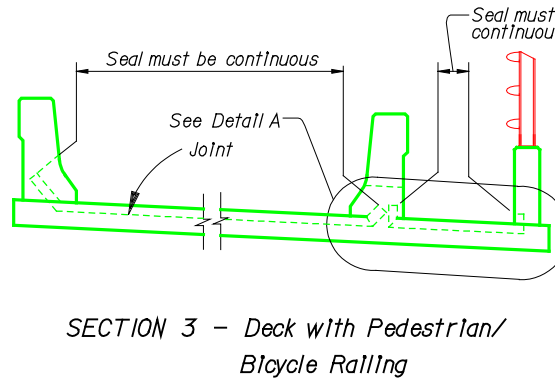
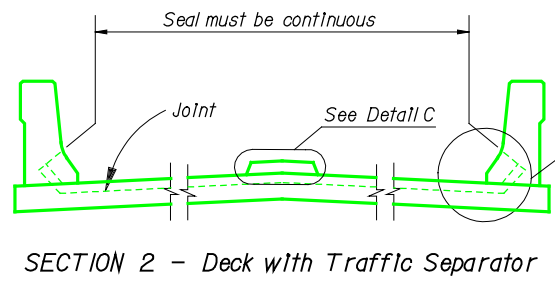
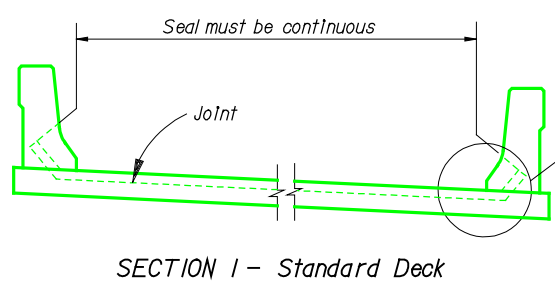
Work this Drawing with Indices 400 and 403.

All dimensions are in millimeters unless otherwise noted.

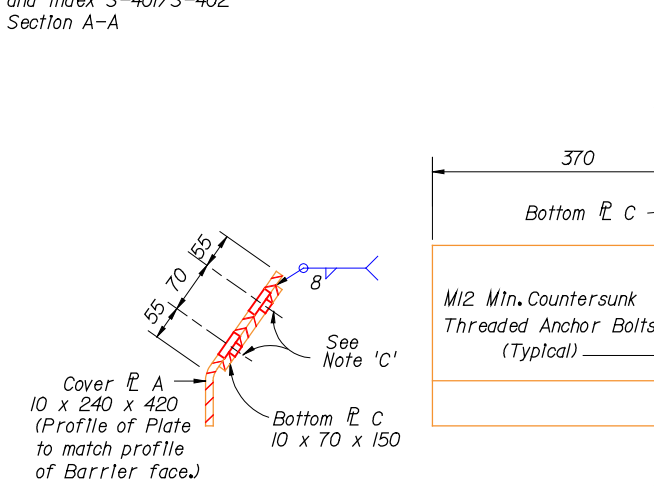
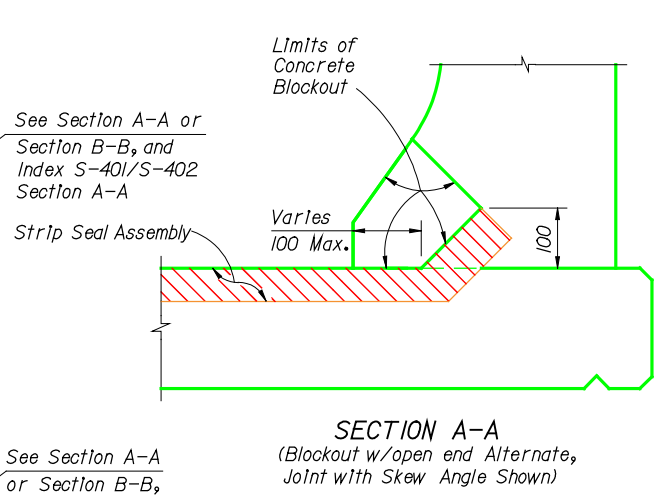
EXPANSION JOINT DATA							
LOCATION	SEAL OPENING @ 21° C (W, mm)	MINIMUM SEAL OPENING (mm)	MAXIMUM SEAL OPENING (mm)	TEMPERATURE ADJUSTMENT (mm/°C)	Ø LT.	Ø RT.	PAY LENGTH OF JOINT (m)

Total Pay Length of Joint(s) = ____ m

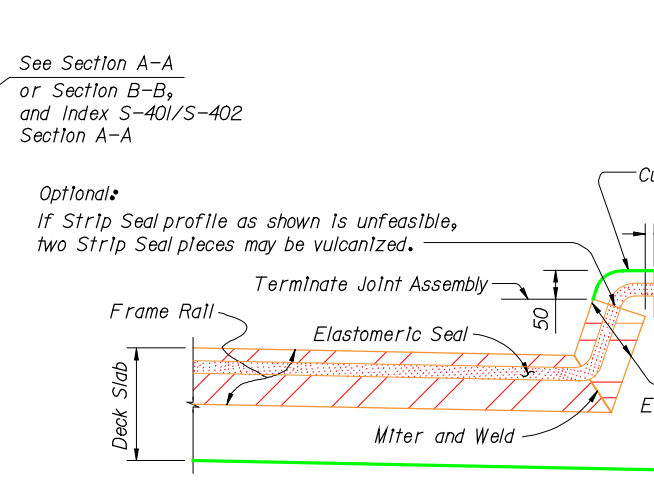
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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	CHECKED BY						ROAD NO.	COUNTY	PROJECT NO.	STRIP SEAL EXPANSION JOINT (JOINT WITH SKEW ANGLE)	1 of 1
			98R			DESIGNED BY										
						CHECKED BY										
						APPROVED BY										
														PROJECT NAME:	INDEX NO. S-402	



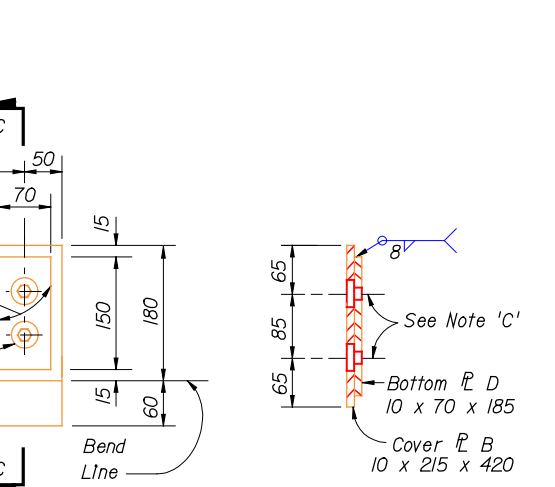
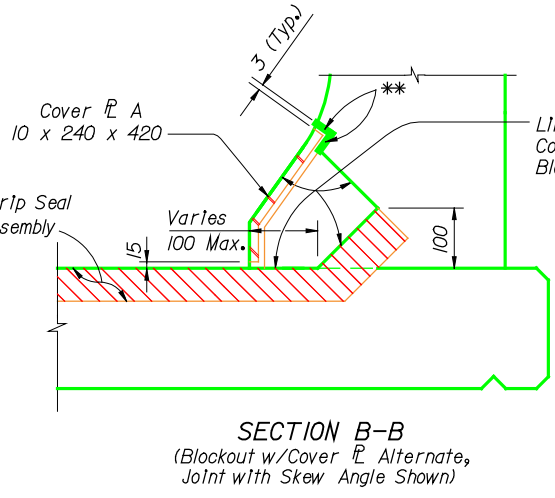
JOINT SEAL CONTINUITY PATTERNS
(See Sections 1 thru 5 above)



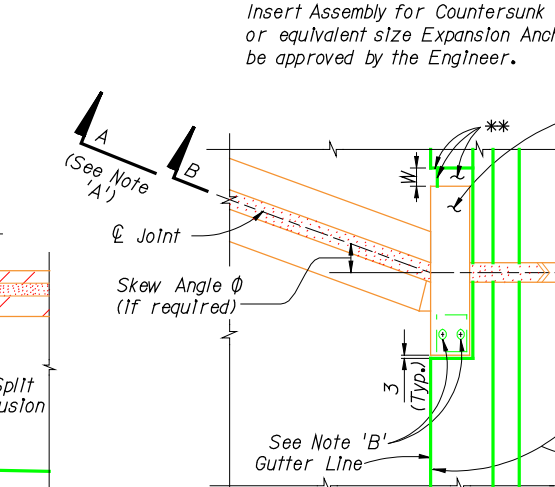
SECTION C-C
DETAIL - COVER PLATE A
(Front Elevation - Unfolded)



DETAIL B - JOINT TERMINATION AT CURB
* At Approach Slab side of End Bent, use Split Extrusion (Modified) (see Index S-401 or S-402, Detail A or B). Joint with no skew angle shown. In case of a joint with skew angle, detail shown shall be designed with concrete blockout.
** Limit of Recess in Concrete to allow for plate movement. Some lines omitted for clarity.

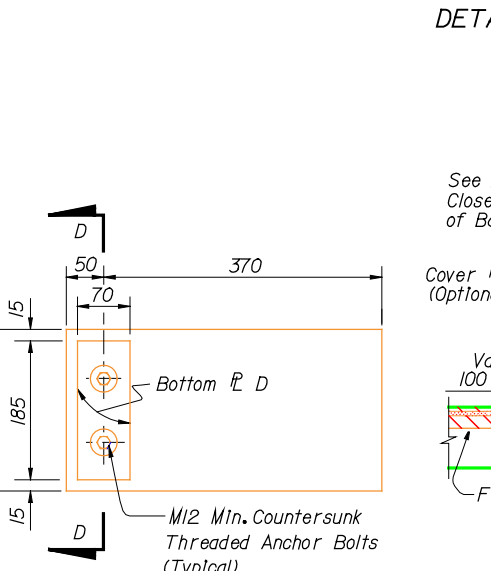
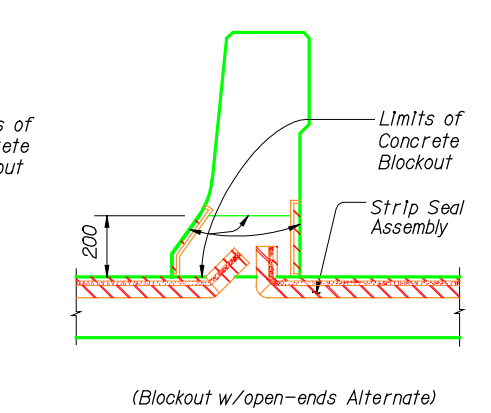


SECTION D-D
DETAIL - COVER PLATE B
(Front Elevation)

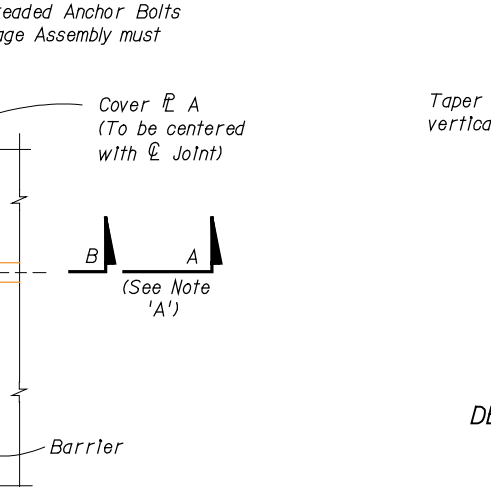


JOINT THRU DECK SLAB AT BARRIER
(Blockout w/Cover Plate Alternate, Joint with Skew Angle Shown)

Note 'A': Section A-A similar to Section B-B, except Blockout is with open end (No Cover Plate).
Note 'B': Anchor Bolts for Cover Plate shall be located on Approaching Traffic End.



DETAIL A - JOINT AT BARRIER WITH PEDESTRIAN/BICYCLE RAILING
(Blockout w/Cover Plate Alternate Shown)
NOTE: Cover Plate surfaces to be flush with barrier face



DETAIL C - JOINT AT TRAFFIC SEPARATOR
(Plan View)

NOTES:
Work this Drawing with Indices 400, S-401 and/or S-402.
For Barrier and Railing Details, see Indices 700, 710 and 720.
The cost of providing the cover plates assemblies where required, shall be included in the Contract Unit Price for Expansion Joint Seal.
All dimensions are in millimeters (mm) unless otherwise noted.

DATE: 11/11/11 TIME: 10:00 AM

REVISIONS				DRAWING NO.			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	INDEX NO.	
						1 of 1	
						403	

DRAWN BY	NAMES	DATES	ENGINEER OF RECORD	LOGO	FLORIDA DEPARTMENT OF TRANSPORTATION	SHEET TITLE	STRIP SEAL EXPANSION JOINT (MISCELLANEOUS SECTIONS AND DETAILS)
CHECKED BY	NRK	1-96	STRUCTURES DESIGN OFFICE				
DESIGNED BY	NRK	1-96	CENTRAL OFFICE				
CHECKED BY	CBH	1-96	605 Suwannee Street, MS 33				
APPROVED BY	TJB		Tallahassee, Florida 32399-0450				

ROAD NO.	COUNTY	PROJECT NO.	PROJECT NAME

Technical drawing of a bridge deck cross-section showing reinforcement details. The drawing includes labels for 'Approach Slab', 'Bridge Deck', 'Wingwall', 'Pull Box 300 x 300 x 200', 'Bolt Circle', '53 mm Ø Conduit', 'Edge of Slab', and 'Barrier'. Dimensions include '1,500 m', '400', '300', '11 Sp. @ 100', '10 Sp. @ 100', '1,300 m', and '915 Min.'. A note specifies 'Spacing For 16V & 16P'.

PLAN

815 Barrier

Approach Slab

Wingwall

300

53 mm ϕ Conduit

Joint

Pull Box 300 x 300 x 200

300

35 mm ϕ Conduit

1.300 m

Pole to be Plumb

1.500 m (Min. to any open Joint In Barrier)

53 mm ϕ Conduit

Joint

Note "A"
Provide Expansion/Deflection Fitting at all Substructure Supports (End Bents, Int. Bents or Piers) where Longitudinal Movement is not greater than 20 mm in accordance with this Note.

Note "B"
Provide Expansion/Deflection and expansion Fittings at all Substructure Supports (End Bents, Int. Bents or Piers) where Longitudinal Movement exceeds 20 mm in accordance with this Note.

Note "B" — Provide Expansion/Deflection and expansion Fittings at all Substructure Supports (End Bents, Int. Bents or Piers) where Longitudinal Movement exceeds 20 mm In accordance with this Note.

1. Additional Concrete and Reinforcing Steel required for the Construction of the Plaster shall meet the same requirements as that of the Traffic Railing.
2. Top of Plaster should be finished to a truly level area.
3. Light Pole Plaster and adjacent Traffic Rail Barrier and Superstructure Slab area shown on this sheet, are designed to resist Working Loads (In any direction) from the Light Pole applied at the top of the Plaster as follows:

Longitudinal Moment	=	40.7 kN • m
Transverse Moment	=	8.4 kN • m
Longitudinal Shear	=	4.4 kN
Transverse Shear	=	0.9 kN
Torsion	=	4.4 kN • m
Axial	=	1.8 kN
- If the Light Pole provided applies Loads that are in excess of those shown above, the Contractor shall redesign the Plaster and submit his Design to the Department for Review. The Contractor's Redesign shall be Prepared, Signed and Sealed by a Professional Engineer Registered in the State of Florida, and Qualified to perform the work.
4. The Contractor is responsible for providing Anchor Bolts that Effectively transmit the Light Pole Loads to the Plaster and that fit the Reinforcing cage. Calculations Signed and Sealed by a Professional Engineer Registered in the State of Florida shall be submitted by the Contractor to the Department for Review and Approval showing that these Requirements have been met prior to Construction.
5. All Conduits shall be Rigid Galvanized Steel or Schedule 80 P.V.C. Bends in conduit shall in accordance with the latest N.E.C.

- [illegible]

The Deck Slab area (symmetrical about Pillaster) shall be strengthened with the addition of 22 ~ 16A1 Bars (11 Top & 11 Bottom). The Bars shall be located as shown and spaced at approximately 180 mm centers.

Technical drawing of a PILASTER PLAN VIEW. The drawing shows a cross-section of a structure with a Bridge Deck at the top. Below the deck is an Anchor Bolt Circle. A 65 mm ϕ Conduit runs horizontally. A Barrier is shown on the right side. A 35 mm ϕ Conduit is shown on the left. A 27 mm ϕ Weep Hole is indicated. Bars 13A2 and Bars 13A1 are shown. The overall width is 610 and the height is 250. The structure is labeled as a ϕ Pilaster and Light Pole.

Figure 4-10

Area (symmetrical about Pillar) shall with the addition of 22 ~ 16A1 Bars

(Longitudinal Reinforcement not shown)

*Quantities and Bill of Reinforcing Steel are for one Pillaster.
Concrete Quantity Required: 0.076 m³
Steel Quantity Required: 114.91 kg
For Details of Bars 16P and 16V, See Traffic Railing
Barrier Sheet (Index 700).


Technical drawings of three reinforcement bars:

- BAR 13A1:** A rectangular bar with a width of 445 mm and a height of 355 mm. It has a 115 mm extension on the right side.
- BAR 13A2:** A rectangular bar with a top width of 355 mm, a bottom width of 405 mm, and a height of 430 mm. It has a 115 mm extension on the right side.
- BAR 16A1:** A long bar with a total length of 1.220 m. It has a 180 mm extension on the left side and a 95 mm diameter bend on the right side.

All Dimensions are out-to-out.

In order to minimize vibration of the poles due to traffic, locate pilasters near substructure supports.

PLEASE ERASE THIS NOTE WHEN COMPLETING THIS DRAWING

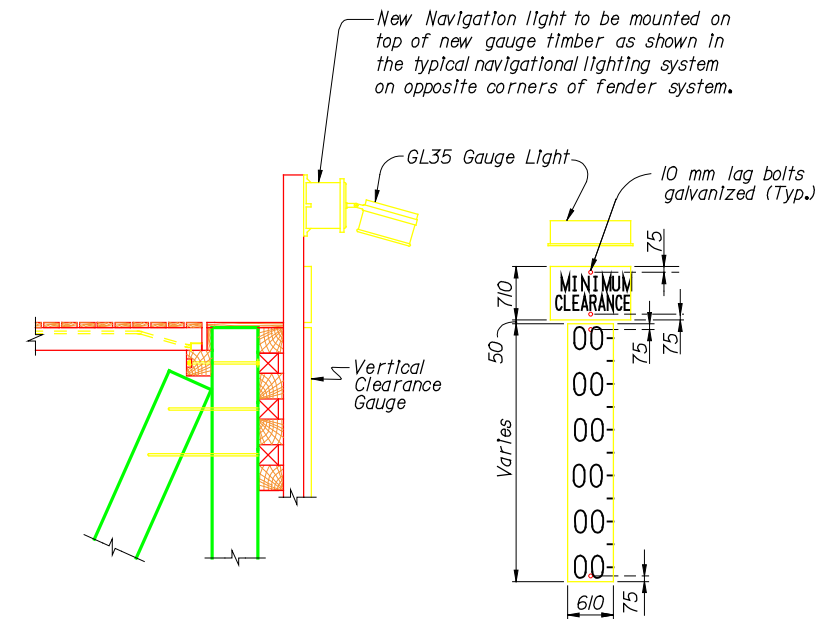
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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY					STRUCTURES DESIGN OFFICE		 STRUCTURES DESIGN OFFICE		LIGHT POLE PILASTER		1 of 1		
			98R			CHECKED BY	AJG	3-89			CENTRAL OFFICE								
						DESIGNED BY	TJB	3-89			605 Suwannee Street, MS 33								
						CHECKED BY	AJG	3-89			Tallahassee, Florida 32399-0450								
						APPROVED BY	AJG										500		

The figure consists of two diagrams illustrating the Navigation Light System for different bridge types.

NAVIGATION LIGHT SYSTEM SINGLE BRIDGE: This diagram shows a single bridge crossing a channel. The bridge is represented by a horizontal line with a central section labeled "Bridge". The channel is labeled "Channel". The bridge has four "Clearance Gauge Flood Light" (R.N.L.) at its ends and four "G.N.L." (G.N.L.) at the corners of the bridge deck. The channel has two "G.N.L." (G.N.L.) at the corners of the bridge deck. The bridge has a "Fender" on each side.

NAVIGATION LIGHT SYSTEM DUAL BRIDGE: This diagram shows a dual bridge crossing a channel. The bridge is represented by two horizontal lines, each with a central section labeled "Bridge". The channel is labeled "Channel". Each bridge has four "Clearance Gauge Flood Light" (R.N.L.) at its ends and four "G.N.L." (G.N.L.) at the corners of the bridge deck. The channel has two "G.N.L." (G.N.L.) at the corners of the bridge deck. Each bridge has a "Fender" on each side.

TYPICAL LAYOUT OF NAVIGATION LIGHTS



GAUGE LIGHT

CLEARANCE GAUGE DETAILS

Numbered clearance gauge to be furnished by the Dept. of Transportation. Contractor shall verify in field that the clearance of the bridge agrees with readings of the target. If not, the target shall be reset.

NOTES

GENERAL: The Navigation Light System shall comply with the latest edition of the Code of Federal Regulations: Navigation and Navigable Waters, CFR 33 Part 118, Bridge Lighting and Other Signals. The Installation shall comply with the latest edition of the National Electrical Code (NEC).

CONDUIT: Conduit shall be made from UV-resistant Polyvinyl Chloride (PVC), schedule 80, conforming with Underwriters Laboratories (UL) Section 651, NEC Section 347, and the National Electric Manufacturers Association (NEMA) TC-2.

FLEXIBLE CONDUIT: Liquidtight UV resistant flexible conduit shall be used to accomplish difficult bends, offsets, and for connection to fixtures. Liquidtight flexible conduit shall be supported every 1 meter maximum.

MOUNTING HARDWARE: All supporting hardware shall be manufactured from 300 series stainless steel. Conduit supports shall be provided every 1.5 meters maximum. Fasteners for concrete mounting shall be stud type expansion anchor bolts with single piece wedge, suitable for dynamic loading (vibration due to traffic). Fasteners for Conduit Support and Junction Boxes shall be 6.35 mm Φ , and shall provide minimum allowable working loads of 1.3 kN (Tension) and 2.6 kN (Shear). Fasteners for Center Channel Lights shall be 9.53 mm Φ , and shall provide minimum allowable working loads of 2.2 kN (Tension) and 4.4 kN (Shear). The fasteners shall be installed in drilled holes per manufacturer's recommendations. All other fasteners shall comply with the recommendations of the manufacturer of the equipment to be mounted.


THERMAL EXPANSION: Flexible couplings shall be installed at all substructure supports. Flexible coupling shall be forged brass with bronze braid covering and flexible brass inner core. The flexible coupling shall be able to accommodate a minimum movement equal to 1.5 times the maximum movement of the bridge joint, but not less than 40 mm.

JUNCTION BOXES: All junction and pull boxes shall be NEMA 4X (non-metallic) and shall be surface-mounted with stainless steel hardware. As a minimum, one box shall be located at one end of the Flexible Coupling, located at each substructure support.

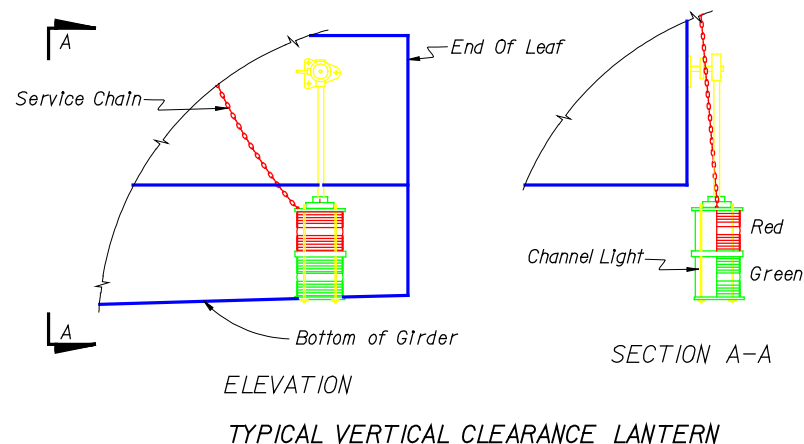
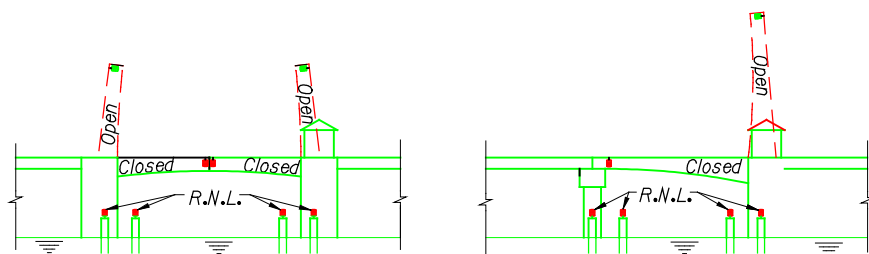
FIXTURES: All fixtures shall have a dual lamp and transfer relay with an Indicating light to signal when the primary light burns out.

LAMPS: 100 watts, 32,000 hour @ 110 volts, extended life.

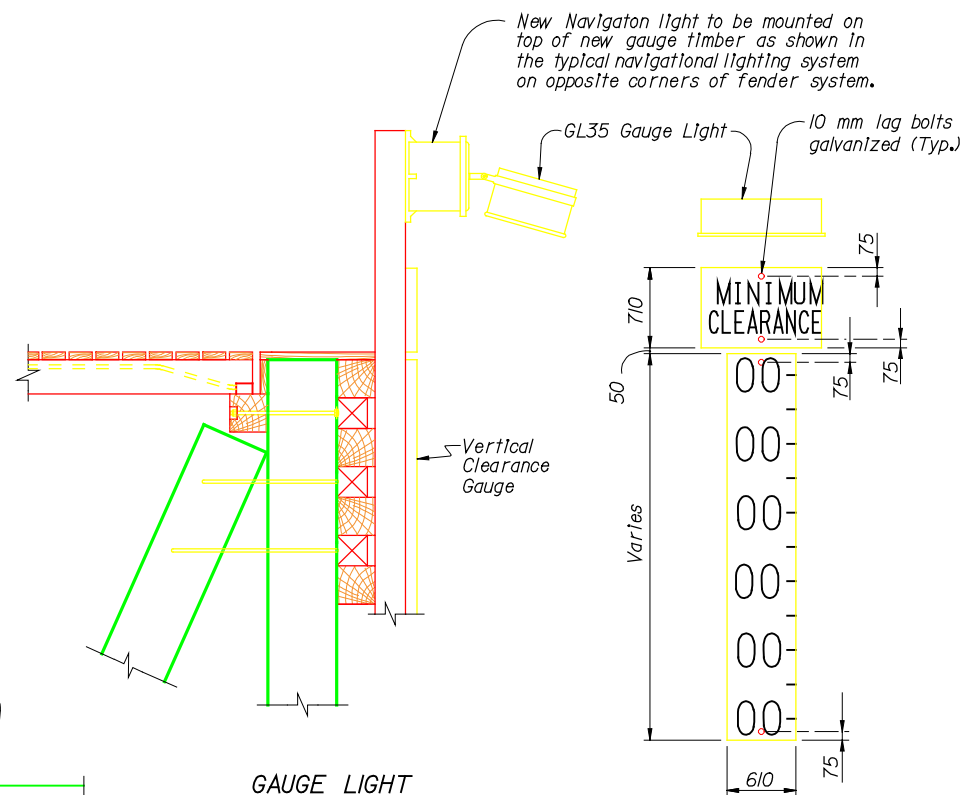
NOTE: All dimensions are in millimeters (mm), unless otherwise noted.

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	SHM	3-94	CHECKED BY	NRK	3-94	DESIGNED BY				ROAD NO.	COUNTY	PROJECT NO.	PROJECT NAME.	INDEX NO.
			98R			CHECKED BY													NAVIGATION LIGHT SYSTEM DETAILS (FIXED BRIDGES)	1 of 1
						APPROVED BY	AFR/AJG													510

NOTE: See Fender System Drawings & Control House Drawings for their actual configuration & location.

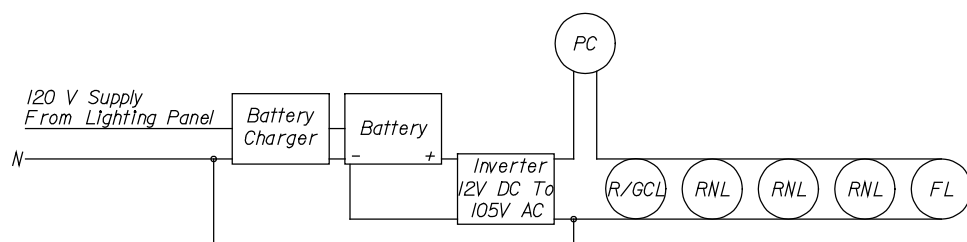
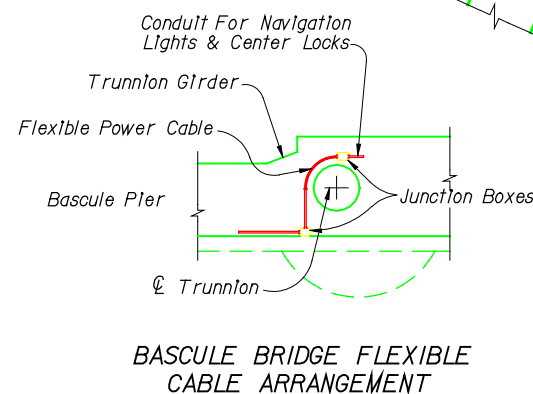
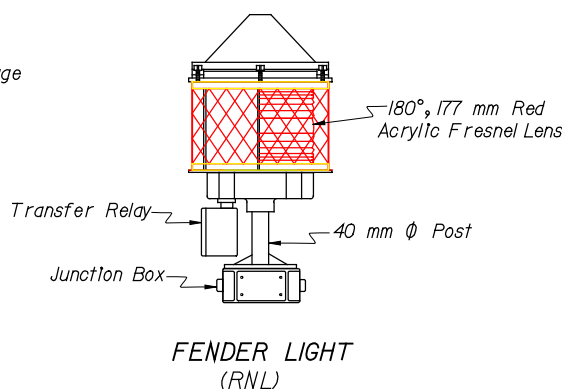
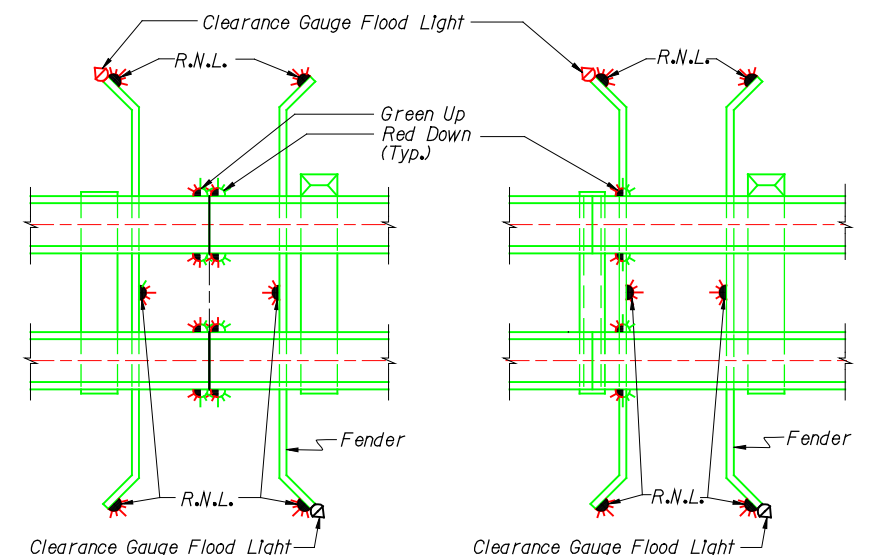
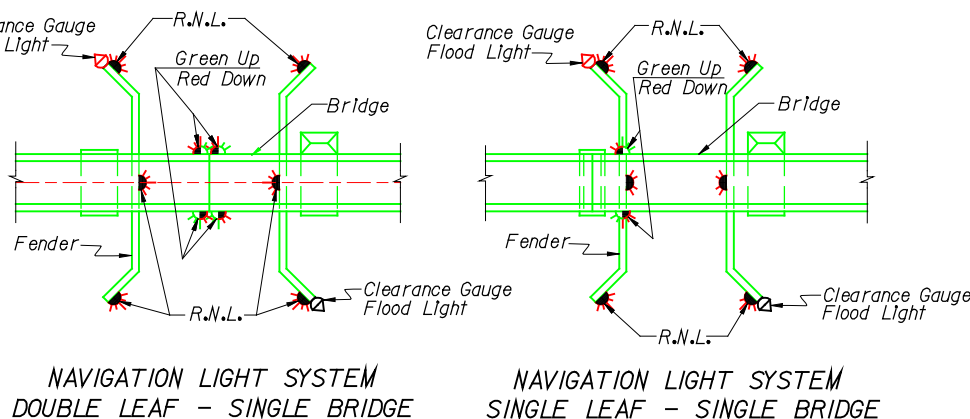


NOTE: All dimensions are in millimeters (mm), unless otherwise noted.



CLEARANCE GAUGE DETAILS

Numbered clearance gauge to be furnished by the Dept. of Transportation. Contractor shall verify in field that the clearance of the bridge agrees with readings of target. If not, the target will be reset.



TYPICAL LAYOUT OF NAVIGATION LIGHTS

- Output voltage shall be adjustable between 100 & 115 volts.
- Battery shall be sized for 12 hours of full, continuous load.
- Inverter shall be sized for 2 times the calculated load.
- Battery charger shall be rated to fully recharge batteries in 12 hours.
- Equip each navigation light with a lamp-out indicator.

R/GCL - Red/Green Channel Light
FL - Clearance Gauge Floodlight
RNL - Red Navigation Light
PC - Photocell

NOTES

GENERAL: The Navigation Light System shall comply with the latest edition of the Code of Federal Regulations: Navigation and Navigable Waters, CFR 33 Part 118, Bridge Lighting and Other Signals. The Installation shall comply with the latest edition of the National Electrical Code (NEC).

FIXTURES: All fixtures shall have a dual lamp and transfer relay with an Indicating light to signal when the primary light burns out.

LAMPS: 100 watts, 32,000 hour @ 110 volts, extended life.

RED/GREEN NAVIGATION LIGHT (Channel Light): The fixture shall be: RED 180°, GREEN 180°, 177 mm standard marine fresnel type. The fixture shall be equipped with a pivot mount and retrieval chain so that when the base is mounted outside of the handrail post, the light can be serviced by reaching over the handrail from inside the bridge. The hanger stem shall be long enough so that the light does not extend below the bottom flange of the main girder.

RED NAVIGATION LIGHT (Fender Light): The fixture shall be 180°, 177 mm standard marine fresnel type, vandalproof with tamper-resistant fasteners. The fixture shall be mounted on a stainless steel post with stainless steel fittings at a height of 610 mm above the fender. Provide the fixture with an integral marine junction box.

CLEARANCE GAUGE LIGHT: The angle of illumination of the light shall be 15° to 30° depending on the fixture contour. Provide high power factor ballast using a 35 watt high pressure sodium lamp. The fixture enclosure shall be NEMA 3R cast aluminum housing with epoxy finish enamel. The light shall be rated for 110 volts.

DATE: 11/11/11 TIME: 10:00 AM

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			98				

DRAWN BY	SHM	3-94
CHECKED BY	NRK	3-94
DESIGNED BY		
CHECKED BY		
APPROVED BY	AFR/AJG	

ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO:

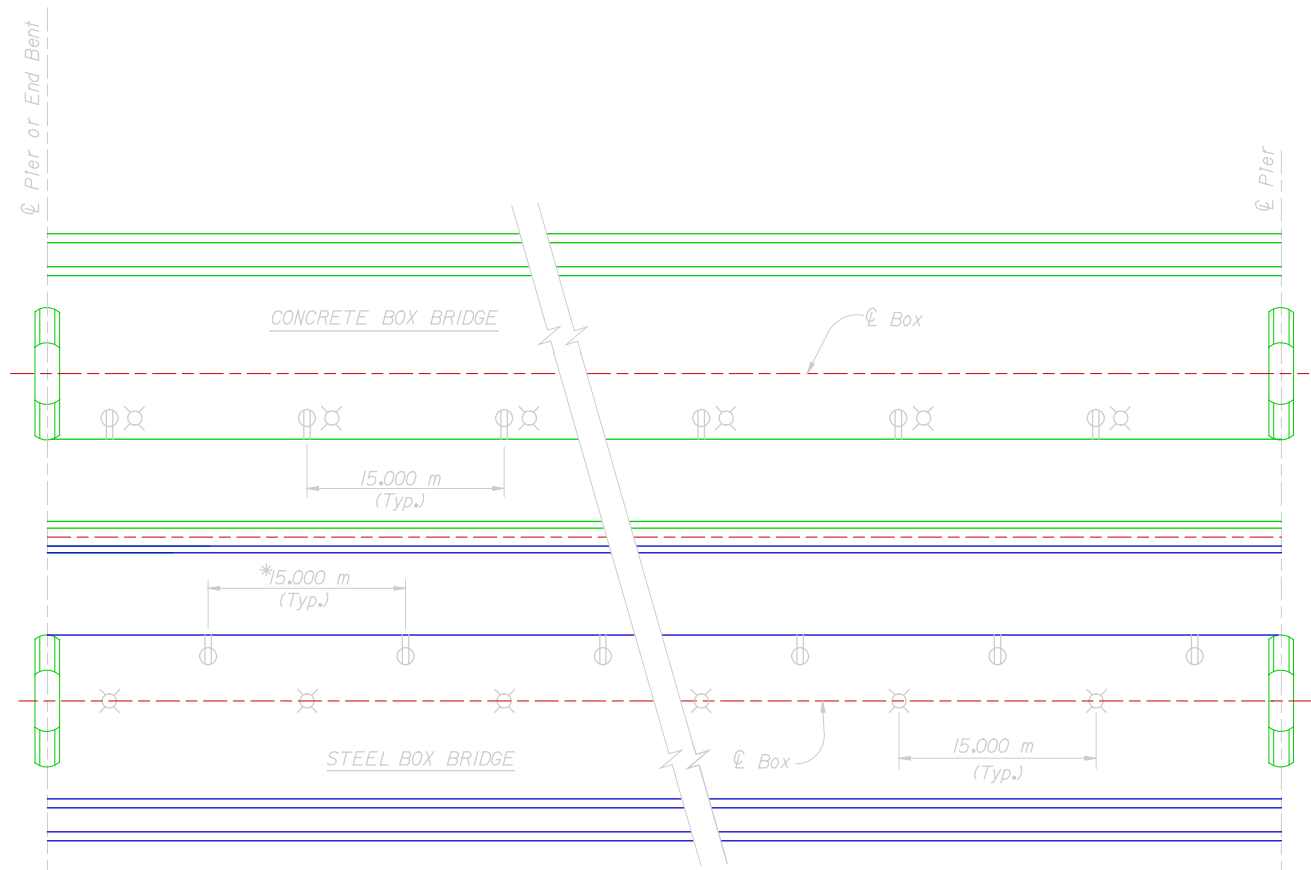
FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: NAVIGATION LIGHT SYSTEM DETAILS (BASCULE BRIDGES)		DRAWING NO. 1 of 1
PROJECT NAME:		INDEX NO. 5/1

DATE: 11/11/2024 TIME: 10:11:11 AM s:\structures\software\structures\addl\standards\98standards\512.dgn

LEGEND

SYMBOL	DESCRIPTION
	Exposed Conduit
	Ceiling Mounted Lighting Fixture
	120V Duplex Receptacle, GFI, NEMA Configuration
	5-20R Surface Wall Mounted In Non-Metallic Outlet Box, WP Denotes Weatherproof Box.



PLAN VIEW
ELECTRICAL LAYOUT (TYPICAL SPAN)

*At crossbracing/web stiffener locations at not less than 15 m between outlets.

GENERAL ELECTRICAL NOTES

- The Contractor shall furnish all labor, equipment, materials and incidentals required for a complete installation as shown on the Drawings.
- Installation shall meet all requirements of the latest edition of the National Electrical Code (NEC) and all codes having jurisdiction.
- Grounding shall be installed in accordance with NEC Article 250.
- All equipment and materials shall be new and unused and U.L. listed.
- Conductor shall be Copper type THWN above ground and XHHW below ground.
- Raceways shall be as follows: Exposed - Rigid Galvanized Steel.
Underground and Indoor exposed - Conduit shall be made from UV-resistant Polyvinyl Chloride (PVC) schedule 80, conforming with Underwriters Laboratories (UL) Section 651, NEC Section 347 and the National Electric Manufacturers Association (NEMA) TC-2.
- The Contractor shall submit to the Engineer of Record Shop Drawings detailing the layout of the maintenance lighting system for the entire structure. The Shop Drawings should include the following information:
Raceway layouts including details through diaphragms, and around P.T. ducts & cross bracing as necessary, Fasteners for the interior electrical system, panel board details, lighting fixture details, disconnect switch details, conduit & wire details, circuit breaker details and equipment enclosure details.
- Fasteners shall be spaced to avoid conflicts with reinforcing steel and post-tensioning ducts in concrete box bridges.
- Attachments shall be made to deck slabs, transverse stiffeners or crossbracing only with approved anchors or bolts. No fasteners shall be allowed to be attached to main members of structural steel, i.e. webs and flanges.
- Coordinate all lighting fixtures, equipment locations with the structure plans.
- The drawings are not intended to show the exact location of conduit runs. These are to be coordinated with the other trades so that conflicts are avoided.
- Expansion joints shall be placed in all interior conduits runs at 30 meters minimum intervals and at all bridge expansion joints.
- All interior cable terminations shall be made with enough slack to allow for minor shifting of bridge without separation.
- Incandescent Lamp shall be an approved 100 watt, vibration service, industrial grade exterior use fixture.
- Switches shall also be located at all access hatches in addition to the beginning and end of each span.
- Six hour reset timers shall be provided for each circuit to turn off the lighting system.
- All supporting hardware shall be manufactured from 300 series stainless steel. Conduit supports shall be provided every 1,500 m maximum. Fasteners for concrete mounting shall be stud type expansion anchor bolts with single piece wedge, suitable for dynamic loading (vibration due to traffic). Fasteners for conduit support and junction boxes shall be 6 mm ϕ and shall provide minimum allowable working loads of 1,335 kN (tension) and 2,670 kN (shear).
- Flexible couplings shall be installed at all substructure supports. Flexible coupling shall be forged brass with bronze braid covering and flexible brass inner core. The flexible coupling shall be able to accommodate a minimum movement equal to 1.5 times the maximum movement of the bridge joint, but not less than 38 mm.
- All junction boxes, outlet boxes and pull boxes shall be NEMA 4X (non-metallic) and shall be surface mounted with stainless steel hardware. As a minimum, one box shall be located at one end of the flexible coupling, located at each substructure support. Pull and junction box sizes shall meet the requirements of NEC.
- Power distribution shall be 480 VAC, 1 phase with step down transformers at regular intervals.
- Step down transformers shall be 7.5 KVA mini power center with 8 ~ 20 A. breakers. Each mini power center shall feed a maximum of 40 lamps and 40 receptacles.
- Largest wire size to use is #4 AWG.
- Lighting contactors shall switch the 480 VAC power.
- The cost of the box maintenance lighting system shall be included under individual bid items. All incidental work for the box maintenance lighting system, as shown in the plans but not specifically covered under an individual bid item, shall be included in the cost of related lighting bid items.

INSTRUCTIONS TO DESIGNER:

The box maintenance lighting system shall be completely designed and detailed in the plan set including conductor sizing and layout. All Bid items such as conductors, conduits, pull boxes, grounding electrodes, and service points shall be tabulated in the plans and included in the G.E.S. for bid purposes.

PLEASE ERASE THIS NOTE WHEN COMPLETING THIS DRAWING

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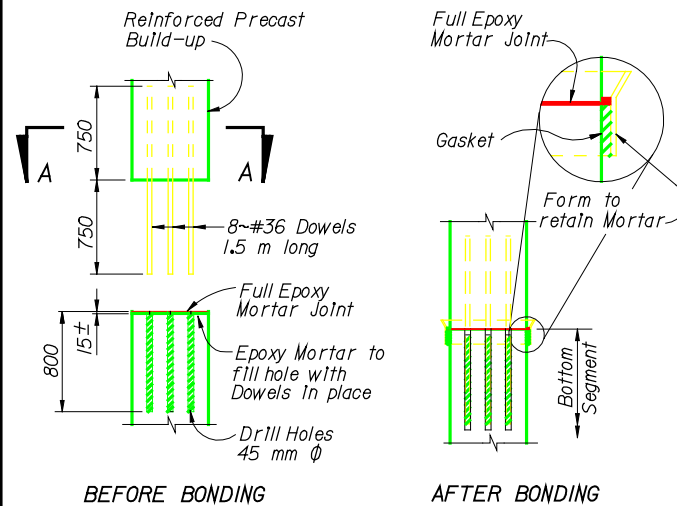
 FLORIDA DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: MAINTENANCE LIGHTING FOR BOX GIRDERS	DRAWING NO.: 1 of 2
PROJECT NAME:	INDEX NO.: 5/2

TABLE OF BONDED SPLICE DATA

Drivable Splice	Min. Splice Length	#36 Dowel Length
YES	3.050 m	2.3 m
NO *	1.525 m	1.5 m

*For Splices less than 1.525 m (not Drivable), use the Reinforced Precast Splice.

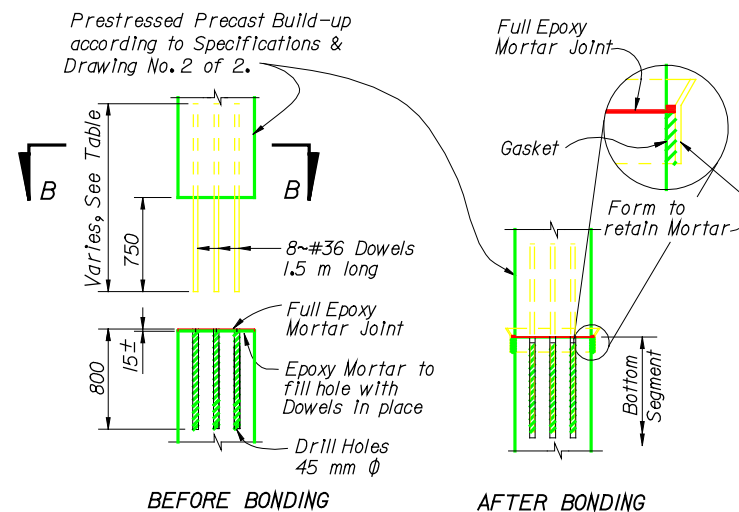


NOTE: Dowels shown for 610 Pile. See Sect. A-A for spacing and number of Dowels for each Pile.

REINFORCED PRECAST SPLICES

(Extensions 610 mm Min. but less than 1.525 m) (Not Drivable)

NOTE: The reinforced precast Build-up shall conform with the Specifications and Section A-A. Spiral ties pitch shall be 150 mm Max.



NOTE: Dowels shown for 610 Pile. See Sect. B-B for spacing and number of Dowels for each Pile.

PRESTRESSED PRECAST SPLICES

(Extensions 1.525 m or longer)

PILE NOTES

SPIRAL TIES: Each wrap of spirals shall be tied to at least two corner strands or bars. One turn required for spiral splices. Spirals shall be manufactured from cold-drawn steelwire meeting the requirements of ASTM A82.

PILE CUT OFF: Piles required to be cut off shall be sawcut at the pile cut off elevation shown on the plans with an abrasive saw. Unless otherwise noted on the plans, the cut shall be made to the depth into the pile necessary to cleanly cut through the prestressing strands.

CONCRETE CLASS: Concrete for all piles shall be Class V (Special) or Class V (Special) (Microsilica). Class V (Special) and Class V (Special) (Microsilica) Concrete shall conform to all requirements for Class V Concrete except for the 28-day strength as noted below.

CONCRETE STRENGTH: The cylinder strength shall be 41 MPa minimum at 28 days and 28 MPa minimum at transfer of the Prestressing Force.

SPLICED PILES: Piles may be spliced in accordance with Subart. 455-7.7 of the Specifications. Precast buildups shall be prestressed or reinforced according to pile details for the "head" section of the pile shown on this Standard. Drivable spliced piles may be driven after splice is two days old.

PICK-UP POINTS: Piles shall be marked at the pick-up points to indicate proper points for attaching handling lines.

STORAGE AND TRANSPORTATION: Piles shall be supported on adequate dunnage both in the precasting yard and at the jobsite and shall be supported and tied down during transit in accordance with the following schedule except that if the Contractor chooses to use an alternative transportation support scheme, then calculations, sealed by the Specialty Engineer, must be submitted by the Contractor for approval by the Engineer prior to transport of any pile. Calculations must show that the pile can be transported without exceeding the bending moments associated with applicable Storage and Transportation Support Details case on this sheet.

Type Pickup Required by Pile Length	Type Storage and Transportation Support Detail
Single or Double	2, 3 or 4 Point Support
Triple	3 or 4 Point Support

REINFORCING STEEL: All Reinforcing Steel except spiral ties shall be ASTM A615M-96, Grade 420.

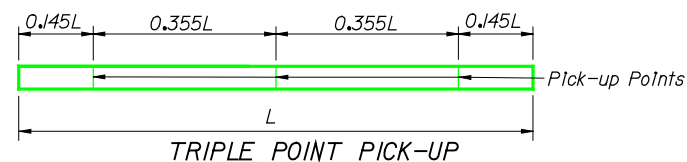
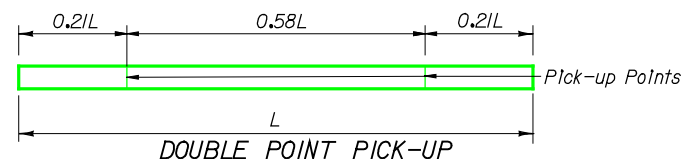
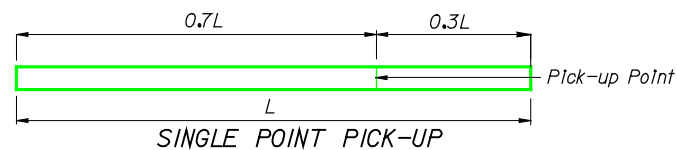
STRAND NOMENCLATURE:

S.R. = Stress Relieved Strand

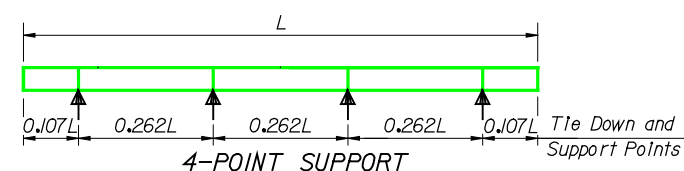
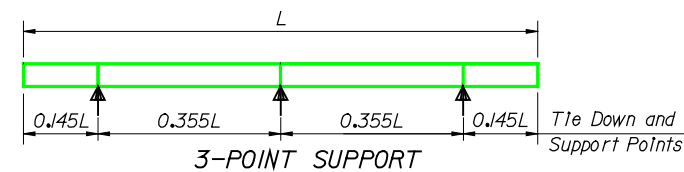
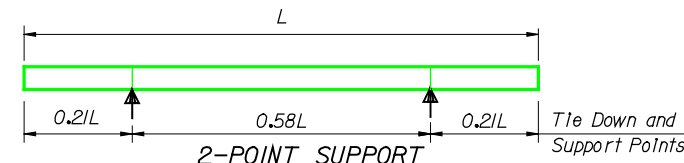
L.R.S. = Low-Relaxation Strand

No. 13 (Spec.) : $A_s = 107.74 \text{ mm}^2$

No. 14 (Spec.) : $A_s = 126.45 \text{ mm}^2$

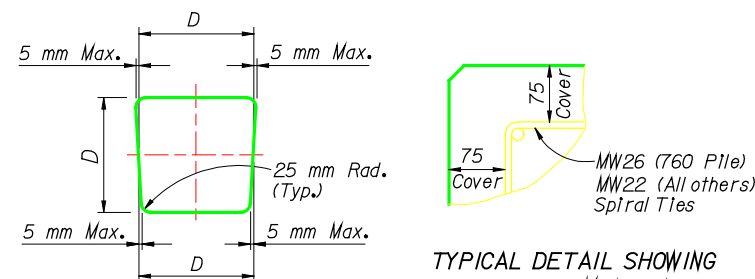


PILE PICK-UP DETAILS



STORAGE AND TRANSPORTATION SUPPORT DETAILS

PILE SIZE	MAX. LENGTH "L" (METERS) FOR PICK-UP		
	SINGLE POINT	DOUBLE POINT	TRIPLE POINT
305	15	21	$L > 21$
355	17	23	$L > 23$
455	18	27	$L > 27$
510	20	29	$L > 29$
610	21	30	$L > 30$
760	27	38	$L > 38$



TYPICAL DETAIL SHOWING COVER DIMENSION

NOTE: All dimensions are in millimeters (mm), except as noted.

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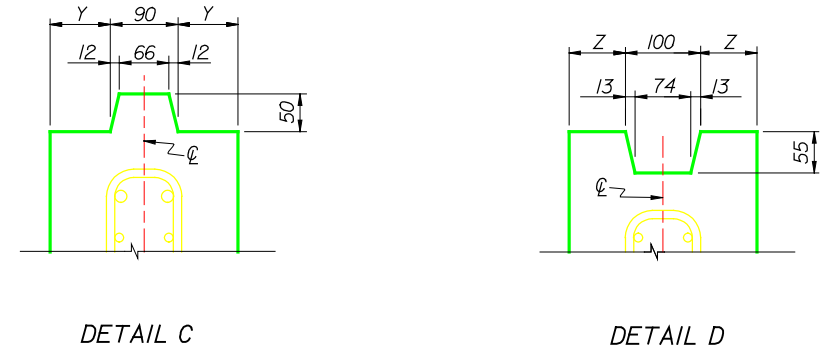
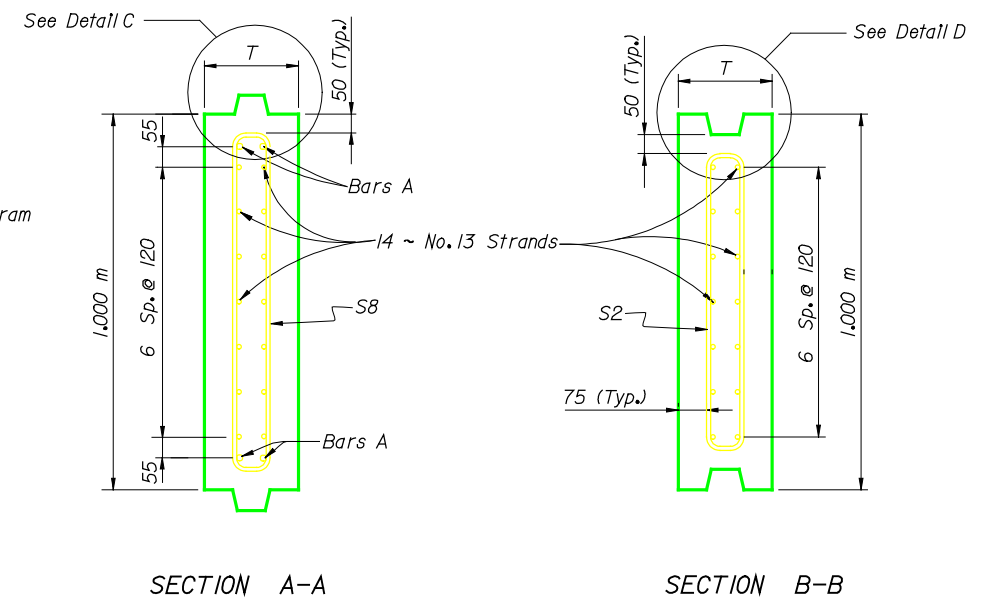
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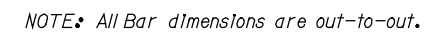
FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE:	DRAWING NO.
305, 355, 455, 510, 610 AND 760 PRESTRESSED CONCRETE PILES	1 of 3
PROJECT NAME:	INDEX NO.
	600



NOTES

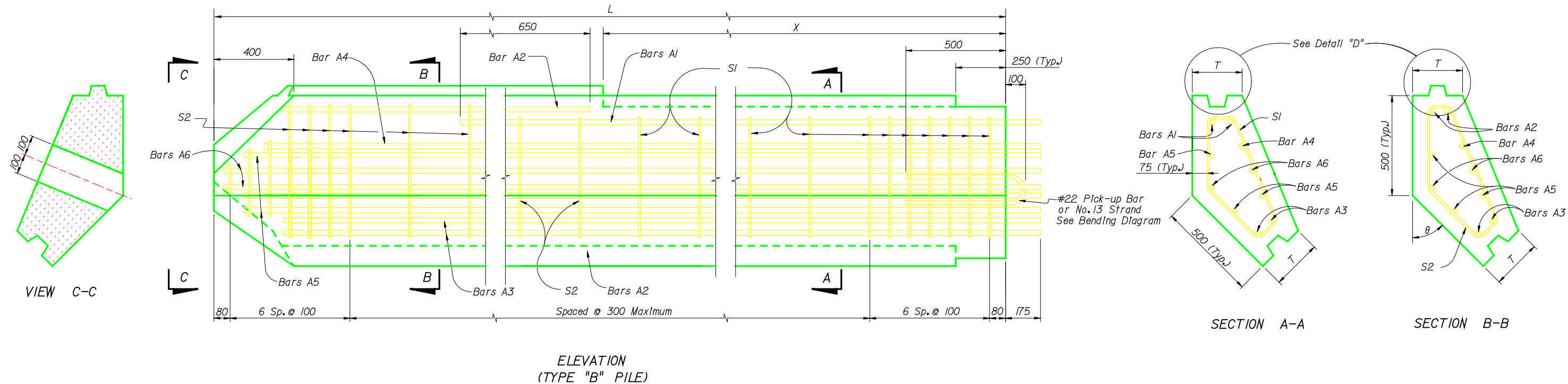
BENDING DIAGRAM



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SHEET TITLE:	DRAWING NO.
<p align="center"><i>PRECAST CONCRETE SHEET PILES</i></p> <p align="center"><i>TYPE "A"</i></p>	<i>1 of 1</i>
PROJECT NAME:	INDEX NO.
	<i>610</i>

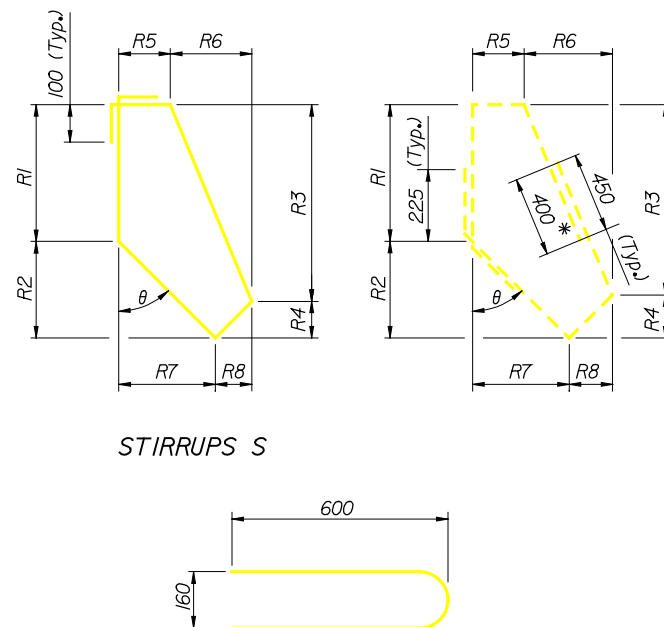


BENDING DIAGRAM

STIRRUP DIMENSIONS										
θ	T (mm)	BAR MARK	R1	R2	R3	R4	R5	R6	R7	R8
30°	250	SI	375	325	640	60	125	170	185	110
		S2	430	325	695	60	110	185	185	110
	300	SI	375	325	610	90	175	165	185	155
		S2	430	325	665	90	160	180	185	155
45°	250	SI	365	260	525	100	140	220	260	100
		S2	420	260	580	100	120	240	260	100
	300	SI	365	260	490	135	190	200	260	130
		S2	420	260	545	135	165	225	260	130
60°	250	SI *	350	175	395	130	150	230	305	75
		S2	405	175	450	130	120	260	305	75
	300	SI	350	175	355	170	200	205	305	100
		S2	405	175	410	170	170	235	305	100

NOTE: Values for Stirrup Dimensions are shown for θ equal to 30°, 45° & 60° only.

At the Contractor's option, stirrups S may be fabricated either as a two-piece bar with a 450 mm lap splice or may be welded wire fabric, one or two-piece, provided the wire size and spacing furnishes the same steel area as #13 bars shown.



PICK-UP BAR (#22)

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

SHEET PILE DIMENSIONS

T (mm)	250	300
Y (mm)	80	105
Z (mm)	75	100

NOTES

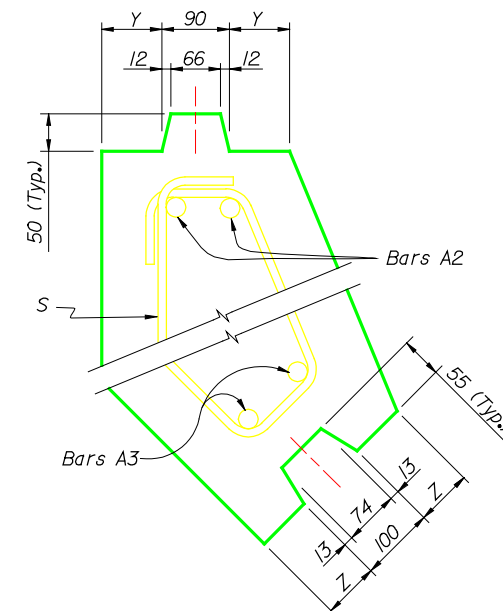
Work this standard with Index No. S-613.

This drawing includes details for precast concrete corner piles for 250 mm and 300 mm thick sheet pile systems. The details apply equally to both thicknesses.

The bar configurations shown in Section A-A and B-B are to be used with an angle θ comprised between 15° and 75°.

Bars A are #25 and Stirrups S are #13.

All Dimensions are in millimeters, except as noted.



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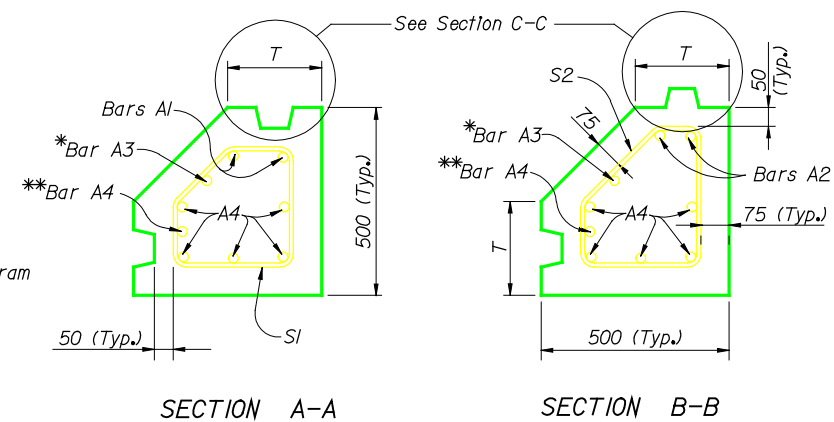
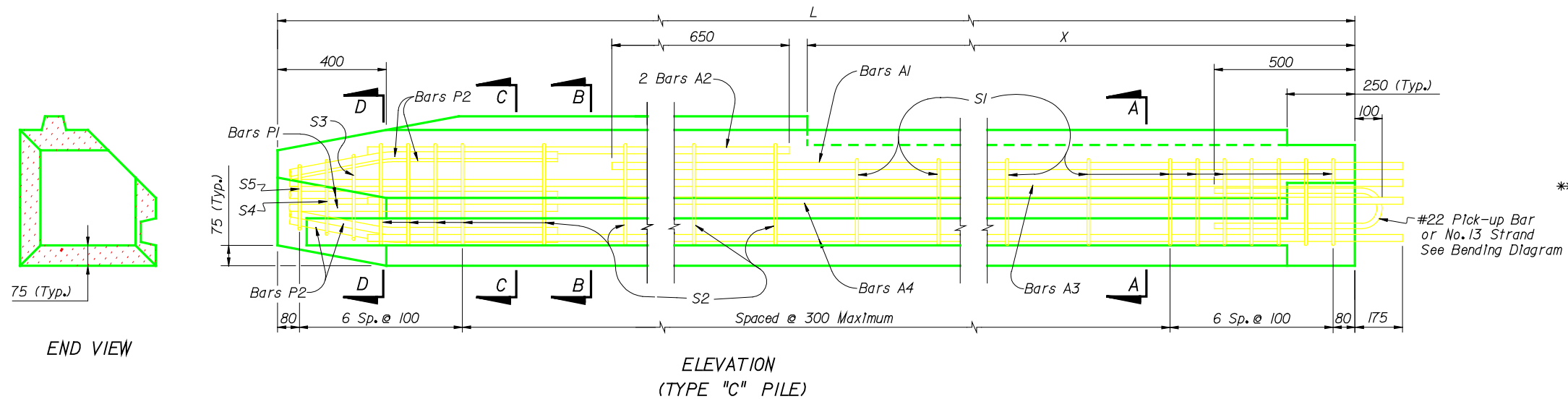
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APPROVED BY	TJB	

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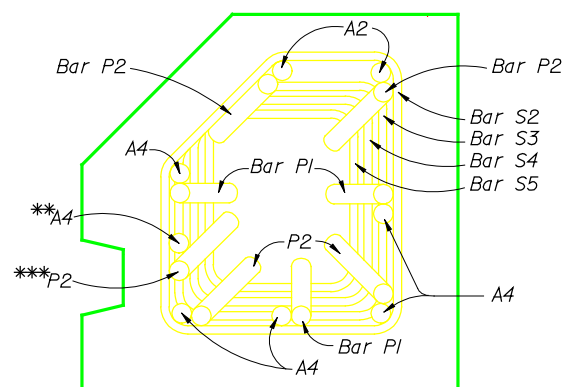
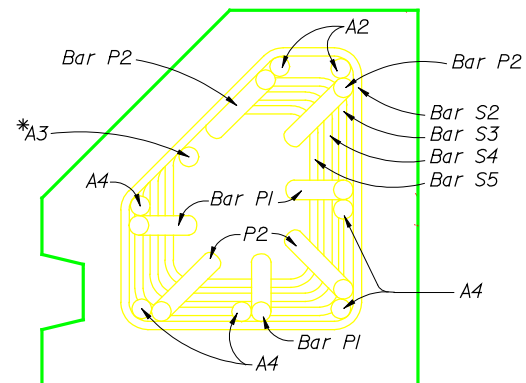
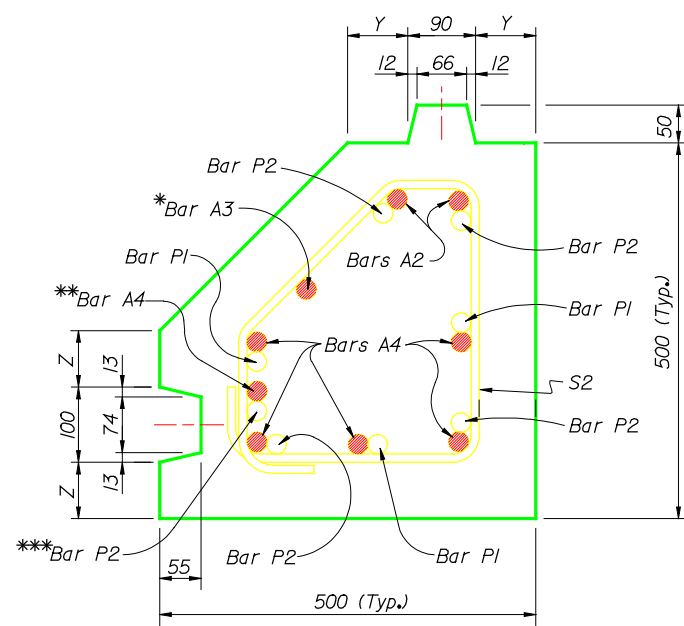
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ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE:		DRAWING NO.
PRECAST CONCRETE SHEET PILES VARIABLE ANGLE CORNER PILE		1 of 1
PROJECT NAME:		INDEX NO.
		611

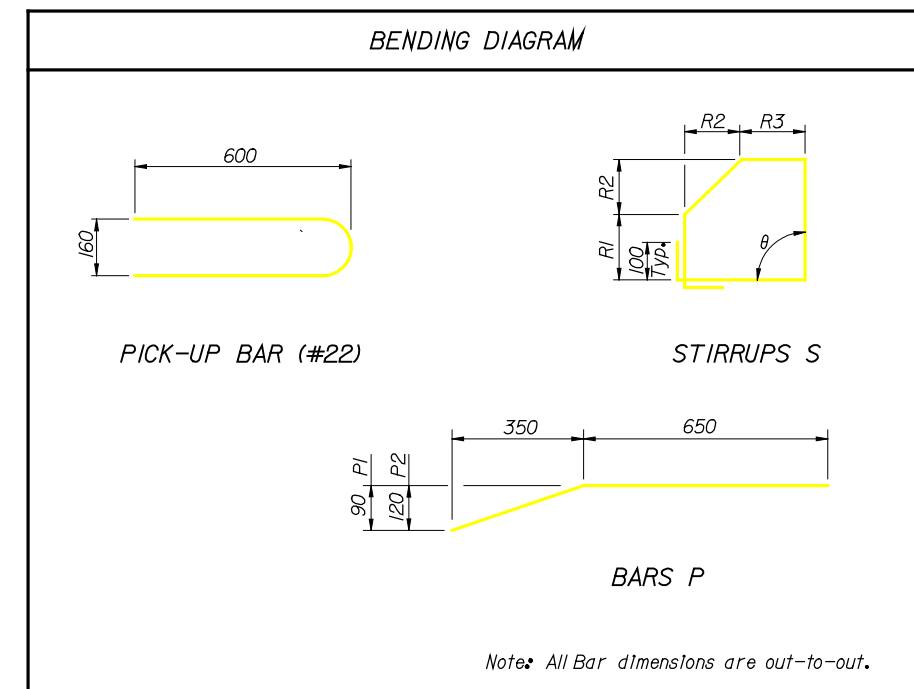


- * Bar A3 (shown also in elevation) is included only if $T = 250$ mm.
 ** This Bar A4 (not shown in elevation) is included only if $T = 300$ mm.
 *** This Bar P2 is included only if ** Bar A4 is included.



STIRRUP DIMENSIONS					
θ	T (mm)	BAR MARK	R1	R2	R3
90°	250	S1	175	145	175
		S2	175	200	120
		S3	175	145	140
		S4	175	105	140
		S5	175	65	140
90°	300	S1	225	95	225
		S2	225	150	170
		S3	225	95	190
		S4	225	55	190
		S5	240	N/A	205

SHEET PILE DIMENSIONS		
T (mm)	250	300
Y (mm)	80	105
Z (mm)	75	100



NOTES

Work this standard with Index No. S-613.

This drawing includes information for precast concrete Corner Piles for 250 mm and 300 mm thick Sheet Pile systems. The details apply to both thicknesses but the bar configurations change slightly according to the thickness values used.

Bars A and P are #25 and Stirrups S are #13.

All dimensions are in millimeters, except as noted.

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SHEET TITLE:
**PRECAST CONCRETE SHEET PILES
 RIGHT ANGLE CORNER PILE**

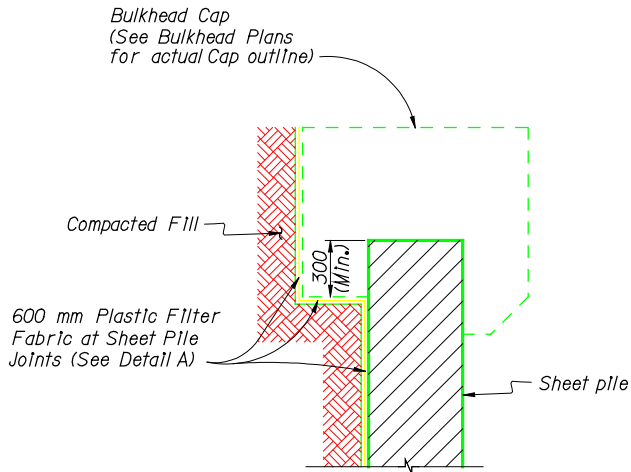
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DRAWING NO.
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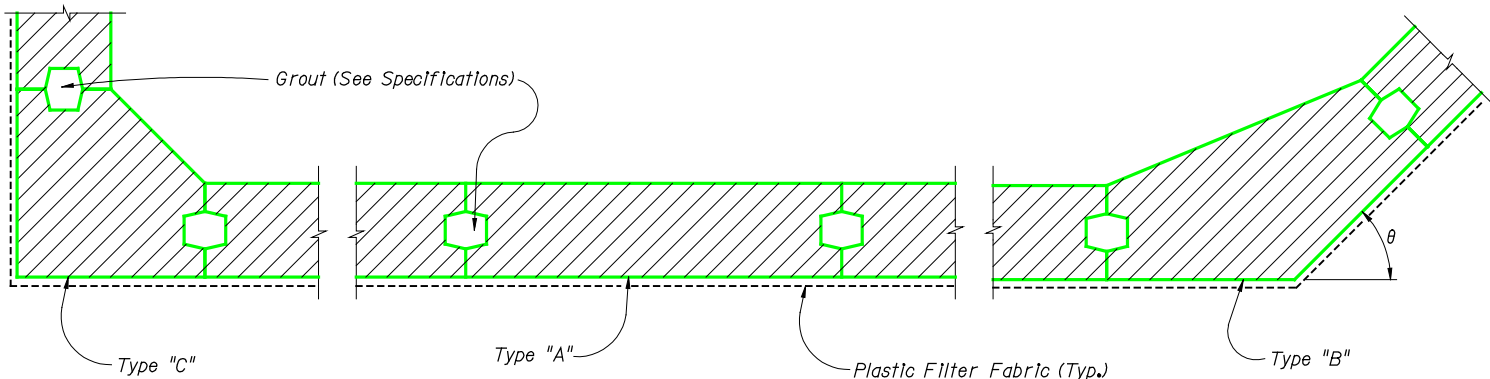
INDEX NO.
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Note: The tip elevation of Concrete Sheet Piles shall be determined by the Geotechnical Engineer.



SECTION THRU BULKHEAD
(Showing Plastic Filter Fabric)



DETAIL A
(Cap and Anchoring System Not Shown)

NOTE: Detail A shows a Part-Plan View of an assumed bulkhead.
See Bulkhead plans for actual Plan View.

SHEET PILES NOTES

DESCRIPTION: Standard drawings Indices 610, 611 and 612 include details for three types of piles with two thicknesses. Types "B" and "C" piles (corner piles) are of reinforced concrete construction, and Type "A" is of prestressed concrete construction. The piles shall be manufactured, cured and installed in accordance with the requirements of the contract documents.

NOTE: Index 611 and/or 612 are included if Type "B" and/or "C" piles are required.

CONCRETE CLASS: All concrete shall be class V (special) or class V (special) (microsilica).

CONCRETE STRENGTH: The cylinder strength shall be 41 MPa minimum at 28 days and if prestressing is involved, 28 MPa minimum at transfer of the prestressing force.

REINFORCING STEEL: All reinforcing steel shall be ASTM A615M-96, Grade 420.

PRESTRESSING STRANDS: All prestressing strands shall be Low-Relaxation ASTM A416M, Grade 1860. The strand pattern shown on Index No. 610 for piles 1,000 meter wide, requires 14 ~ No. 13 strands at 138.0 kN each. The nominal diameter of No. 13 strand is 12.7 millimeters.

ENVIRONMENT: The pile designs are applicable to all Environments.

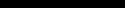
PLASTIC FILTER FABRIC: Plastic filter fabric shall extend to the bottom of the "X" dimension.

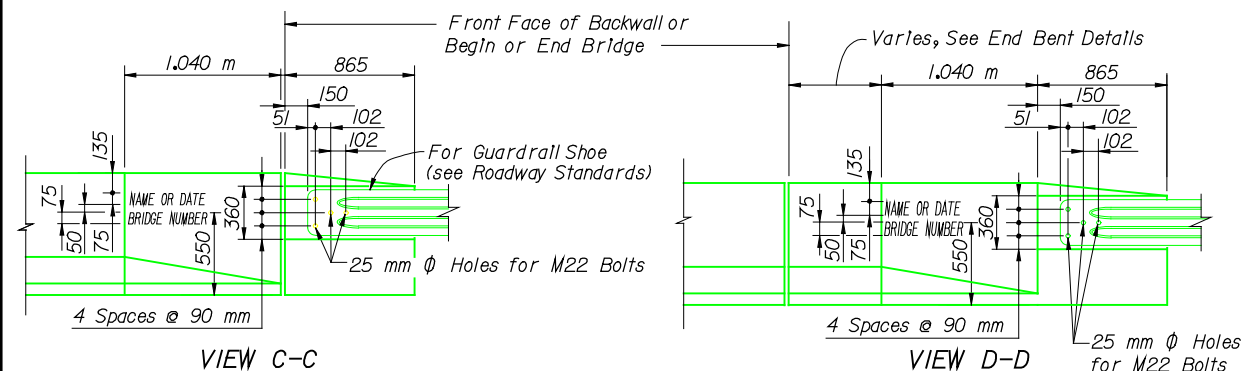
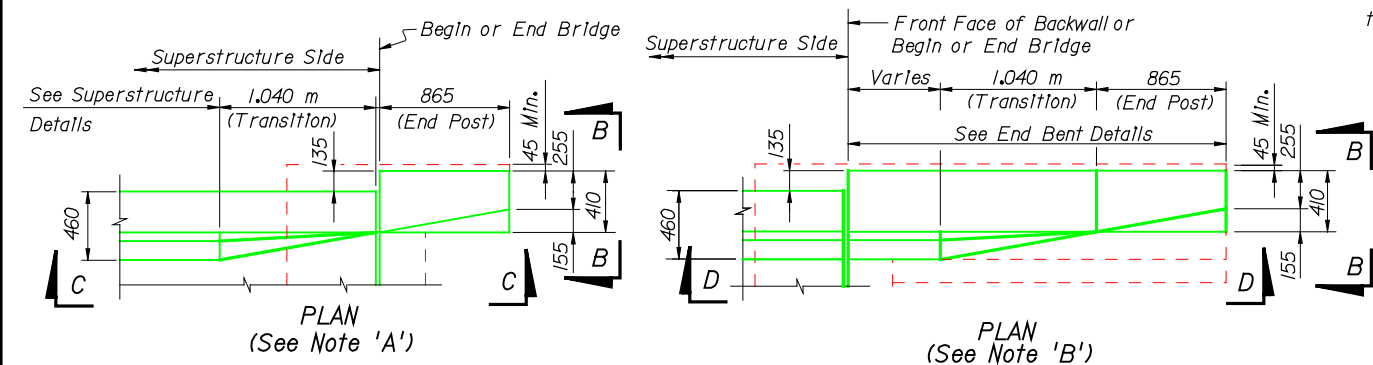
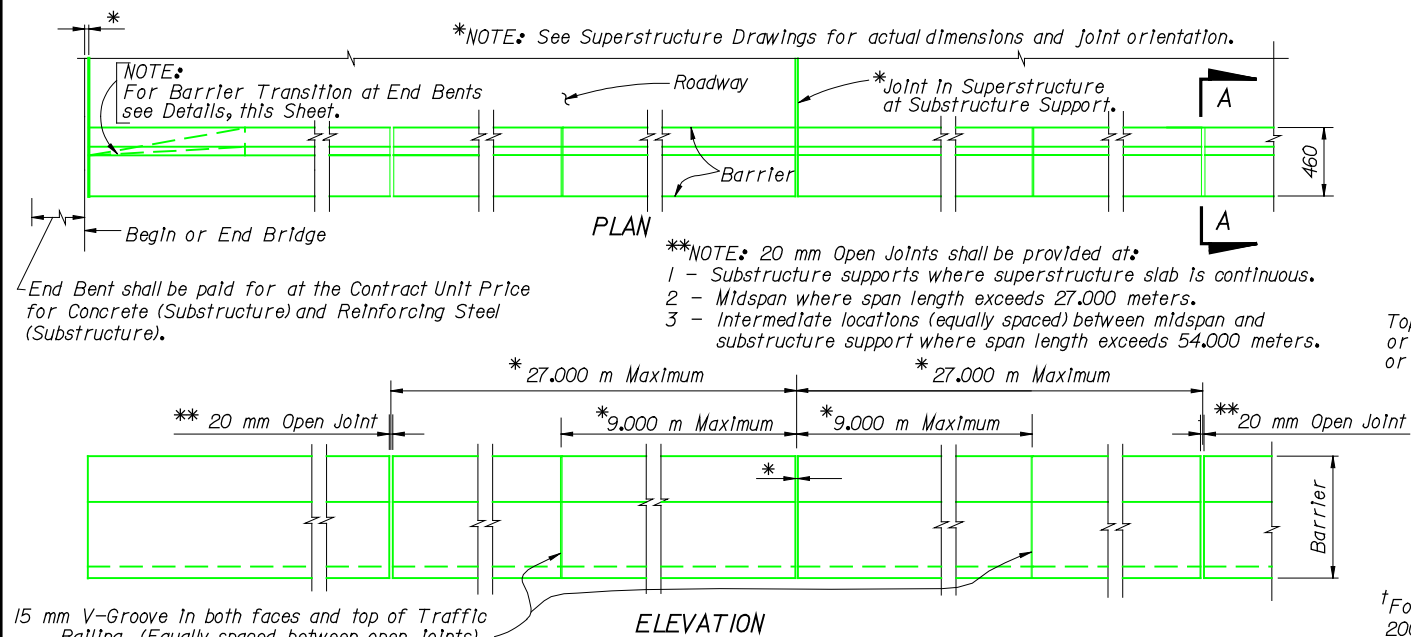
PAYMENT: Payment shall be based on the total length of one meter wide piling and the contract unit price per linear meter (Item No. 2455-14-11 for T=250 mm and Item No. 2455-14-12 for T=300 mm). For payment purposes, corner piles Types "B" or "C", shall be considered to be same as one meter wide Type "A" piling.

INSTRUCTION TO DESIGNER:

The bottom of the "X" dimension shall be 500 mm below the mud line.

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REVISIONS						DRAWN BY	NAMES	DATES	ENGINEER OF RECORD.	LOGO.	 FLORIDA DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN OFFICE	SHEET TITLE:	DRAWING NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	CHECKED BY						<i>PRECAST CONCRETE SHEET PILES</i>	<i>1 of 1</i>
			<i>98R</i>			DESIGNED BY							
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						APPROVED BY							<i>S-613</i>
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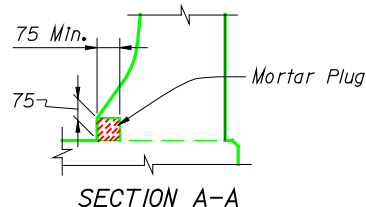


NOTE 'A':

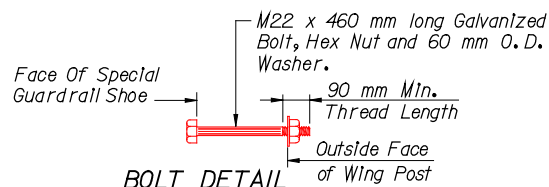
If Barrier Transition is required and the Superstructure Depth (thickness) is 635 millimeters or less, the Transition shall be provided on the Superstructure side. To accommodate the Transition on the Superstructure the Reinforcement (Bars 16V, 16P & 13S) will need adjusting. The 355 mm portion of Bars 16V shall be bent to fit and the horizontal 255 mm portion along the bottom shall be cut at the center.

NOTE 'B':

If Barrier Transition is required and the Superstructure Depth (thickness) exceeds 635 millimeters, the Barrier Transition shall be provided on the End Bent side.



NOTE: When open joint in Barrier is not coincident with joint in the superstructure, the lower 75 mm portion of the open joint shall be plugged by filling with mortar in accordance with Subarticle 400-15J.



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

ROADWAY CROSS-SLOPE	LOW GUTTER		HIGH GUTTER	
	$\phi 1$	$\phi 2$	$\phi 1$	$\phi 2$
0% to 2%	90°	90°	90°	90°
2%+ to 6%	93°	87°	87°	93°
6%+ to 10%	96°	84°	84°	96°

Top of Bridge Deck or Wearing Surface or sidewalk

TYPICAL SECTION THRU TRAFFIC RAILING

† For Slabs 200 mm thick or less. If Slab is thicker than 200 mm or Barrier is located on a Retaining Wall, embed Bar 16V 155 mm.

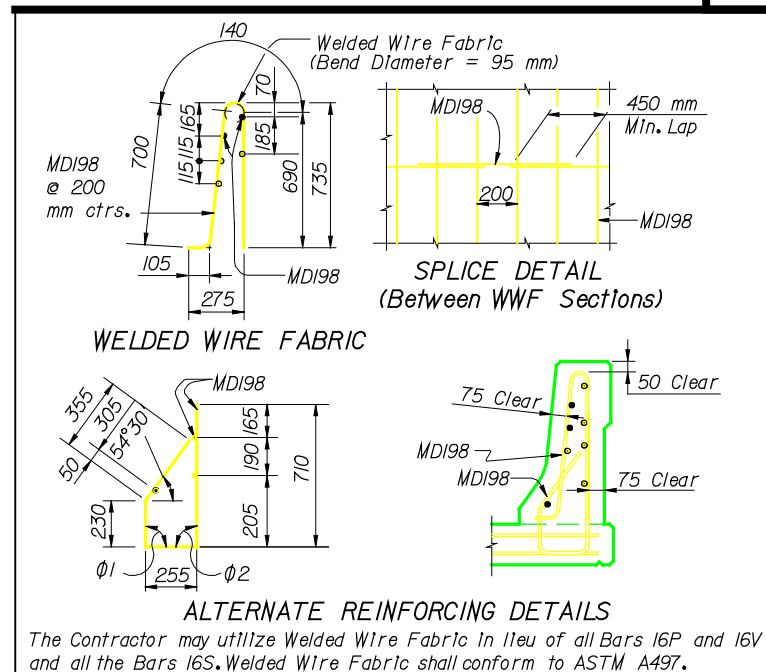
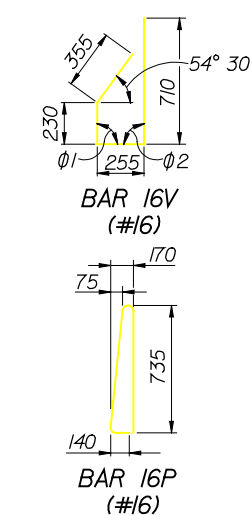
†† Where Barriers of adjacent bridges are to be built back to back, the outside vertical plane of the Barrier and Slab may coincide if so shown on the Superstructure Plans.

BAR BENDING NOTES

1. All bar dimensions in the bending diagrams are out to out.
2. Bars 16P and 16V shall be bent around a ϕ 65 mm.
3. The 230 mm and the 710 mm vertical dimensions shown for Bar 16V are based on a bridge slab 200 mm thick or greater and without raised sidewalk or wearing surface. If the slab thickness is less than 200 mm decrease these dimensions by an amount equal to the difference in the thicknesses; and if a wearing surface or a raised sidewalk is to be provided, increase the dimensions by an amount equal to the wearing surface thickness or sidewalk thickness.
4. Reinforcement for Barrier on Retaining Wall shall be the same as detailed above for a 200 mm slab with $\phi 1 = \phi 2 = 90^\circ$.

TYPICAL TRAFFIC RAILING QUANTITIES

CONCRETE: 0.260 m³ per meter.
REINFORCING STEEL: 36.90 kg per meter.
(Above quantities are based on 200 mm slab and 2% cross-slope).



REINFORCING STEEL NOTES

All vertical reinforcing steel in Traffic Railing shall be #16 Bars spaced at 200 mm c.c. and all longitudinal reinforcing steel shall be #16 Bars. At all open joints all reinforcing shall have 50 mm minimum cover. At all construction joints Bars 16S (#16) may be continuous or spliced. All splices in Bars 16S shall be 450 mm minimum.

TRAFFIC RAILING NOTES

CONCRETE AND REINFORCING STEEL: See General Notes.
PAYMENT: Traffic Railing including transition and end post sections, on Bridges, Approach Slabs and Wing Walls shall be paid for per linear meter (Item No. 2400-148-1) which shall include all concrete and reinforcing steel.

MARKERS: Markers recording the elevation shall be placed on top of the Traffic Railing at End Bents. On bridges longer than 30,000 m, one marker shall be placed at each end of the bridge. On bridges 30.0 m or less, one marker shall be placed at one end of the bridge only. Markers are to be furnished by the Florida Department of Transportation and installed by the Contractor. The cost of installing the markers shall be included in the Contract Unit Price for Traffic Railing (Barrier).

TRAFFIC RAIL CONSTRUCTION: The contractor may construct the railing by the use of stationary removable forms or by the use of slip forms without altering the rail dimensions shown above.

SUPERELEVATED BRIDGES: At the option of the Contractor, Traffic Railing and End Bent Wing Posts on superelevated bridges, may be constructed perpendicular to the roadway surface. The cost of modifications shall be at the Contractor's expense.

BOLTS: Bolts, Nuts, and Washers shall be hot dip galvanized in accordance with ASTM A153.

RETAINING WALL: If the Barrier is to be provided on a retaining wall, the Barrier Section shall be as shown above. Other details such as transition for guardrail attachment, maximum spacing of 20 mm open joint and 15 mm V-Groove shall also apply. See Wall Plans for Payment.

NAME AND BRIDGE NUMBER: The Name and Bridge Number to be placed on the Traffic Railing shall be seen on the driver's right when approaching bridge. The date is to be placed on the driver's left when approaching the bridge. The date shall be the year the bridge is constructed. Black plastic letters and figures 75 mm in height, as approved by the Engineer, may be used, in lieu of letters and figures formed by 10 mm V-Grooves. V-Grooves shall be formed by preformed letters and figures. For a major widening the date shall be the date of the widening.

NOTE: All dimensions are in millimeters (mm), except as noted.

TO FORM INSCRIBED LETTERS AND FIGURES

SECTION THRU RECESSED "V" GROOVE

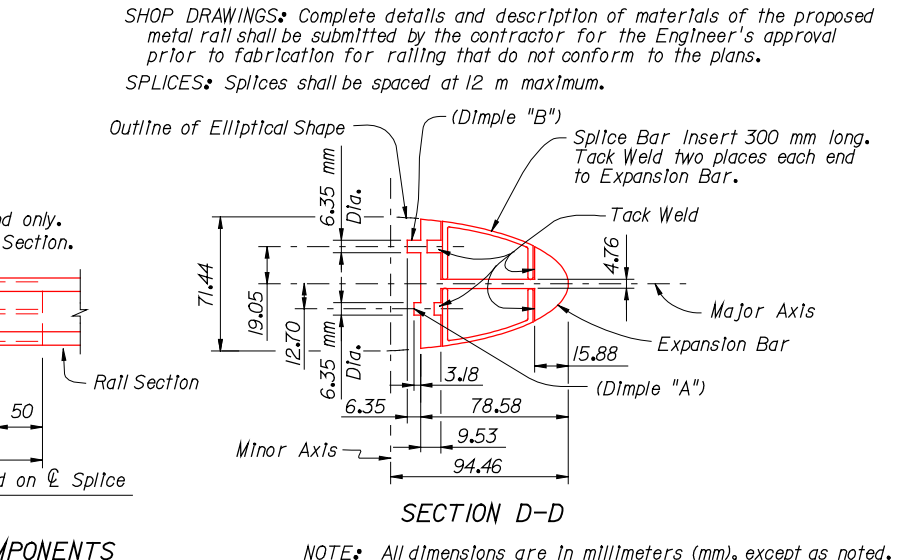
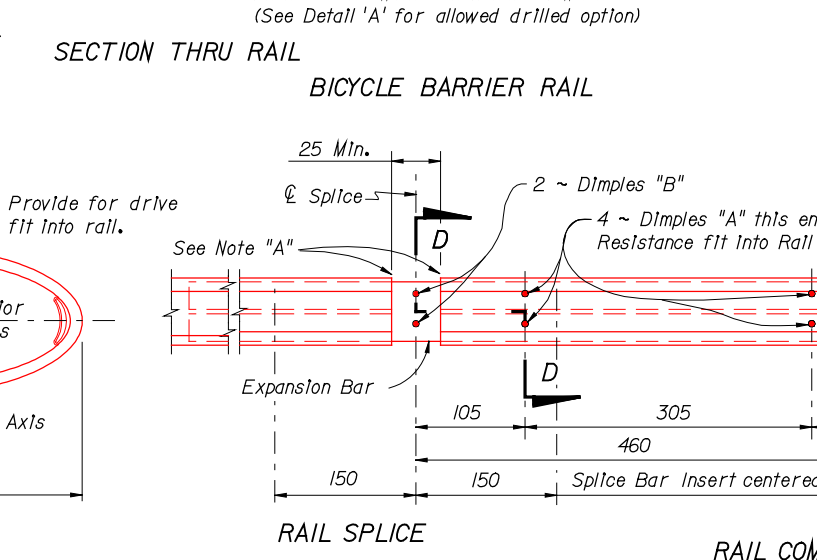
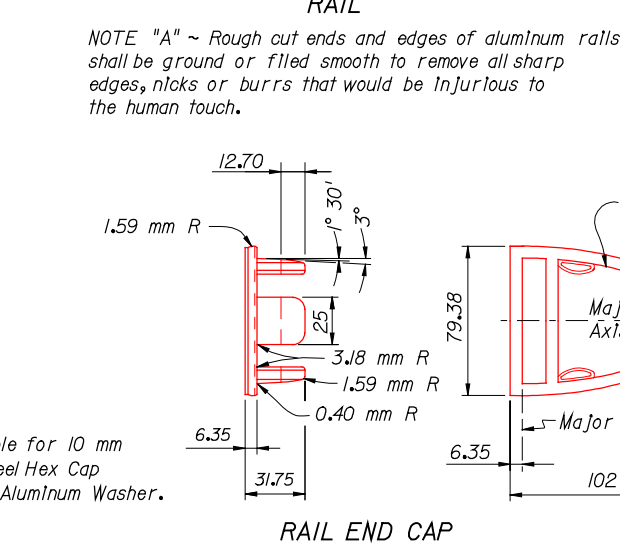
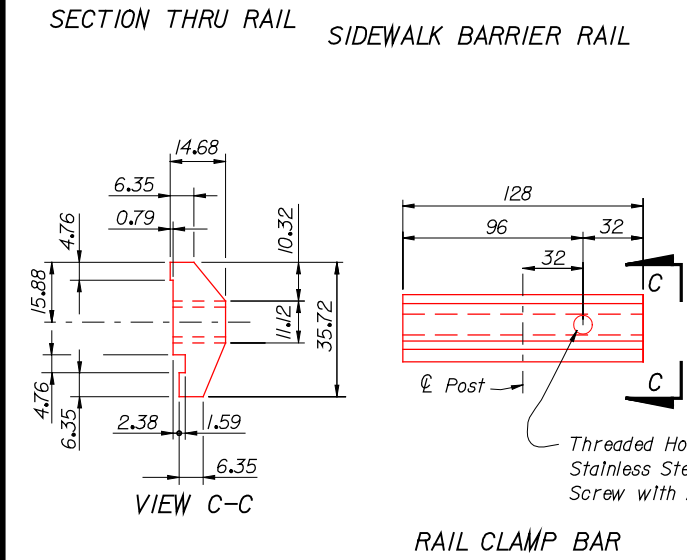
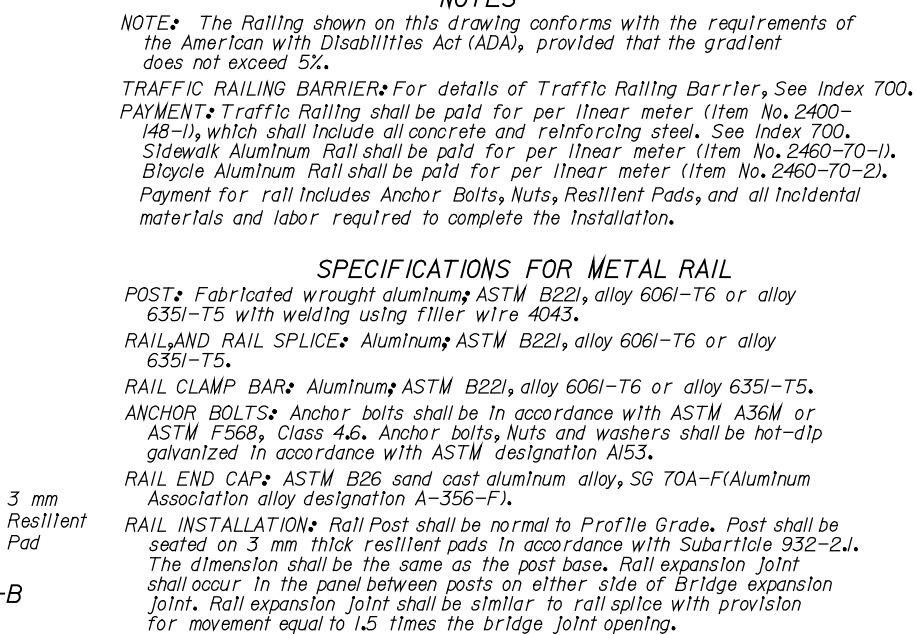
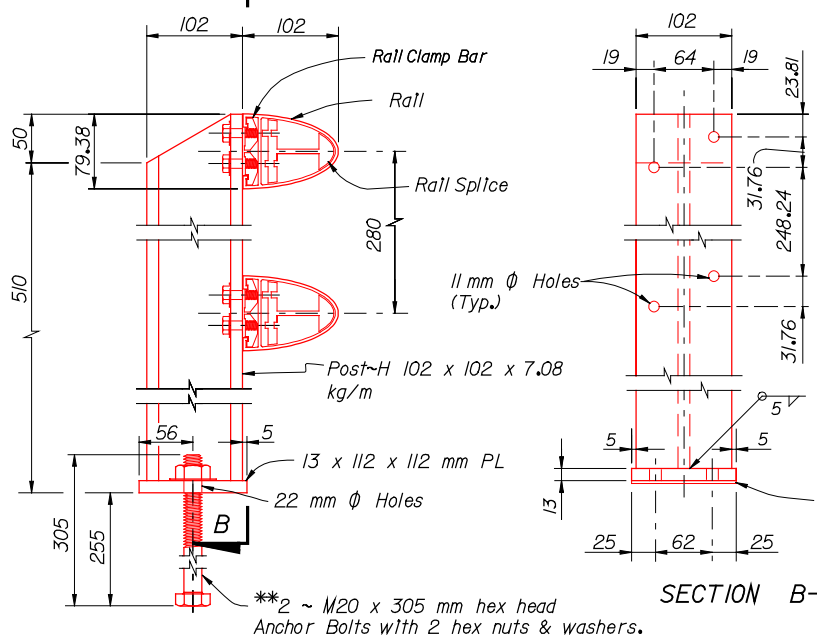
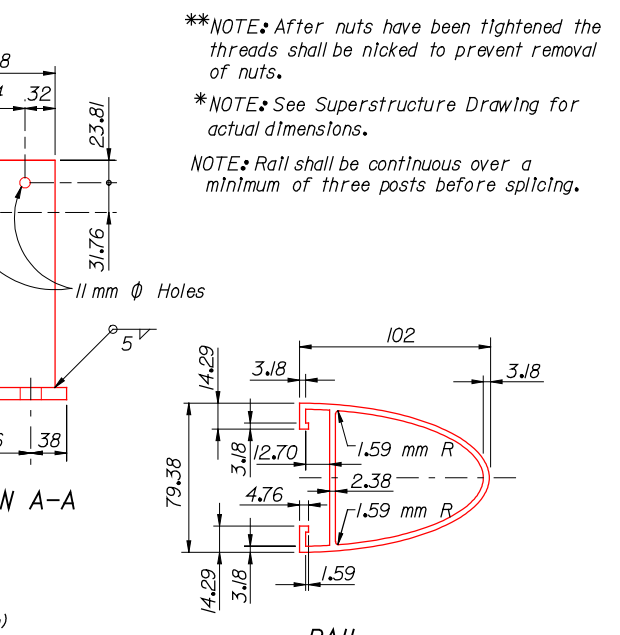
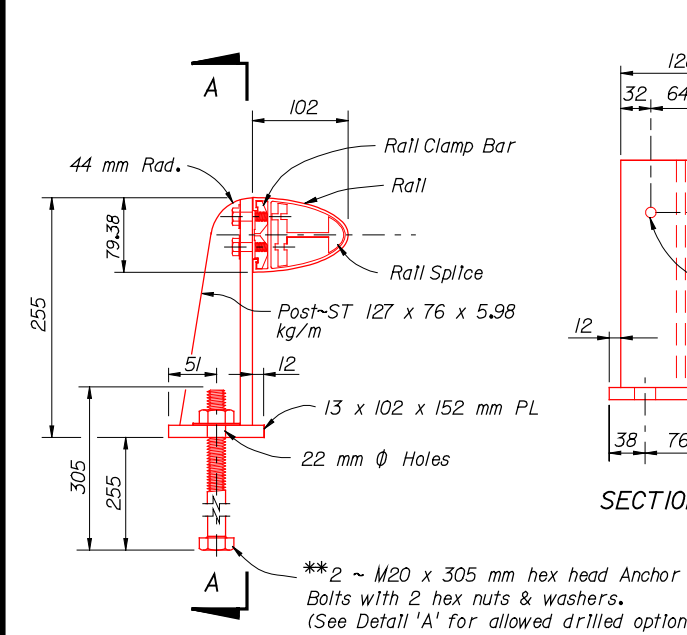
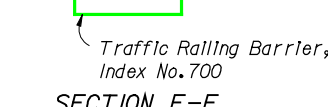
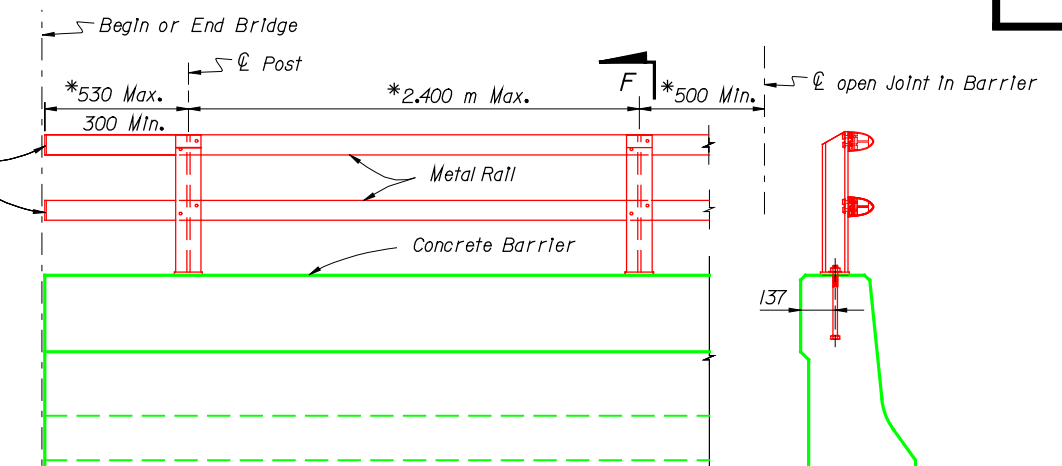
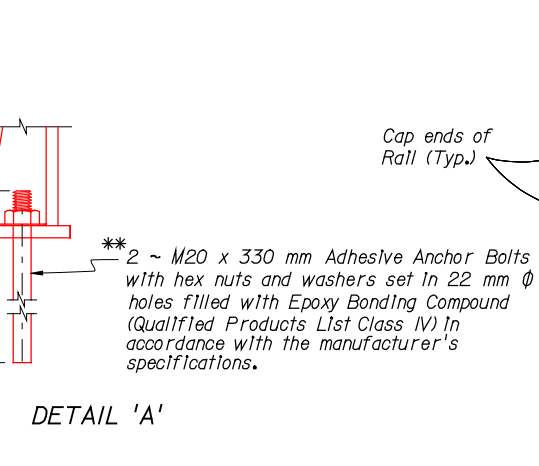
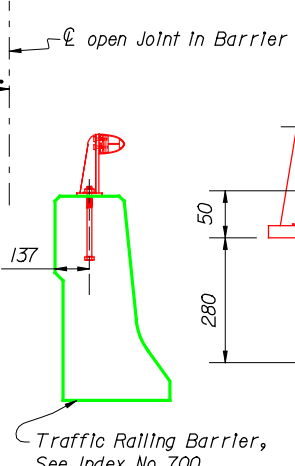
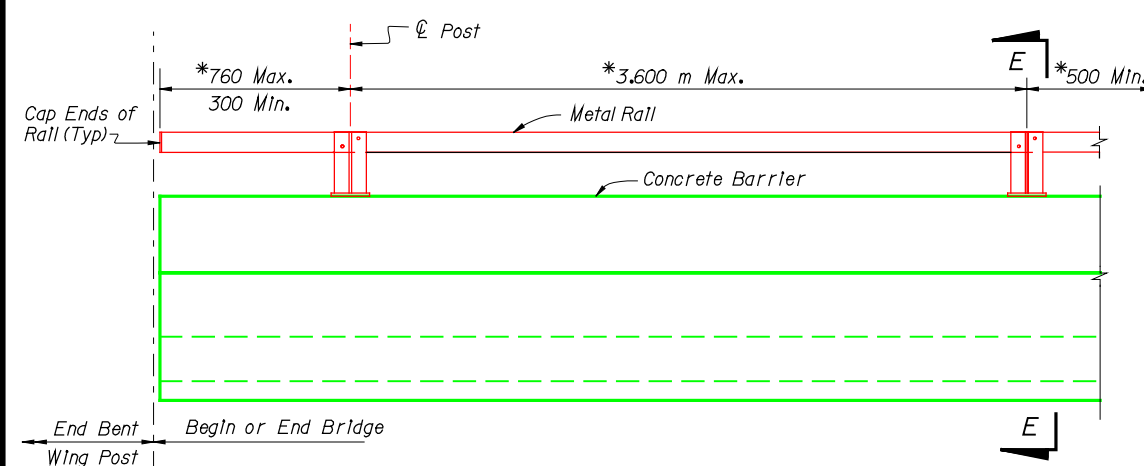
REVISIONS				NAMES		DATES	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY
			98R				
				DRAWN BY	WEH	2-89	
				CHECKED BY	AJG	2-89	
				DESIGNED BY			
				CHECKED BY			
				APPROVED BY	AJG		

ENGINEER OF RECORD.

LOGO.

FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE:		DRAWING NO.
TRAFFIC RAILING BARRIER		1 of 1
PROJECT NAME:		INDEX NO.
		700



NOTES

NOTE: The Railing shown on this drawing conforms with the requirements of the American with Disabilities Act (ADA), provided that the gradient does not exceed 5%.

TRAFFIC RAILING BARRIER: For details of Traffic Railing Barrier, See Index 700.

PAYMENT: Traffic Railing shall be paid for per linear meter (Item No. 2400-148-1), which shall include all concrete and reinforcing steel. See Index 700.

Sidewalk Aluminum Rail shall be paid for per linear meter (Item No. 2460-70-1). **Bicycle Aluminum Rail** shall be paid for per linear meter (Item No. 2460-70-2). Payment for rail includes Anchor Bolts, Nuts, Resilient Pads, and all incidental materials and labor required to complete the installation.

SPECIFICATIONS FOR METAL RAIL

POST: Fabricated wrought aluminum; ASTM B221, alloy 6061-T6 or alloy 6351-T5 with welding using filler wire 4043.

RAIL AND RAIL SPLICE: Aluminum; ASTM B221, alloy 6061-T6 or alloy 6351-T5.

RAIL CLAMP BAR: Aluminum; ASTM B221, alloy 6061-T6 or alloy 6351-T5.

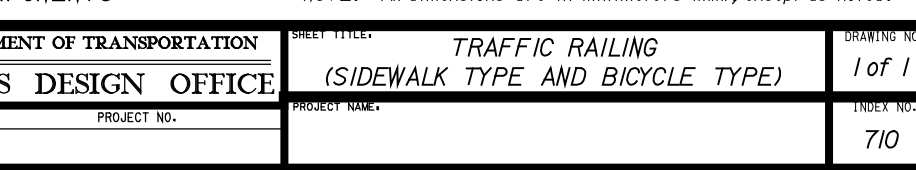
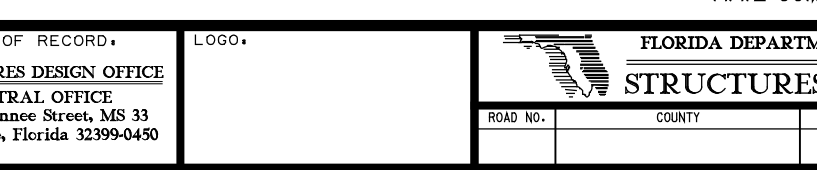
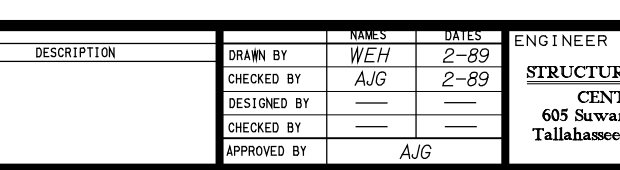
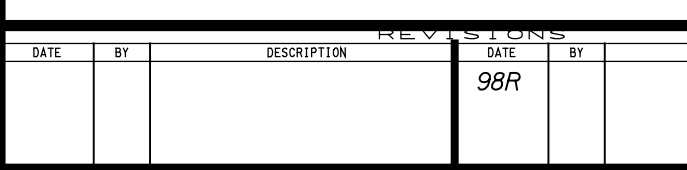
ANCHOR BOLTS: Anchor bolts shall be in accordance with ASTM A36M or ASTM F568, Class 4.6. Anchor bolts, nuts and washers shall be hot-dip galvanized in accordance with ASTM designation A153.

RAIL END CAP: ASTM B26 sand cast aluminum alloy, SG 70A-F (Aluminum Association alloy designation A-356-F).

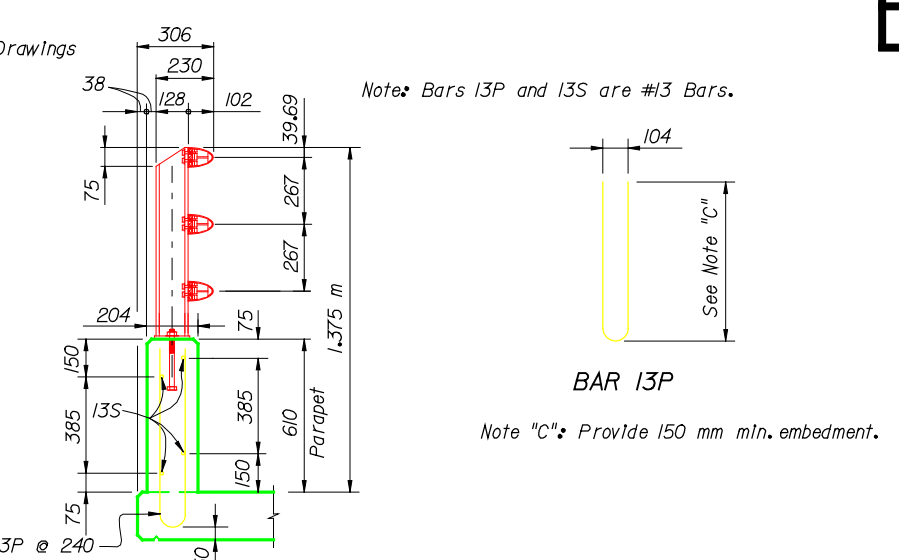
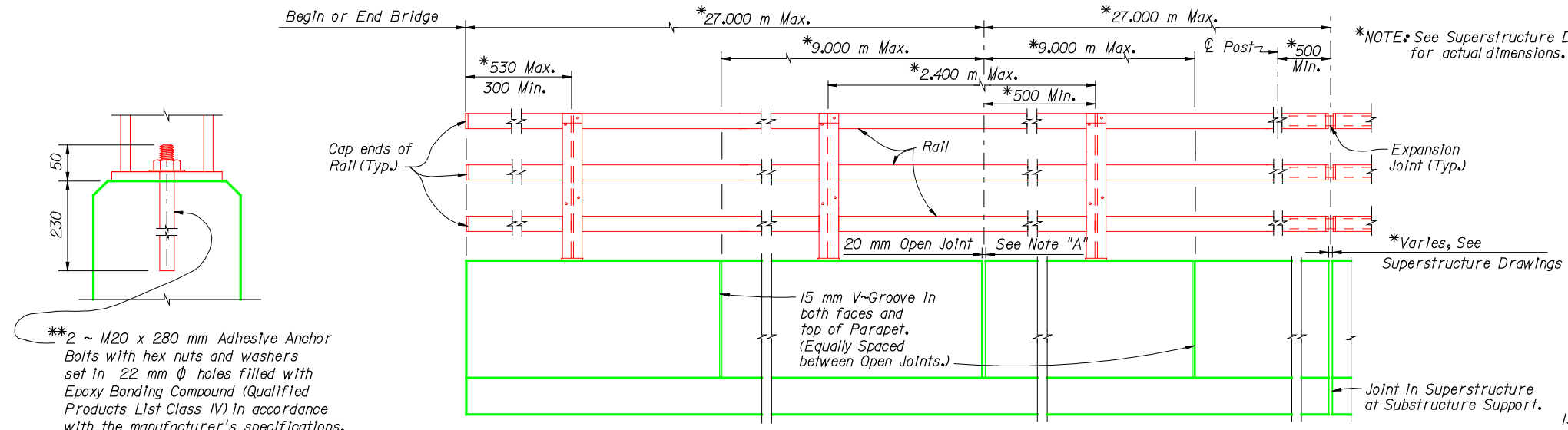
RAIL INSTALLATION: Rail Post shall be normal to Profile Grade. Post shall be seated on 3 mm thick resilient pads in accordance with Subarticle 932-2J. The dimension shall be the same as the post base. Rail expansion joint shall occur in the panel between posts on either side of Bridge expansion joint. Rail expansion joint shall be similar to rail splice with provision for movement equal to 1.5 times the bridge joint opening.

SHOP DRAWINGS: Complete details and description of materials of the proposed metal rail shall be submitted by the contractor for the Engineer's approval prior to fabrication for railing that do not conform to the plans.

SPLICES: Splices shall be spaced at 12 m maximum.



REVISIONS				REVISIONS				REVISIONS			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
			98R								
DRAWN BY WEH 2-89				CHECKED BY AJG 2-89				DESIGNED BY			
CHECKED BY				APPROVED BY AJG				ENGINEER OF RECORD			
STRUCTURES DESIGN OFFICE				CENTRAL OFFICE				605 Suwannee Street, MS 33			
Tallahassee, Florida 32399-0450				LOGO				FLORIDA DEPARTMENT OF TRANSPORTATION			
ROAD NO.				COUNTY				PROJECT NO.			
SHEET TITLE: TRAFFIC RAILING (SIDEWALK TYPE AND BICYCLE TYPE)				PROJECT NAME:				DRAWING NO. 1 of 1			
INDEX NO. 710											

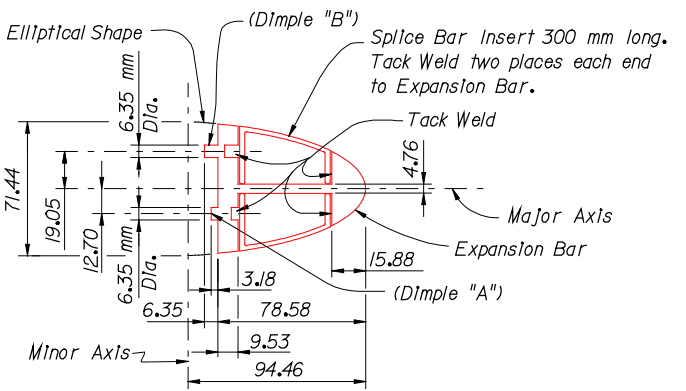
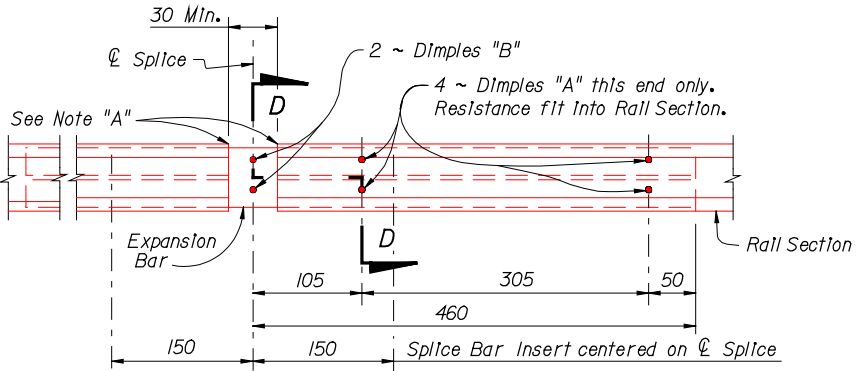
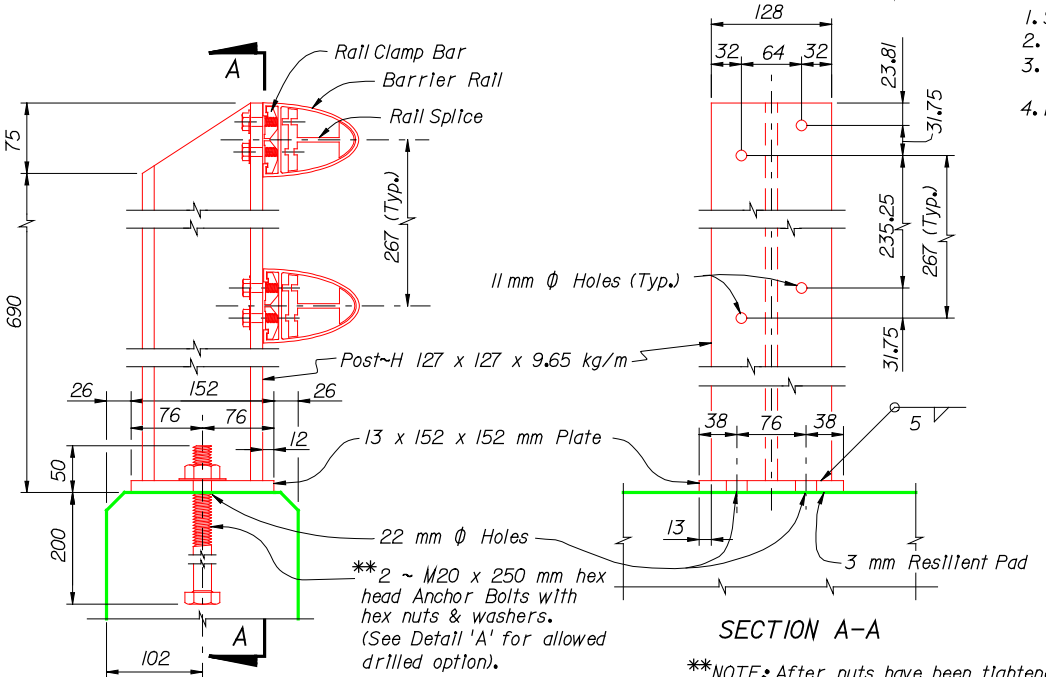


DETAIL 'A'

ELEVATION

TYPICAL SECTION THRU PARAPET AND RAIL

- Note "A": 20 mm Open Joints shall be provided at:
1. Substructure Supports where Superstructure Slab is continuous.
 2. Mid-Span where Span length exceeds 27,000 meters.
 3. Intermediate locations (equally spaced) between Mid-Span and Superstructure Support where Span length exceeds 54,000 meters.
 4. Locations Coinciding with Joints for the Traffic Railing Barrier.



RAIL SPLICE

SECTION D-D

NOTES

NOTE: The Railing shown on this drawing conforms with the requirements of the American with Disabilities Act (ADA), provided that the gradient does not exceed 5%.

PAYMENT: Pedestrian/Bicycle Parapet on bridges, approach slabs or wing walls shall be paid for per linear meter (Item No. 2400-160) which shall include all concrete and reinforcing steel. Aluminum Rail shall be paid for per linear meter (Item No. 2460-70-3). Payment for the rail includes Anchor Bolts, Nuts, Resilient Pads, and all incidental materials and labor required to complete the installation.

RAIL COMPONENTS

NOTE: Rail shall be continuous over a minimum of three posts before splicing. Splices shall be spaced at 12 m maximum.

SPECIFICATIONS FOR METAL RAIL

POST: Fabricated wrought aluminum; ASTM B221, alloy 6061-T6 or alloy 6351-T5 with welding using filler wire 4043.

RAIL AND RAIL SPLICE: Aluminum; ASTM B221, alloy 6061-T6 or alloy 6351-T5.

RAIL CLAMP BAR: Aluminum; ASTM B221, alloy 6061-T6 or alloy 6351-T5.

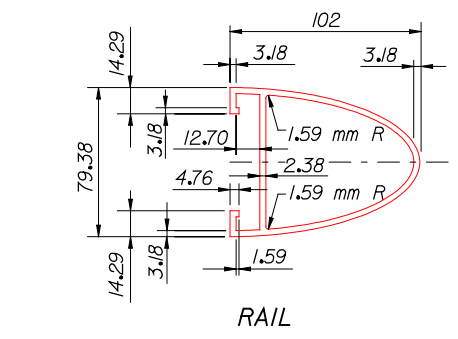
ANCHOR BOLTS: Anchor bolts shall be in accordance with ASTM A36M or ASTM F568, Class 4.6. Anchor bolts, Nuts and washers shall be hot-dip galvanized in accordance with ASTM designation A153.

RAIL END CAP: ASTM B26 sand cast aluminum alloy, SG 70A-F (Aluminum Association alloy designation A-356-F).

RAIL INSTALLATION: Rail Post shall be normal to Profile Grade. Post shall be seated on 3 mm thick resilient pads in accordance with Subarticle 932-2.1. The dimension shall be the same as the post base. Rail expansion joint shall occur in the panel between posts on either side of Bridge expansion joint. Rail expansion joint shall be similar to rail splice with provision for movement equal to 1.5 times the bridge joint opening.

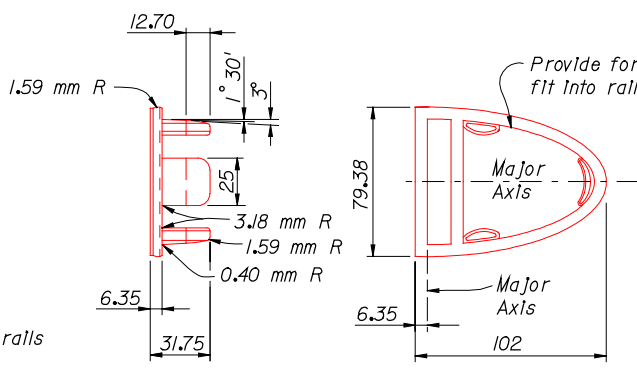
SHOP DRAWINGS: Complete details and description of materials of the proposed metal rail shall be submitted by the contractor for the Engineer's approval prior to fabrication for railing that do not conform to the plans.

NOTE: All dimensions are in millimeters (mm), except as noted.

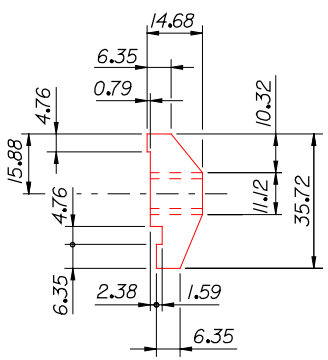


RAIL

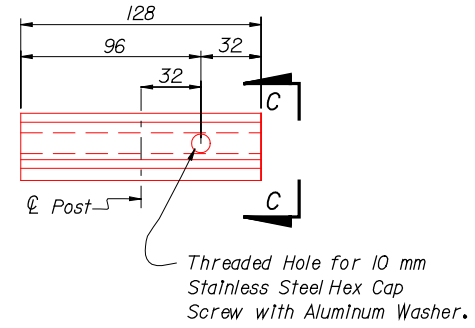
NOTE "A" ~ Rough cut ends and edges of aluminum rails shall be ground or filed smooth to remove all sharp edges, nicks or burrs that would be injurious to the human touch.



RAIL END CAP



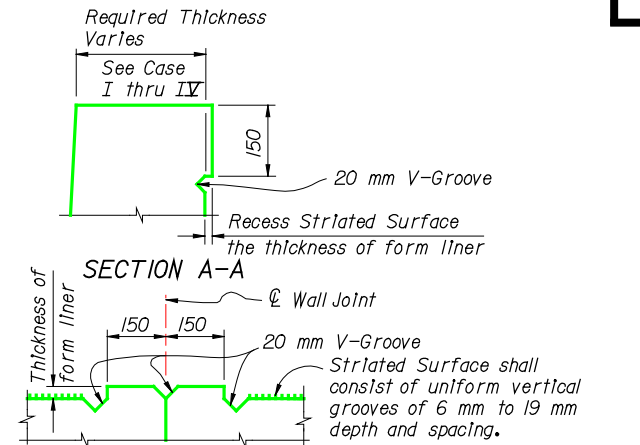
VIEW C-C



RAIL CLAMP BAR

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	NAMES	DATES	ENGINEER OF RECORD	LOGO	FLORIDA DEPARTMENT OF TRANSPORTATION	SHEET TITLE	1 of 1
			98R			DRAWN BY	LFC	12-85	STRUCTURES DESIGN OFFICE		STRUCTURES DESIGN OFFICE	PEDESTRIAN/BICYCLE RAILING	
						CHECKED BY	RDS	1-86	CENTRAL OFFICE				
						DESIGNED BY			605 Suwannee Street, MS 33				
						CHECKED BY			Tallahassee, Florida 32399-0450				
						APPROVED BY	AJG						720



SECTION B-B

SHEET TITLE.	CANTILEVER RETAINING WALLS GENERAL NOTES AND DETAILS	DRAWING NO.	1 of 1
PROJECT NAME.		INDEX NO.	800

DATE: "H" TIME: s:\01\structures\for\retaining\structures\00std\00standards\0801.dwg

* NOTE: Wall Dimension "H" is given in meters (m). All other dimensions, lengths and spacings are given in millimeters (mm).
** NOTE: For placement details of Bars D see Standard Index No.800.

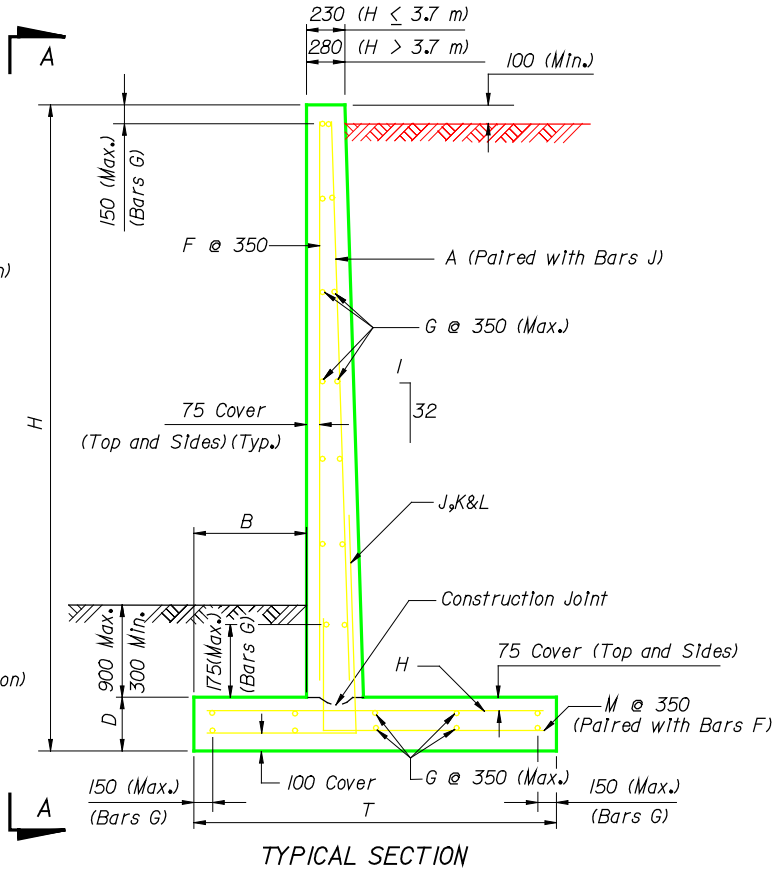
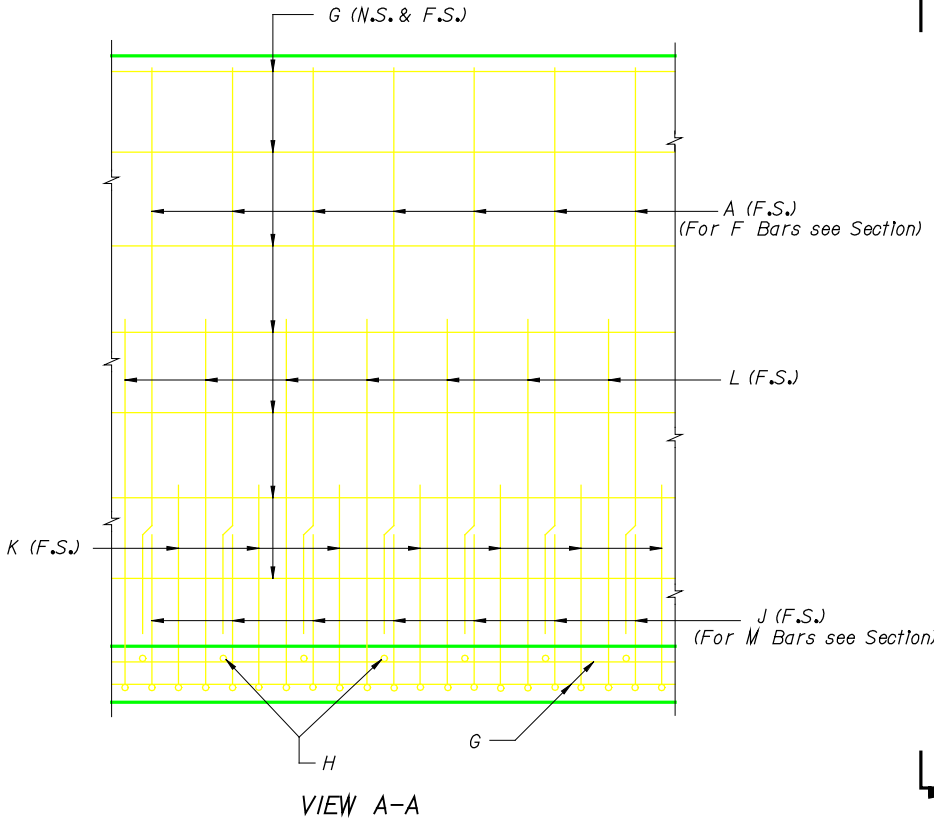
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

SHEET NO.

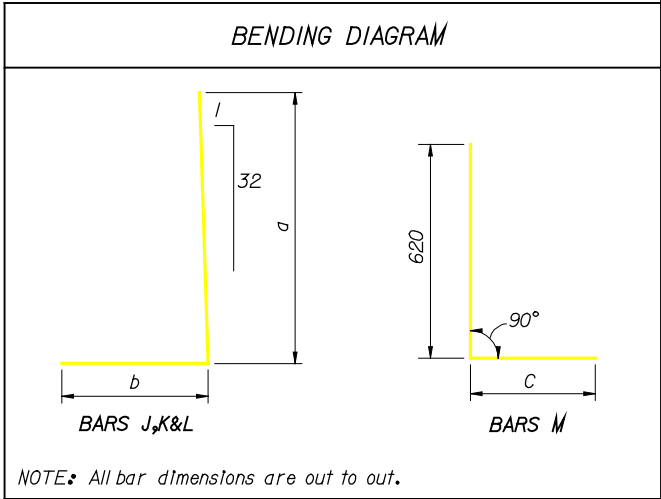
RETAINING WALL DATA *

WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																							
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				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH	
1.8	205	280	940				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	790	#13	35	235	1625	340	1965													#13	24	585	1205	1.8	
2.1	255	280	1065				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	915	#13	35	235	1925	400	2325													#13	24	660	1280	2.1	
2.4	305	280	1220				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1070	#13	35	235	2225	455	2680													#13	24	765	1385	2.4	
2.7	355	280	1370				#22	6	460	#13	24	2325	#13	24	7850	#13	26	315	1220	#13	38	215	2525	515	3040													#13	24	865	1485	2.7	
3.0	380	280	1575				#22	7	460	#13	24	2625	#13	26	7850	#13	38	215	1425	#13	38	215	2825	550	3375													#13	24	1045	1665	3.0	
3.4	455	280	1805				#22	8	460	#13	24	3025	#13	30	7850	#16	31	265	1655	#16	22	380	3225	640	3865													#13	24	1200	1820	3.4	
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4.0	610	305	2335				#22	10	460	#13	24	3600	#13	36	7850	#16	36	225	2185	#16	27	305	3825	860	4685													#13	24	1575	2195	4.0	
4.3	685	305	2640				#22	11	460	#13	24	3900	#13	40	7850	#16	43	190	2490	#16	36	225	4125	945	5070													#13	24	1805	2425	4.3	
4.6	760	305	2920	#16	22	4200	#22	12	460	#13	24	4200	#13	44	7850	#22	37	220	2770	#16	22	390	1120	1030	2150	#16	21	390	3275	1030	4305								#13	24	2010	2630	4.6
4.9	865	305	3250	#16	19	4500	#22	13	460	#13	24	4500	#13	48	7850	#22	45	180	3100	#16	19	440	865	1145	2010	#16	18	440	1575	1145	2720	#16	18	440	4495	1145	5640	#13	24	2235	2855	4.9	
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5.5	1065	355	3885	#16	19	5050	#22	14	460	#13	24	5050	#13	54	7850	#22	52	155	3735	#22	19	450	1320	1365	2685	#22	18	450	1805	1365	3170	#22	18	450	4545	1365	5910	#13	24	2670	3290	5.5	
5.8	1170	355	4265	#16	21	5350	#22	15	460	#13	24	5350	#13	58	7850	#25	38	215	4115	#22	21	410	1040	1480	2520	#22	20	410	1930	1480	3410	#22	20	410	4675	1480	6155	#13	24	2945	3565	5.8	
6.1	1270	355	4570	#22	20	5650	#22	16	460	#13	24	5650	#13	62	7850	#25	37	220	4420	#22	20	430	1040	1590	2630	#22	19	430	1930	1590	3520	#22	19	430	4980	1590	6570	#13	24	3150	3770	6.1	

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.19	281	0.65	35
2.1	6.15	338	0.77	42
2.4	7.20	381	0.90	48
2.7	8.25	433	1.03	54
3.0	9.46	496	1.18	62
3.4	11.00	572	1.38	72
3.7	12.70	665	1.59	83
4.0	15.68	752	1.96	94
4.3	17.39	928	2.17	116
4.6	19.05	1192	2.38	149
4.9	20.86	1418	2.61	177
5.2	24.10	1583	3.01	198
5.5	25.87	2032	3.23	254
5.8	28.02	2225	3.50	278
6.1	29.97	2468	3.75	308



NOTE: To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No.800.
All dimensions are in millimeters unless otherwise noted.

REVISIONS				DRAWING NO.			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	INDEX NO.	
			98			1 of 1	
DRAWN BY SHM 12/93				ENGINEER OF RECORD, STRUCTURES DESIGN OFFICE			
CHECKED BY JMD/NRK 12/93				CENTRAL OFFICE			
DESIGNED BY JMD 12/93				605 Suwannee Street, MS 33			
CHECKED BY NRK 12/93				Tallahassee, Florida 32399-0450			
APPROVED BY A/JG				FLORIDA DEPARTMENT OF TRANSPORTATION			
				STRUCTURES DESIGN OFFICE			
				ROAD NO. COUNTY PROJECT NO.			
				CASE I (96 kPa MAX. BEARING PRESSURE) 1.8 m TO 6.1 m HEIGHT			
				PROJECT NAME:			
				801			

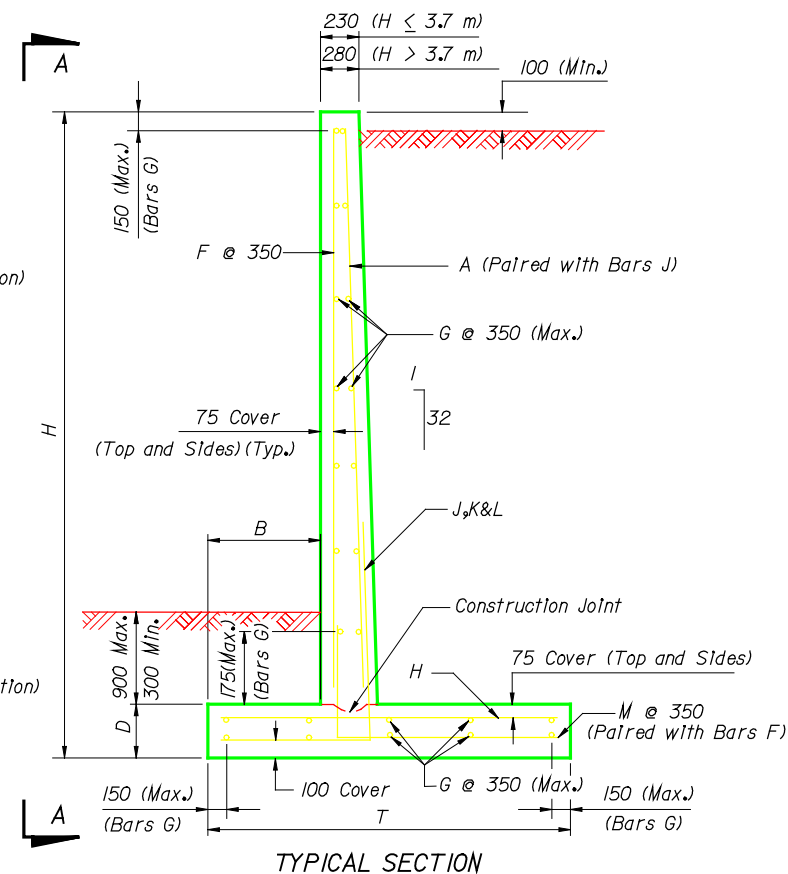
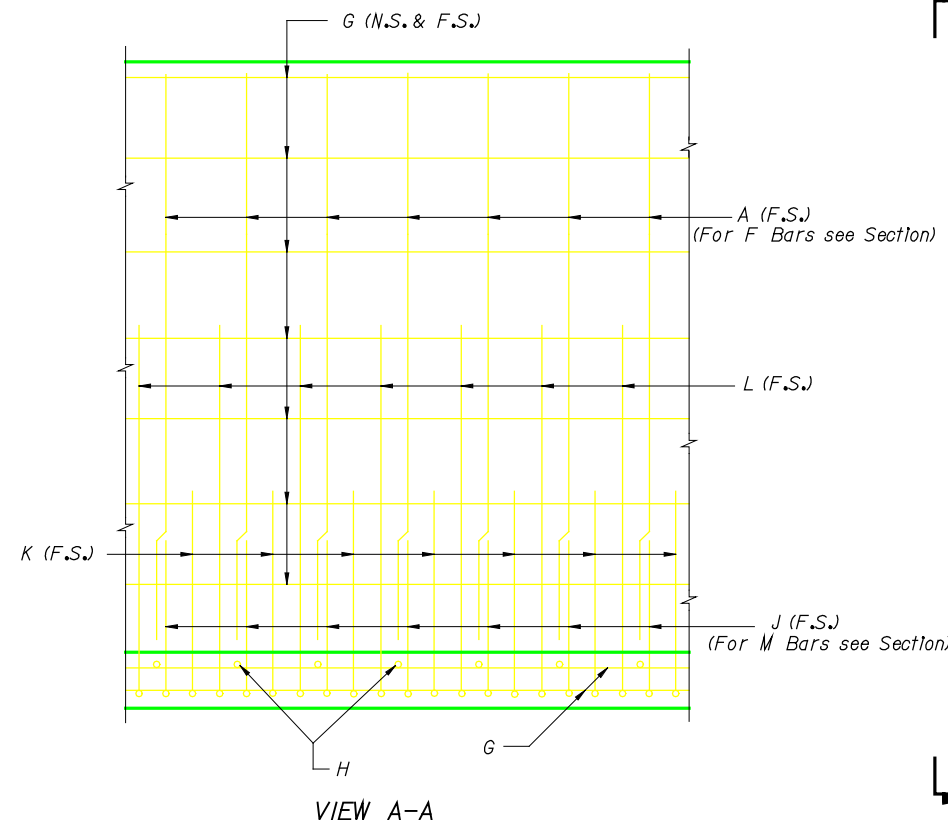
**** NOTE:** For placement details of Bars D see Standard Index No. 800.

NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

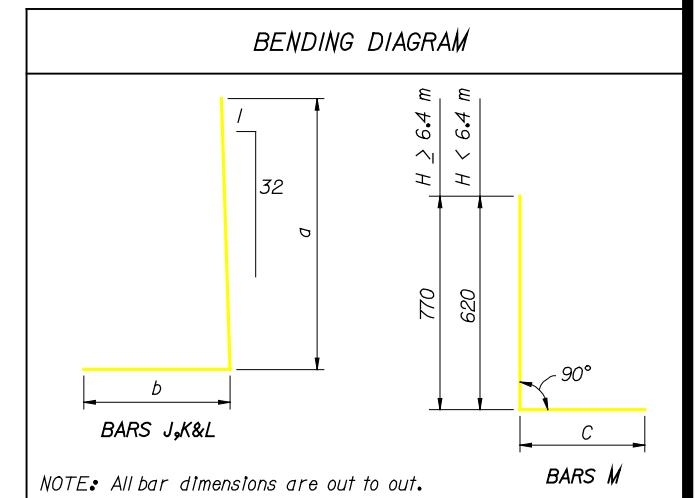
* RETAINING WALL DATA

* RETAINING WALL DATA																																											
WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																							
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J					BARS K					BARS L					BARS M				H				
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH	
1.8	205	280	940				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	790	#13	35	235	1625	340	1965												#13	24	585	1205	1.8		
2.1	255	280	1065				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	915	#13	35	235	1925	400	2325												#13	24	660	1280	2.1		
2.4	305	280	1220				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1070	#13	35	235	2225	455	2680												#13	24	765	1385	2.4		
2.7	355	280	1370				#22	6	460	#13	24	2325	#13	24	7850	#13	26	315	1220	#13	38	215	2525	515	3040												#13	24	865	1485	2.7		
3.0	380	280	1500				#22	7	460	#13	24	2625	#13	26	7850	#13	38	215	1350	#13	38	215	2825	550	3375													#13	24	970	1590	3.0	
3.4	405	280	1675				#22	8	460	#13	24	3025	#13	28	7850	#16	31	265	1525	#16	22	380	3225	590	3815													#13	24	1120	1740	3.4	
3.7	455	305	1805				#22	9	460	#13	24	3300	#13	32	7850	#13	52	155	1655	#16	27	305	3525	650	4175													#13	24	1200	1820	3.7	
4.0	485	305	1905				#22	10	460	#13	24	3600	#13	34	7850	#16	36	225	1755	#16	27	305	3825	735	4560													#13	24	1270	1890	4.0	
4.3	535	305	2085				#22	11	460	#13	24	3900	#13	38	7850	#16	43	190	1935	#16	36	225	4125	795	4920													#13	24	1400	2020	4.3	
4.6	560	305	2235	#16	22	4200	#22	12	460	#13	24	4200	#13	40	7850	#22	37	220	2085	#16	22	390	1120	830	1950	#16	21	390	3275	830	4105								#13	24	1525	2145	4.6
4.9	635	305	2490	#16	19	4500	#22	13	460	#13	24	4500	#13	44	7850	#22	45	180	2340	#16	19	440	865	915	1780	#16	18	440	1575	915	2490	#16	18	440	4495	915	5410	#13	24	1705	2325	4.9	
5.2	685	355	2745	#16	22	4750	#22	13	460	#13	24	4750	#13	44	7850	#22	45	180	2595	#16	22	390	915	975	1890	#16	21	390	1725	975	2700	#16	21	390	4240	975	5215	#13	24	1910	2530	5.2	
5.5	785	355	2945	#16	19	5050	#22	14	460	#13	24	5050	#13	48	7850	#22	52	155	2795	#22	19	450	1320	1085	2405	#22	18	450	1805	1085	2890	#22	18	450	4545	1085	5630	#13	24	2010	2630	5.5	
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6.1	940	355	3480	#22	23	5650	#22	16	460	#13	24	5650	#13	56	7850	#25	43	190	3330	#22	23	370	1040	1260	2300	#22	22	370	1930	1260	3190	#22	22	370	4980	1260	6240	#13	24	2390	3010	6.1	
6.4	1015	430	3760	#22	23	5875	#22	17	460	#13	24	5875	#13	58	7850	#25	37	220	3610	#22	23	370	1575	1340	2915	#22	22	370	2185	1340	3525	#22	22	370	3405	1340	4745	#13	24	2595	3365	6.4	
6.7	1090	430	4190	#22	25	6175	#22	17	460	#13	24	6175	#13	62	7850	#25	43	190	4040	#22	25	330	1395	1425	2820	#22	24	330	2490	1425	3915	#22	24	330	3710	1425	5135	#13	24	2950	3720	6.7	
7.0	1170	430	4320	#22	19	6475	#22	18	460	#13	24	6475	#13	64	7850	#25	48	170	4170	#25	19	440	1780	1515	3295	#25	18	440	2690	1515	4205	#25	18	440	4015	1515	5530	#13	24	3000	3770	7.0	
7.3	1270	430	4570	#22	22	6775	#22	19	460	#13	24	6775	#13	68	7850	#32	41	200	4420	#25	22	390	1780	1625	3405	#25	21	390	2995	1625	4620	#25	21	390	4320	1625	5945	#13	24	3150	3920	7.3	
7.6	1345	430	4980	#22	19	7075	#22	20	460	#13	24	7075	#13	72	7850	#32	50	160	4830	#32	19	450	2110	1710	3820	#32	18	450	3200	1710	4910	#32	18	450	5335	1710	7045	#13	24	3485	4255	7.6	
7.9	1500	510	5205	#22	20	7295	#22	21	460	#13	24	7295	#13	74	7850	#32	44	185	5055	#32	20	425	2260	1875	4135	#32	19	425	3455	1875	5330	#32	19	425	5565	1875	7440	#13	24	3555	4325	7.9	
8.2	1600	510	5485	#22	22	7595	#22	21	460	#13	24	7595	#13	76	7850	#32	44	185	5335	#32	22	385	2415	1985	4400	#32	21	385	3580	1985	5565	#32	21	385	5715	1985	7700	#13	24	3735	4505	8.2	
8.5	1700	510	5715	#22	25	7895	#22	22	460	#13	24	7895	#13	80	7850	#32	50	160	5565	#32	25	330	2565	2095	4660	#32	24	330	3735	2095	5830	#32	24	330	6020	2095	8115	#13	24	3865	4635	8.5	
8.8	1830	510	5945	#25	19	8195	#22	23	460	#13	24	8195	#13	84	7850	#36	43	190	5795	#36	19	435	2720	2230	4950	#36	18	435	3885	2230	6115	#36	18	435	6325	2230	8555	#13	24	3965	4735	8.8	
9.1	1955	510	6170	#25	22	8495	#22	24	460	#13	24	8495	#13	86	7850	#36	39	210	6020	#36	22	390	2870	2365	5235	#36	21	390	3960	2365	6325	#36	21	390	6630	2365	8995	#13	24	4065	4835	9.1	

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.19	281	0.65	35
2.1	6.15	338	0.77	42
2.4	7.20	381	0.90	48
2.7	8.25	433	1.03	54
3.0	9.29	492	1.16	61
3.4	10.71	547	1.34	68
3.7	12.09	645	1.51	81
4.0	14.63	699	1.83	87
4.3	16.03	857	2.00	107
4.6	17.38	1059	2.17	132
4.9	19.01	1251	2.38	156
5.2	21.58	1375	2.70	172
5.5	23.20	1774	2.90	222
5.8	25.06	1931	3.13	241
6.1	26.88	2422	3.36	303
6.4	30.76	2396	3.85	299
6.7	33.37	2779	4.17	347
7.0	34.97	2883	4.37	360
7.3	37.01	3605	4.63	451
7.6	39.62	4658	4.95	582
7.9	44.62	4836	5.58	604
8.2	47.00	5326	5.87	666
8.5	49.19	6226	6.15	778
8.8	51.42	6417	6.43	802
9.1	53.64	7076	6.70	885



NOTE:
To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.

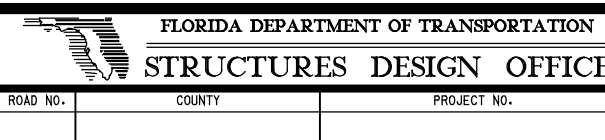


NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

REVISIONS						NAMES	DATES
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		
			98			DRAWN BY	<i>SHM</i> 12/93
						CHECKED BY	JMD/NRK 12/93
						DESIGNED BY	JMD 12/93
						CHECKED BY	NRK 12/93
						APPROVED BY	AJG

ENGINEER OF RECORD.
STRUCTURES DESIGN OFFICE
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605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO:



SHEET TITLE:	CASE I (144 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT	DRAWING NO.:	1 of 1
PROJECT NAME:		INDEX NO.:	802

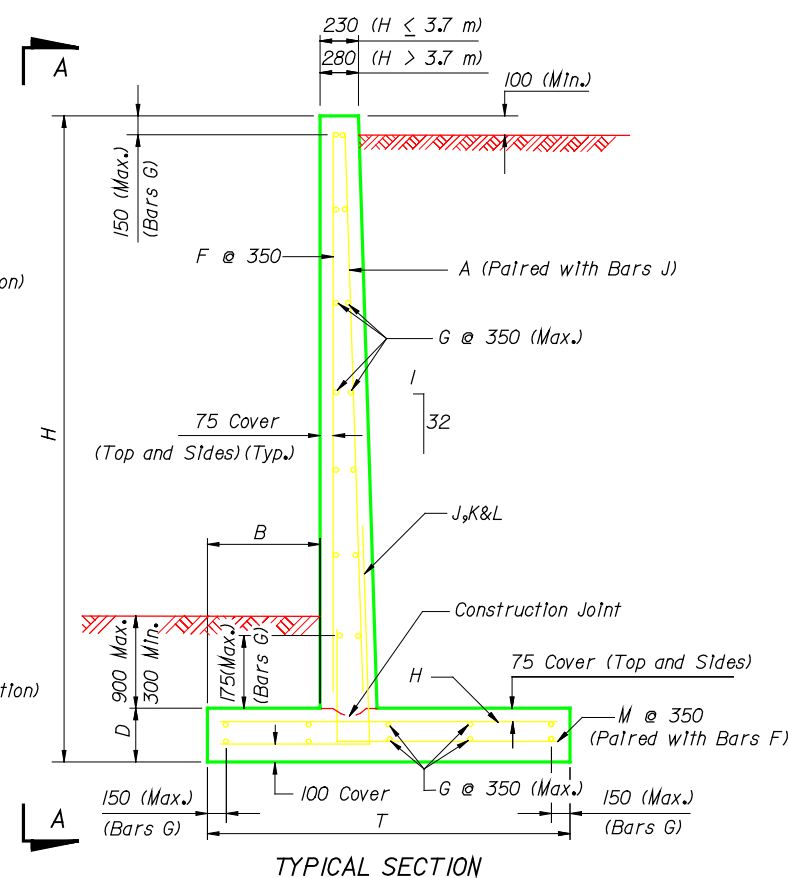
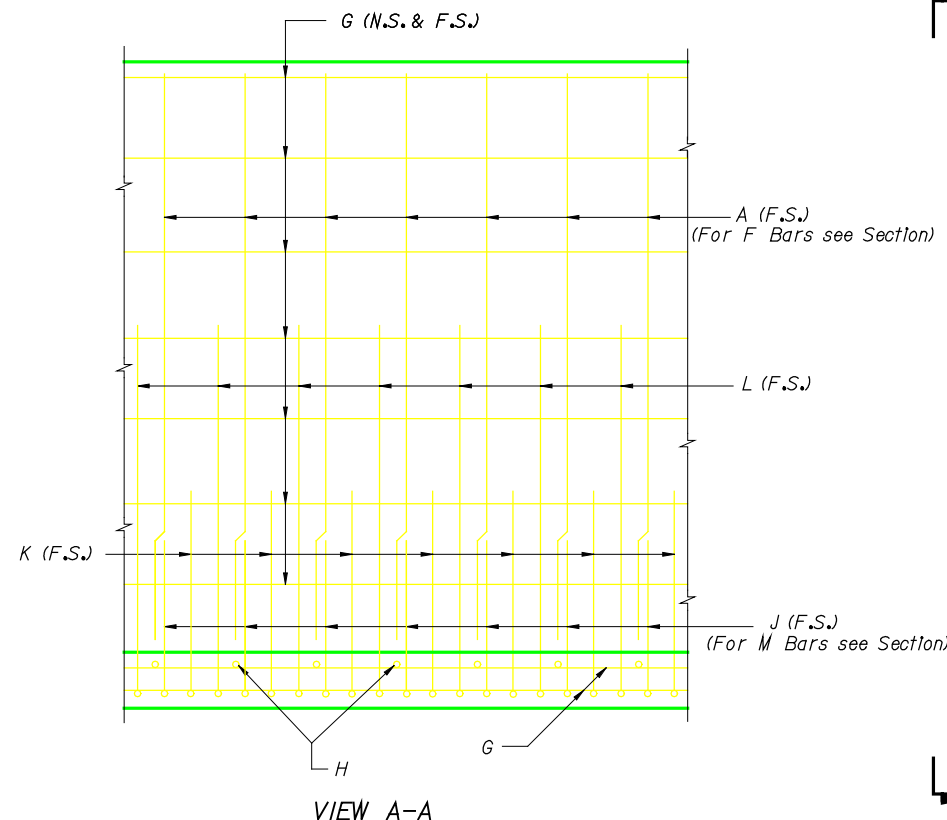
**** NOTE:** For placement details of Bars D see Standard Index No. 800.

NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

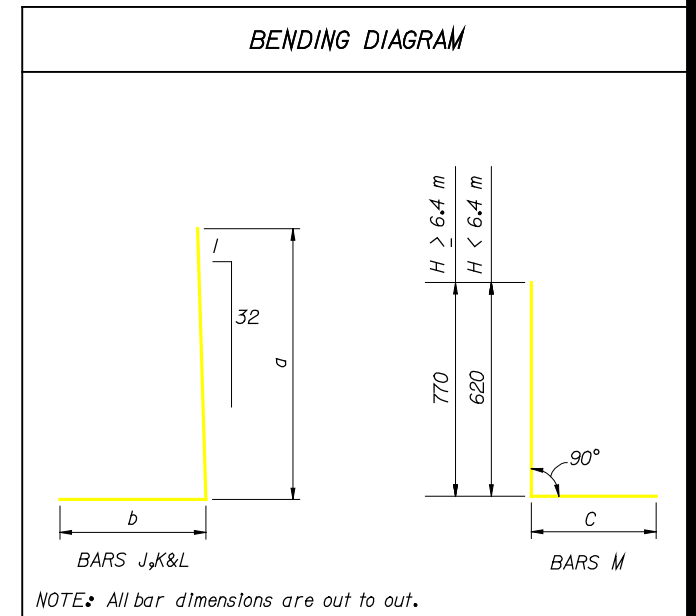
* RETAINING WALL DATA

* RETAINING WALL DATA																																													
WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																									
				BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J					BARS K					BARS L					BARS M				H						
H	B	D	T	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH			
1.8	205	280	940				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	790	#13	35	235	1625	340	1965															#13	24	585	1205	1.8	
2.1	255	280	1065				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	915	#13	35	235	1925	400	2325																#13	24	660	1280	2.1
2.4	305	280	1220				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1070	#13	35	235	2225	455	2680																#13	24	765	1385	2.4
2.7	355	280	1370				#22	6	460	#13	24	2325	#13	24	7850	#13	26	315	1220	#13	38	215	2525	515	3040																#13	24	865	1485	2.7
3.0	380	280	1500				#22	7	460	#13	24	2625	#13	26	7850	#13	38	215	1350	#13	38	215	2825	550	3375																#13	24	970	1590	3.0
3.4	405	280	1675				#22	8	460	#13	24	3025	#13	28	7850	#16	31	265	1525	#16	22	380	3225	590	3815																#13	24	1120	1740	3.4
3.7	455	305	1805				#22	9	460	#13	24	3300	#13	32	7850	#13	52	155	1655	#16	27	305	3525	650	4175																#13	24	1200	1820	3.7
4.0	485	305	1905				#22	10	460	#13	24	3600	#13	34	7850	#16	36	225	1755	#16	27	305	3825	735	4560																#13	24	1270	1890	4.0
4.3	535	305	2085				#22	11	460	#13	24	3900	#13	38	7850	#16	43	190	1935	#16	36	225	4125	795	4920																#13	24	1400	2020	4.3
4.6	560	305	2235	#16	22	4200	#22	12	460	#13	24	4200	#13	40	7850	#22	37	220	2085	#16	22	390	1120	830	1950	#16	21	390	3275	830	4105										#13	24	1525	2145	4.6
4.9	610	305	2335	#16	19	4500	#22	13	460	#13	24	4500	#13	42	7850	#22	45	180	2185	#16	19	440	865	890	1755	#16	18	440	1575	890	2465	#16	18	440	4495	890	5385	#13	24	1575	2195	4.9			
5.2	610	355	2490	#16	22	4750	#22	13	460	#13	24	4750	#13	44	7850	#22	45	180	2340	#16	22	390	915	900	1815	#16	21	390	1725	900	2625	#16	21	390	4240	900	5140	#13	24	1730	2350	5.2			
5.5	685	355	2665	#16	19	5050	#22	14	460	#13	24	5050	#13	46	7850	#22	52	155	2515	#22	19	450	1320	985	2305	#22	18	450	1805	985	2790	#22	18	450	4545	985	5530	#13	24	1830	2450	5.5			
5.8	710	355	2795	#16	21	5350	#22	15	460	#13	24	5350	#13	50	7850	#25	37	220	2645	#22	21	410	1040	1020	2060	#22	20	410	1930	1020	2950	#22	20	410	4675	1020	5695	#13	24	1935	2555	5.8			
6.1	760	355	2945	#22	23	5650	#22	16	460	#13	24	5650	#13	52	7850	#25	37	220	2795	#22	23	370	1040	1080	2120	#22	22	370	1930	1080	3010	#22	22	370	4980	1080	6060	#13	24	2035	2655	6.1			
6.4	785	430	3075	#22	23	5875	#22	17	460	#13	24	5875	#13	54	7850	#25	37	220	2925	#22	23	370	1575	1110	2685	#22	22	370	2185	1110	3295	#22	22	370	3405	1110	4515	#13	24	2140	2910	6.4			
6.7	865	430	3225	#22	25	6175	#22	17	460	#13	24	6175	#13	56	7850	#25	43	190	3075	#22	25	330	1395	1200	2595	#22	24	330	2490	1200	3690	#22	24	330	3710	1200	4910	#13	24	2210	2980	6.7			
7.0	865	430	3355	#22	19	6475	#22	18	460	#13	24	6475	#13	58	7850	#32	41	200	3205	#25	19	440	1780	1210	2990	#25	18	440	2690	1210	3900	#25	18	440	4015	1210	5225	#13	24	2340	3110	7.0			
7.3	940	430	3505	#22	22	6775	#22	19	460	#13	24	6775	#13	62	7850	#32	41	200	3355	#25	22	390	1780	1295	3075	#25	21	390	2995	1295	4290	#25	21	390	4320	1295	5615	#13	24	2415	3185	7.3			
7.6	940	430	3660	#22	19	7075	#22	20	460	#13	24	7075	#13	64	7850	#32	50	160	3510	#32	19	450	2110	1305	3415	#32	18	450	3200	1305	4505	#32	18	450	5335	1305	6640	#13	24	2570	3340	7.6			
7.9	1040	510	3810	#22	20	7295	#22	21	460	#13	24	7295	#13	66	7850	#32	44	185	3660	#32	20	425	2260	1415	3675	#32	19	425	3455	1415	4870	#32	19	425	5565	1415	6980	#13	24	2620	3390	7.9			
8.2	1120	510	4015	#22	22	7595	#22	21	460	#13	24	7595	#13	68	7850	#32	50	160	3865	#32	22	385	2415	1505	3920	#32	21	385	3580	1505	5085	#32	21	385	5715	1505	7220	#13	24	2745	3515	8.2			
8.5	1220	510	4190	#22	25	7895	#22	22	460	#13	24	7895	#13	72	7850	#32	50	160	4040	#32	25	330	2565	1615	4180	#32	24	330	3735	1615	5350	#32	24	330	6020	1615	7635	#13	24	2820	3590	8.5			
8.8	1295	510	4395	#25	19	8195	#22	23	460	#13	24	8195	#13	74	7850	#36	45	180	4245	#36	19	435	2720	1695	4415	#36	18	435	3885	1695	5580	#36	18	435	6325	1695	8020	#13	24	2950	3720	8.8			
9.1	1420	510	4595	#25	22	8495	#22	24	460	#13	24	8495	#13	78	7850	#36	45	180	4445	#36	22	390	2870	1830	4700	#36	21	390	3960	1830	5790	#36	21	390	6630	1830	8460	#13	24	3025	3795	9.1			

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.19	281	0.65	35
2.1	6.15	338	0.77	42
2.4	7.20	381	0.90	48
2.7	8.25	433	1.03	54
3.0	9.29	492	1.16	61
3.4	10.71	547	1.34	68
3.7	12.09	645	1.51	81
4.0	14.63	699	1.83	87
4.3	16.03	857	2.00	107
4.6	17.38	1059	2.17	132
4.9	18.63	1208	2.33	151
5.2	20.86	1328	2.61	166
5.5	22.40	1693	2.80	212
5.8	23.84	1820	2.98	228
6.1	25.36	2188	3.17	273
6.4	28.41	2206	3.55	276
6.7	30.05	2499	3.76	312
7.0	31.65	2800	3.96	350
7.3	33.35	3177	4.17	397
7.6	35.08	4009	4.38	501
7.9	38.92	4187	4.87	523
8.2	41.00	4778	5.12	597
8.5	42.97	5426	5.37	678
8.8	45.09	5622	5.64	703
9.1	47.21	6443	5.90	805



To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



Work this Drawing with Standard Index No. 800.

All dimensions are in millimeters unless otherwise noted.

REVISIONS						NAMES	DATES
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		
			98			DRAWN BY	<i>SHM</i> <i>12/93</i>
						CHECKED BY	<i>JMD/NRK</i> <i>12/93</i>
						DESIGNED BY	<i>JMD</i> <i>12/93</i>
						CHECKED BY	<i>NRK</i> <i>12/93</i>
						APPROVED BY	A/G

ENGINEER OF RECORD.
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO:



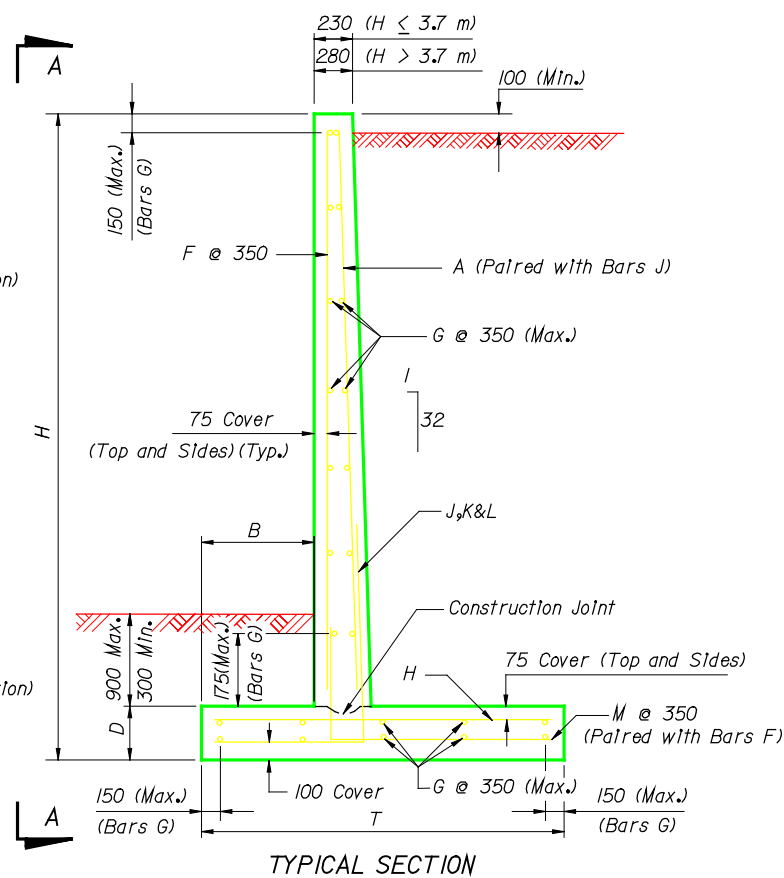
FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.

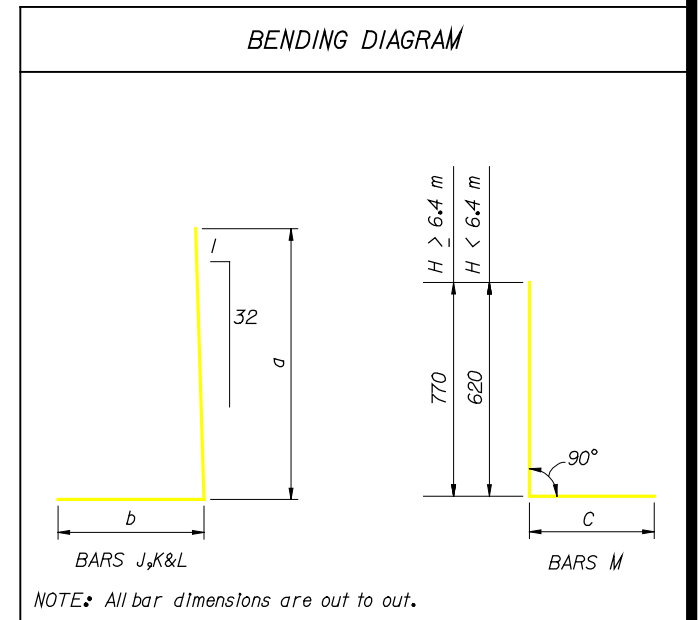
SHEET TITLE:	CASE I (239 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT	DRAWING NO.:	1 of 1
PROJECT NAME:		INDEX NO.:	804

* RETAINING WALL DATA

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.19	281	0.65	35
2.1	6.15	338	0.77	42
2.4	7.20	381	0.90	48
2.7	8.25	433	1.03	54
3.0	9.29	492	1.16	61
3.4	10.71	547	1.34	68
3.7	12.09	645	1.51	81
4.0	14.63	699	1.83	87
4.3	16.03	857	2.00	107
4.6	17.38	1059	2.17	132
4.9	18.63	1208	2.33	151
5.2	20.86	1328	2.61	166
5.5	22.40	1693	2.80	212
5.8	23.84	1820	2.98	228
6.1	25.36	2188	3.17	273
6.4	28.41	2206	3.55	276
6.7	30.05	2499	3.76	312
7.0	31.65	2800	3.96	350
7.3	33.35	3177	4.17	397
7.6	35.08	4009	4.38	501
7.9	38.92	4187	4.87	523
8.2	40.67	4739	5.08	592
8.5	42.56	5353	5.32	669
8.8	44.26	5523	5.53	690
9.1	46.50	6325	5.81	791



To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



All dimensions are in millimeters unless otherwise noted.

ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

SHEET TITLE:	CASE I (287 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1m HEIGHT	DRAWING NO.	1 of 1
PROJECT NAME:		INDEX NO.	805

DATE: "H" TIME: s:\03\structures\water\structures\cardd\08\standards\0806.dgn

* NOTE: Wall Dimension "H" Is given In meters (m). All other dimensions, lengths and spacings are given In millimeters (mm).

** NOTE: For placement details of Bars D see Standard Index No. 800.

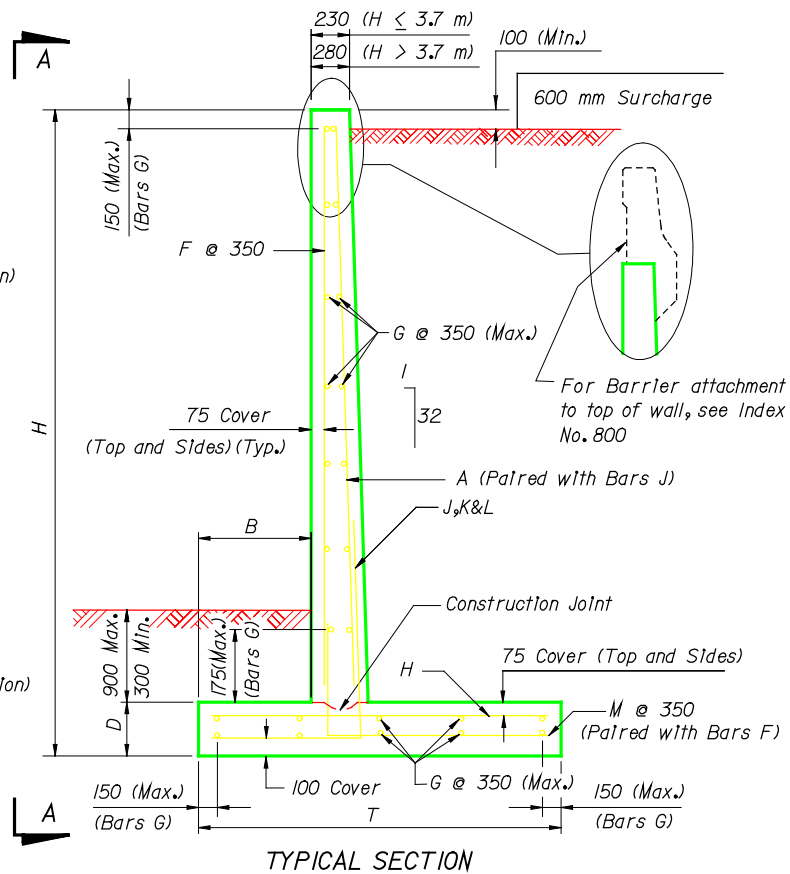
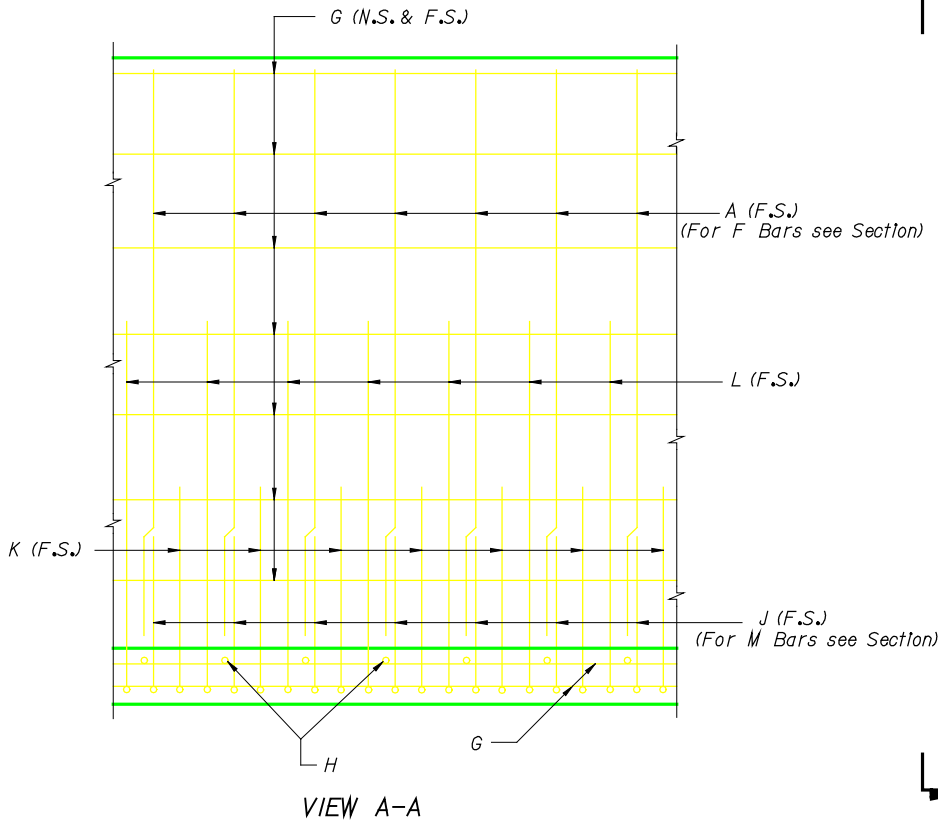
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

SHEET NO.

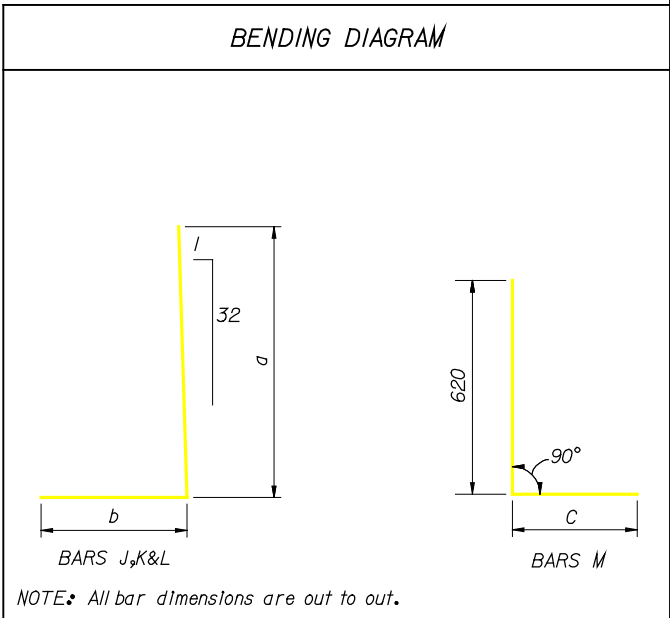
* RETAINING WALL DATA

WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																						
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J					BARS K					BARS L					BARS M				H			
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH
1.8	330	280	1295				#22	4	460	#13	24	1425	#13	18	7850	#13	25	335	1145	#16	30	270	1625	465	2090											#13	24	815	1435	1.8		
2.1	355	280	1475				#22	5	460	#13	24	1725	#13	22	7850	#13	26	315	1325	#16	33	245	1925	500	2425											#13	24	970	1590	2.1		
2.4	405	280	1600				#22	6	460	#13	24	2025	#13	24	7850	#13	38	215	1450	#16	37	220	2225	555	2780											#13	24	1045	1665	2.4		
2.7	485	280	1755				#22	6	460	#13	24	2325	#13	26	7850	#13	46	175	1605	#16	37	220	2525	645	3170											#13	24	1120	1740	2.7		
3.0	510	280	1930				#22	7	460	#13	24	2625	#13	28	7850	#16	36	225	1780	#16	42	195	2825	680	3505											#13	24	1270	1890	3.0		
3.4	560	280	2185				#22	8	460	#13	24	3025	#13	32	7850	#16	48	170	2035	#16	48	170	3225	745	3970											#13	24	1475	2095	3.4		
3.7	660	305	2490				#22	9	460	#13	24	3300	#13	36	7850	#16	42	195	2340	#16	26	315	3525	855	4380	#16	25	315	2945	855	3800						#13	24	1680	2300	3.7	
4.0	760	305	2745				#22	10	460	#13	24	3600	#13	38	7850	#22	37	220	2595	#16	26	315	3825	1010	4835	#16	25	315	2745	1010	3755						#13	24	1835	2455	4.0	
4.3	840	305	3075				#22	11	460	#13	24	3900	#13	42	7850	#22	39	210	2925	#16	28	295	4125	1100	5225	#16	27	295	2745	1100	3845						#13	24	2085	2705	4.3	
4.6	915	305	3430	#16	23	4200	#22	12	460	#13	24	4200	#13	46	7850	#22	52	155	3280	#16	23	365	1120	1185	2305	#16	22	365	3710	1185	4895	#16	22	365	2440	1185	3625	#13	24	2365	2985	4.6
4.9	1015	305	3735	#22	19	4500	#22	13	460	#13	24	4500	#13	50	7850	#25	38	215	3585	#22	19	450	990	1295	2285	#22	18	450	965	1295	2260	#22	18	450	2820	1295	4115	#13	24	2570	3190	4.9
5.2	1120	355	4165	#22	20	4750	#22	13	460	#13	24	4750	#13	54	7850	#25	38	215	4015	#22	20	415	1245	1410	2655	#22	19	415	1015	1410	2425	#22	19	415	2820	1410	4230	#13	24	2895	3515	5.2
5.5	1220	355	4445	#22	23	5050	#22	14	460	#13	24	5050	#13	56	7850	#25	42	195	4295	#22	23	370	1320	1520	2840	#22	22	370	1015	1520	2535	#22	22	370	2415	1520	3935	#13	24	3075	3695	5.5
5.8	1320	355	4825	#22	25	5350	#22	15	460	#13	24	5350	#13	60	7850	#25	48	170	4675	#22	25	330	1575	1630	3205	#22	24	330	1500	1630	3130	#22	24	330	2720	1630	4350	#13	24	3355	3975	5.8
6.1	1450	355	5155	#22	19	5650	#22	16	460	#13	24	5650	#13	64	7850	#32	41	200	5005	#25	19	440	1320	1770	3090	#25	18	440	1500	1770	3270	#25	18	440	3025	1770	4795	#13	24	3555	4175	6.1

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.99	340	0.75	43
2.1	7.07	416	0.88	52
2.4	8.05	498	1.01	62
2.7	9.12	564	1.14	70
3.0	10.25	664	1.28	83
3.4	11.85	830	1.48	104
3.7	13.76	904	1.72	113
4.0	16.68	1088	2.09	136
4.3	18.45	1236	2.31	154
4.6	20.30	1589	2.54	199
4.9	22.05	1874	2.76	234
5.2	25.62	2078	3.20	260
5.5	27.46	2367	3.43	296
5.8	29.61	2800	3.70	350
6.1	31.63	3207	3.95	401



NOTE: To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J. Work this Drawing with Standard Index No. 800. All dimensions are in millimeters unless otherwise noted.

REVISIONS				REVISIONS			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY
			98				

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD,
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO.

FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

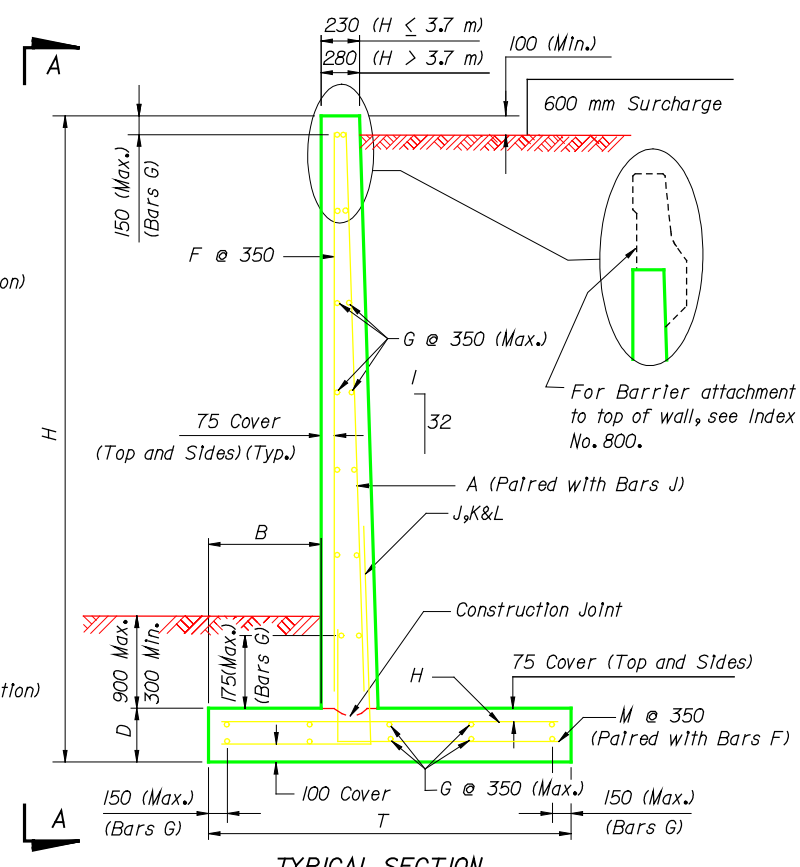
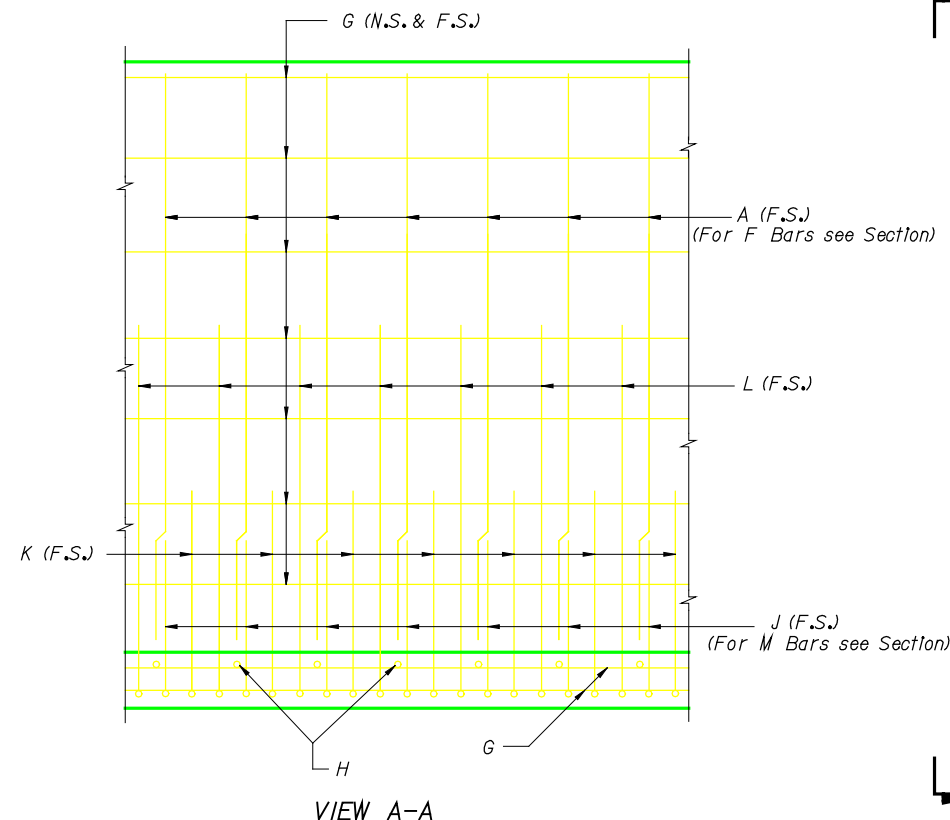
SHEET TITLE:		DRAWING NO.
CASE II (96 kPa MAX. BEARING PRESSURE) 1.8 m TO 6.1 m HEIGHT		1 of 1
PROJECT NAME:		INDEX NO.
		806

NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

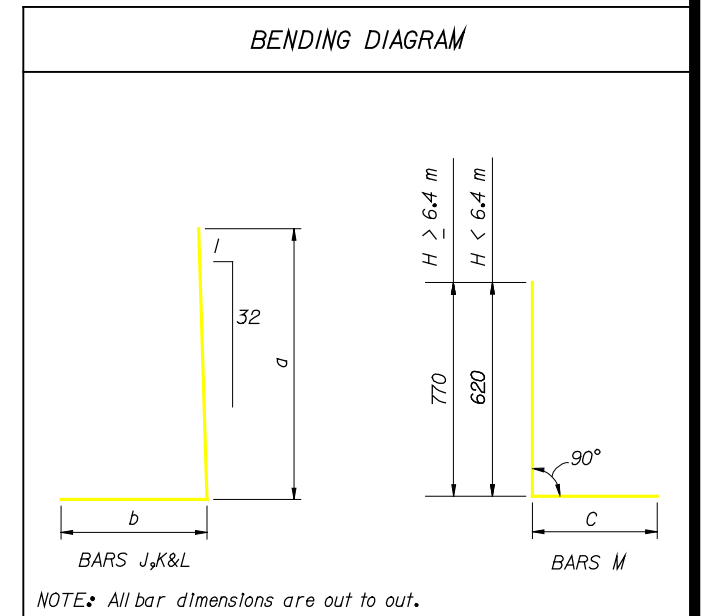
* RETAINING WALL DATA

* RETAINING WALL DATA																																														
WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																										
				BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J					BARS K					BARS L					BARS M				H							
H	B	D	T	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH				
1.8	330	280	1295				#22	4	460	#13	24	1425	#13	18	7850	#13	25	335	1145	#16	30	270	1625	465	2090															#13	24	815	1435	1.8		
2.1	355	280	1475				#22	5	460	#13	24	1725	#13	22	7850	#13	26	315	1325	#16	33	245	1925	500	2425															#13	24	970	1590	2.1		
2.4	405	280	1600				#22	6	460	#13	24	2025	#13	24	7850	#13	38	215	1450	#16	37	220	2225	555	2780															#13	24	1045	1665	2.4		
2.7	485	280	1755				#22	6	460	#13	24	2325	#13	26	7850	#13	46	175	1605	#16	37	220	2525	645	3170																#13	24	1120	1740	2.7	
3.0	485	280	1905				#22	7	460	#13	24	2625	#13	28	7850	#16	36	225	1755	#16	42	195	2825	655	3480																#13	24	1270	1890	3.0	
3.4	510	280	2030				#22	8	460	#13	24	3025	#13	30	7850	#16	48	170	1880	#16	48	170	3225	695	3920																	#13	24	1370	1990	3.4
3.7	585	305	2160				#22	9	460	#13	24	3300	#13	34	7850	#16	42	195	2010	#16	26	315	3525	780	4305	#16	25	315	2945	780	3725											#13	24	1425	2045	3.7
4.0	610	305	2310				#22	10	460	#13	24	3600	#13	36	7850	#22	37	220	2160	#16	26	315	3825	860	4685	#16	25	315	2745	860	3605											#13	24	1550	2170	4.0
4.3	635	305	2465				#22	11	460	#13	24	3900	#13	40	7850	#22	45	180	2315	#16	28	295	4125	895	5020	#16	27	295	2745	895	3640											#13	24	1680	2300	4.3
4.6	685	305	2615	#16	23	4200	#22	12	460	#13	24	4200	#13	42	7850	#22	52	155	2465	#16	23	365	1120	955	2075	#16	22	365	3710	955	4665	#16	22	365	2440	955	3395	#13	24	1780	2400	4.6				
4.9	760	305	2845	#22	19	4500	#22	13	460	#13	24	4500	#13	46	7850	#25	43	190	2695	#22	19	450	990	1040	2030	#22	18	450	965	1040	2005	#22	18	450	2820	1040	3860	#13	24	1935	2555	4.9				
5.2	815	355	3125	#22	20	4750	#22	13	460	#13	24	4750	#13	48	7850	#25	37	220	2975	#22	20	415	1245	1105	2350	#22	19	415	1015	1105	2120	#22	19	415	2820	1105	3925	#13	24	2160	2780	5.2				
5.5	915	355	3380	#22	23	5050	#22	14	460	#13	24	5050	#13	50	7850	#25	43	190	3230	#22	23	370	1320	1215	2535	#22	22	370	1015	1215	2230	#22	22	370	2415	1215	3630	#13	24	2315	2935	5.5				
5.8	990	355	3660	#22	25	5350	#22	15	460	#13	24	5350	#13	54	7850	#32	41	200	3510	#22	25	330	1575	1300	2875	#22	24	330	1500	1300	2800	#22	24	330	2720	1300	4020	#13	24	2520	3140	5.8				
6.1	1065	355	3885	#22	19	5650	#22	16	460	#13	24	5650	#13	58	7850	#32	48	170	3735	#25	19	440	1320	1385	2705	#25	18	440	1500	1385	2885	#25	18	440	3025	1385	4410	#13	24	2670	3290	6.1				
6.4	1145	430	4240	#22	19	5875	#22	17	460	#13	24	5875	#13	62	7850	#32	41	200	4090	#25	19	440	1725	1470	3195	#25	18	440	2085	1470	3555	#25	18	440	3605	1470	5075	#13	24	2945	3715	6.4				
6.7	1245	430	4520	#22	19	6175	#22	17	460	#13	24	6175	#13	64	7850	#32	41	200	4370	#32	19	450	1725	1580	3305	#32	18	450	1700	1580	3280	#32	18	450	3300	1580	4880	#13	24	3125	3895	6.7				
7.0	1320	430	4825	#22	19	6475	#22	18	460	#13	24	6475	#13	66	7850	#32	50	160	4675	#32	19	450	2110	1665	3775	#32	18	450	2285	1665	3950	#32	18	450	4115	1665	5780	#13	24	3355	4125	7.0				
7.3	1420	430	5130	#22	22	6775	#22	19	460	#13	24	6775	#13	70	7850	#36	43	190	4980	#32	22	380	2110	1775	3885	#32	21	380	2310	1775	4085	#32	21	380	4115	1775	5890	#13	24	3560	4330	7.3				
7.6	1500	430	5510	#22	22	7075	#22	20	460	#13	24	7075	#13	74	7850	#36	45	180	5360	#32	22	375	2590	1865	4455	#32	21	375	2870	1865	4735	#32	21	375	4725	1865	6590	#13	24	3860	4630	7.6				
7.9	1650	510	5740	#22	25	7295	#22	21	460	#13	24	7295	#13	78	7850	#36	39	210	5590	#32	25	330	2745	2025	4770	#32	24	330	2870	2025	4895	#32	24	330	5335	2025	7360	#13	24	3940	4710	7.9				
8.2	1755	510	6020	#25	19	7595	#22	21	460	#13	24	7595	#13	80	7850	#36	45	180	5870	#36	19	435	2895	2140	5035	#36	18	435	3050	2140	5190	#36	18	435	5485	2140	7625	#13	24	4115	4885	8.2				
8.5	1880	510	6275	#25	22	7895	#22	22	460	#13	24	7895	#13	84	7850	#36	45	180	6125	#36	22	390	3050	2275	5325	#36	21	390	3050	2275	5325	#36	21	390	5485	2275	7760	#13	24	4245	5015	8.5				
8.8	2005	510	6530	#25	23	8195	#22	23	460	#13	24	8195	#13	86	7850	#36	54	150	6380	#36	23	365	3200	2405	5605	#36	22	365	3505	2405	5910	#36	22	365	5945	2405	8350	#13	24	4375	5145	8.8				
9.1	2160	510	6705	#25	24	8495	#22	24	460	#13	24	8495	#13	90	7850	#36	56	145	6555	#36	24	340	3355	2570	5925	#36	23	340	3505	2570	6075	#36	23	340	5945	2570	8515	#13	24	4395	5165	9.1				

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.99	340	0.75	43
2.1	7.07	416	0.88	52
2.4	8.05	498	1.01	62
2.7	9.12	564	1.14	70
3.0	10.20	661	1.27	83
3.4	11.50	797	1.44	100
3.7	12.96	855	1.62	107
4.0	15.62	1005	1.95	126
4.3	16.96	1163	2.12	145
4.6	18.31	1391	2.29	174
4.9	22.05	1704	2.76	213
5.2	25.62	1791	3.20	224
5.5	27.46	2075	3.43	259
5.8	26.30	2690	3.29	336
6.1	28.03	2889	3.50	361
6.4	32.41	3008	4.05	376
6.7	34.51	3610	4.31	451
7.0	36.71	4245	4.59	531
7.3	38.94	4873	4.87	609
7.6	41.44	5416	5.18	677
7.9	46.80	5850	5.85	731
8.2	49.18	6194	6.15	774
8.5	51.48	6963	6.43	870
8.8	53.80	7994	6.73	999
9.1	55.82	8552	6.98	1069



NOTE:
To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.

Work this Drawing with Standard Index No. 800.

All dimensions are in millimeters unless otherwise noted.

REVISIONS						NAMES		DATES		ENGINEER OF RECORD:		LOGO.		 FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:		DRAWING NO.		
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY					<u>STRUCTURES DESIGN OFFICE</u>				<u>STRUCTURES DESIGN OFFICE</u>			CASE II (144 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT		1 of 1	
			98			CHECKED BY	JMD/NRK	12/93			CENTRAL OFFICE										
						DESIGNED BY	JMD	12/93			605 Suwannee Street, MS 33										
						CHECKED BY	NRK	12/93			Tallahassee, Florida 32399-0450										
						APPROVED BY	AJG													807	

* RETAINING WALL DATA

NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

SHEET TITLE:	CASE II (192 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT	DRAWING NO.	1 of 1
PROJECT NAME:		INDEX NO.	808

DATE: "H" TIME: s:\structures\swr\cadd\standards\0809.dgn

* NOTE: Wall Dimension "H" is given in meters (m). All other dimensions, lengths and spacings are given in millimeters (mm).

** NOTE: For placement details of Bars D see Standard Index No. 800.

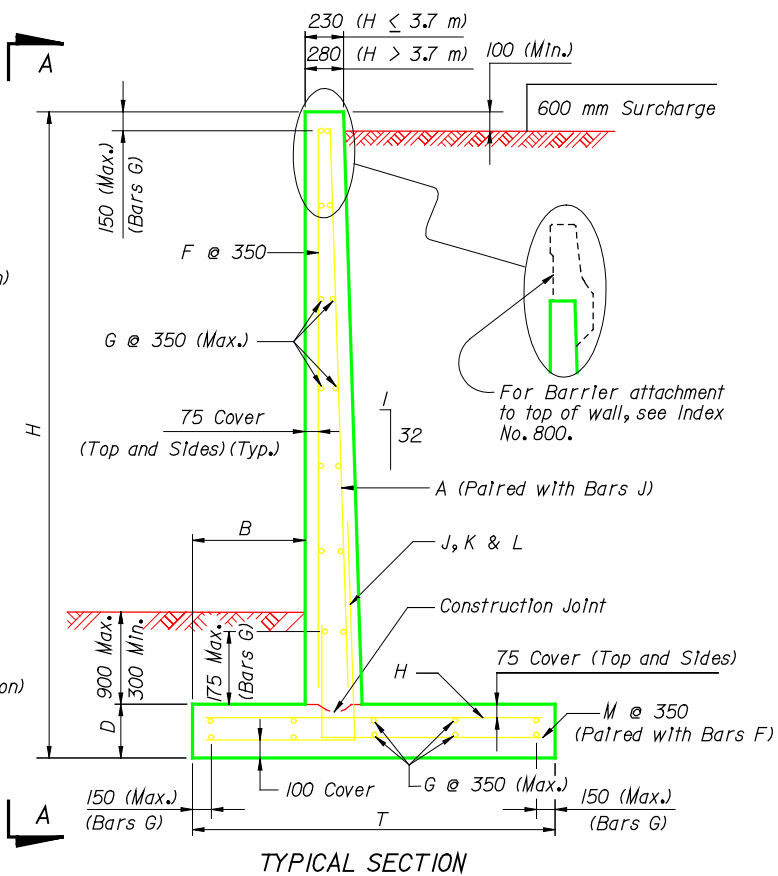
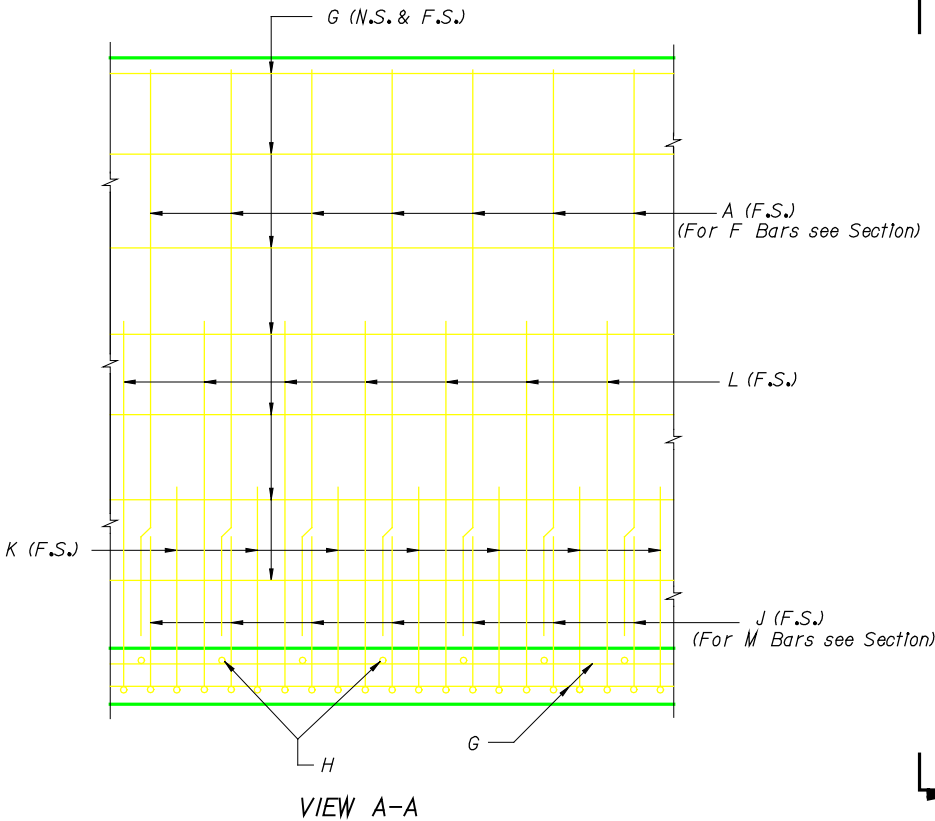
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

SHEET NO.

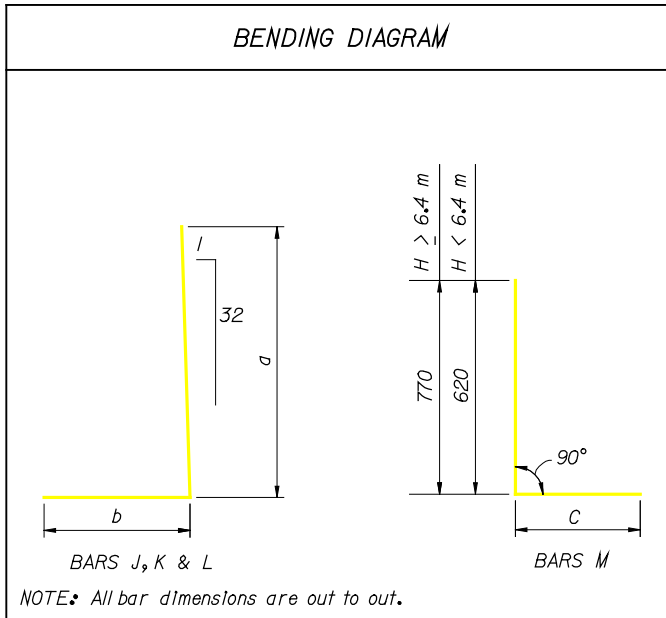
* RETAINING WALL DATA

WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																						
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J				BARS K					BARS L					BARS M				H				
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH		SIZE	NO.	C	LENGTH
1.8	330	280	1295				#22	4	460	#13	24	1425	#13	18	7850	#13	25	335	1145	#16	30	270	1625	465	2090											#13	24	815	1435	1.8		
2.1	355	280	1475				#22	5	460	#13	24	1725	#13	22	7850	#13	26	315	1325	#16	33	245	1925	500	2425											#13	24	970	1590	2.1		
2.4	405	280	1600				#22	6	460	#13	24	2025	#13	24	7850	#13	38	215	1450	#16	37	220	2225	555	2780											#13	24	1045	1665	2.4		
2.7	485	280	1755				#22	6	460	#13	24	2325	#13	26	7850	#13	46	175	1605	#16	37	220	2525	645	3170											#13	24	1120	1740	2.7		
3.0	485	280	1905				#22	7	460	#13	24	2625	#13	28	7850	#16	36	225	1755	#16	42	195	2825	655	3480											#13	24	1270	1890	3.0		
3.4	510	280	2030				#22	8	460	#13	24	3025	#13	30	7850	#16	48	170	1880	#16	48	170	3225	695	3920											#13	24	1370	1990	3.4		
3.7	585	305	2160				#22	9	460	#13	24	3300	#13	34	7850	#16	42	195	2010	#16	26	315	3525	780	4305	#16	25	315	2945	780	3725						#13	24	1425	2045	3.7	
4.0	610	305	2310				#22	10	460	#13	24	3600	#13	36	7850	#22	37	220	2160	#16	26	315	3825	860	4685	#16	25	315	2745	860	3605						#13	24	1550	2170	4.0	
4.3	635	305	2465				#22	11	460	#13	24	3900	#13	40	7850	#22	45	180	2315	#16	28	295	4125	895	5020	#16	27	295	2745	895	3640						#13	24	1680	2300	4.3	
4.6	685	305	2615	#16	23	4200	#22	12	460	#13	24	4200	#13	42	7850	#22	52	155	2465	#16	23	365	1120	955	2075	#16	22	365	3710	955	4665	#16	22	365	2440	955	3395	#13	24	1780	2400	4.6
4.9	735	305	2770	#22	19	4500	#22	13	460	#13	24	4500	#13	46	7850	#25	43	190	2620	#22	19	450	990	1015	2005	#22	18	450	965	1015	1980	#22	18	450	2820	1015	3835	#13	24	1885	2505	4.9
5.2	735	355	2920	#22	20	4750	#22	13	460	#13	24	4750	#13	46	7850	#25	37	220	2770	#22	20	415	1245	1025	2270	#22	19	415	1015	1025	2040	#22	19	415	2820	1025	3845	#13	24	2035	2655	5.2
5.5	815	355	3050	#22	23	5050	#22	14	460	#13	24	5050	#13	48	7850	#25	43	190	2900	#22	23	370	1320	1115	2435	#22	22	370	1015	1115	2130	#22	22	370	2415	1115	3530	#13	24	2085	2705	5.5
5.8	840	355	3225	#22	25	5350	#22	15	460	#13	24	5350	#13	52	7850	#32	41	200	3075	#22	25	330	1575	1150	2725	#22	24	330	1500	1150	2650	#22	24	330	2720	1150	3870	#13	24	2235	2855	5.8
6.1	890	355	3380	#22	19	5650	#22	16	460	#13	24	5650	#13	54	7850	#32	48	170	3230	#25	19	440	1320	1210	2530	#25	18	440	1500	1210	2710	#25	18	440	3025	1210	4235	#13	24	2340	2960	6.1
6.4	915	430	3480	#22	19	5875	#22	17	460	#13	24	5875	#13	58	7850	#32	41	200	3330	#25	19	440	1725	1240	2965	#25	18	440	2085	1240	3325	#25	18	440	3605	1240	4845	#13	24	2415	3185	6.4
6.7	965	430	3605	#22	19	6175	#22	17	460	#13	24	6175	#13	58	7850	#32	41	200	3455	#32	19	450	1725	1300	3025	#32	18	450	1700	1300	3000	#32	18	450	3300	1300	4600	#13	24	2490	3260	6.7
7.0	990	430	3785	#22	19	6475	#22	18	460	#13	24	6475	#13	60	7850	#32	50	160	3635	#32	19	450	2110	1335	3445	#32	18	450	2285	1335	3620	#32	18	450	4115	1335	5450	#13	24	2645	3415	7.0
7.3	1065	430	3910	#22	22	6775	#22	19	460	#13	24	6775	#13	64	7850	#36	43	190	3760	#32	22	380	2110	1420	3530	#32	21	380	2285	1420	3705	#32	21	380	4115	1420	5535	#13	24	2695	3465	7.3
7.6	1065	430	4090	#22	22	7075	#22	20	460	#13	24	7075	#13	66	7850	#36	45	180	3940	#32	22	375	2590	1430	4020	#32	21	375	2870	1430	4300	#32	21	375	4725	1430	6155	#13	24	2875	3645	7.6
7.9	1170	510	4190	#22	25	7295	#22	21	460	#13	24	7295	#13	70	7850	#36	39	210	4040	#32	25	330	2745	1545	4290	#32	24	330	2870	1545	4415	#32	24	330	4725	1545	6270	#13	24	2870	3640	7.9
8.2	1245	510	4420	#25	19	7595	#22	21	460	#13	24	7595	#13	70	7850	#36	45	180	4270	#36	19	435	2895	1630	4525	#36	18	435	3050	1630	4680	#36	18	435	5485	1630	7115	#13	24	3025	3795	8.2
8.5	1345	510	4650	#25	22	7895	#22	22	460	#13	24	7895	#13	74	7850	#36	45	180	4500	#36	22	390	3050	1740	4790	#36	21	390	3050	1740	4790	#36	21	390	5485	1740	7225	#13	24	3155	3925	8.5
8.8	1450	510	4850	#25	23	8195	#22	23	460	#13	24	8195	#13	76	7850	#36	56	145	4700	#36	23	365	3200	1850	5050	#36	22	365	3505	1850	5355	#36	22	365	5945	1850	7795	#13	24	3250	4020	8.8
9.1	1575	510	5080	#25	24	8495	#22	24	460	#13	24	8495	#13	80	7850	#36	56	145	4930	#36	24	340	3355	1985	5340	#36	23	340	3505	1985	5490	#36	23	340	5945	1985	7930	#13	24	3355	4125	9.1

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.99	340	0.75	43
2.1	7.07	416	0.88	52
2.4	8.05	498	1.01	62
2.7	9.12	564	1.14	70
3.0	10.2	661	1.27	83
3.4	11.5	797	1.44	100
3.7	12.96	855	1.62	107
4.0	15.62	1005	1.95	126
4.3	16.96	1163	2.12	145
4.6	18.31	1391	2.29	174
4.9	19.69	1686	2.46	211
5.2	22.08	1728	2.76	216
5.5	23.5	1977	2.94	247
5.8	25.06	2520	3.13	315
6.1	26.59	2656	3.32	332
6.4	29.8	2714	3.72	339
6.7	31.36	3210	3.92	401
7.0	33.13	3732	4.14	467
7.3	34.74	4242	4.34	530
7.6	36.56	4647	4.57	581
7.9	40.48	4966	5.06	621
8.2	42.65	5299	5.33	662
8.5	44.85	6010	5.61	751
8.8	46.95	6952	5.87	869
9.1	49.19	7406	6.15	926



NOTE: To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

REVISIONS				NAMES		DATES	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	DESCRIPTION
			98				
				DRAWN BY	SHM	12/93	
				CHECKED BY	JMD/NRK	12/93	
				DESIGNED BY	JMD	12/93	
				CHECKED BY	NRK	12/93	
				APPROVED BY	AJG		

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Tallahassee, Florida 32399-0450

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FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: CASE II (239 & 287 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT		DRAWING NO. 1 of 1
PROJECT NAME:		INDEX NO. 809

DATE: "H" TIME: s:\03\structures\water\structures\standards\standards0810.dgn

* NOTE: Wall Dimension "H" is given in meters (m). All other dimensions, lengths and spacings are given in millimeters (mm).
** NOTE: For placement details of Bars D see Standard Index No.800.

NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

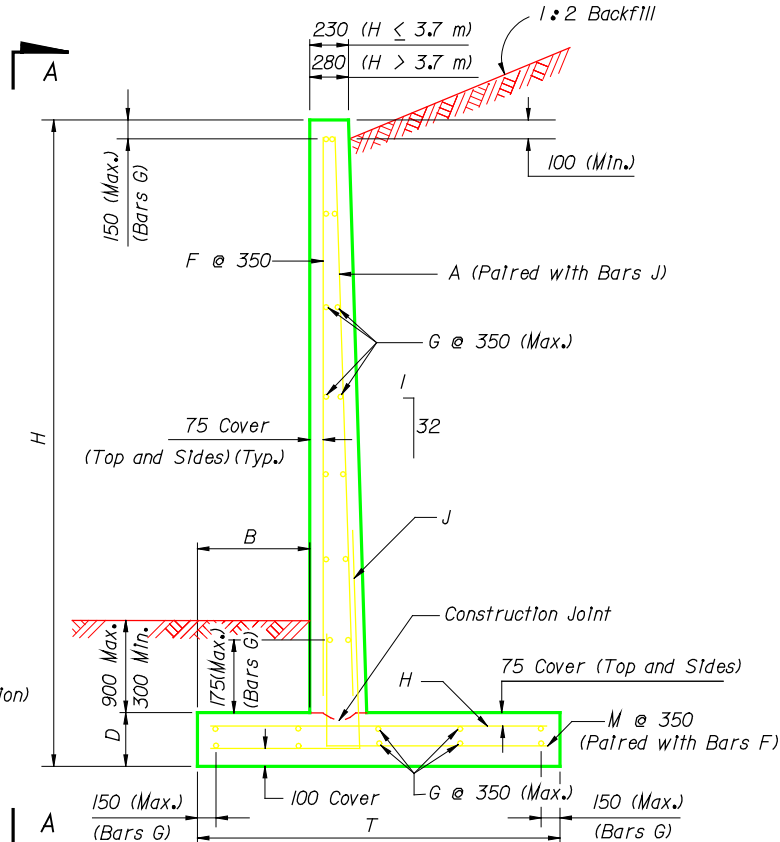
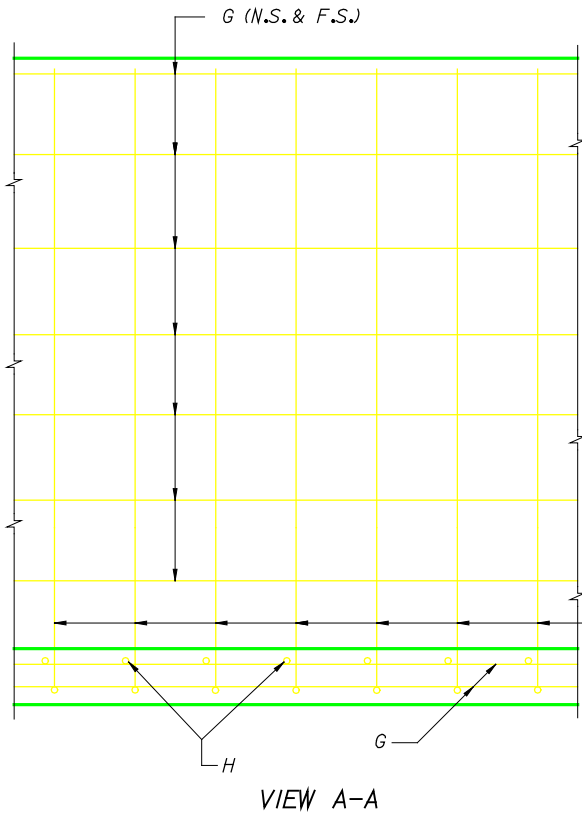
SHEET NO.

* RETAINING WALL DATA

WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																						
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J					BARS K					BARS L					BARS M				H			
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH
1.8	205	280	865				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	715	#13	35	235	1625	340	1965													#13	24	510	1130	1.8
2.1	255	280	1065				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	915	#13	35	235	1925	400	2325													#13	24	660	1280	2.1
2.4	330	280	1295				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1145	#13	35	235	2225	480	2705													#13	24	815	1435	2.4
2.7	405	280	1525				#22	6	460	#13	24	2325	#13	24	7850	#13	25	335	1375	#13	38	215	2525	565	3090													#13	24	970	1590	2.7
3.0	485	280	1855				#22	7	460	#13	24	2625	#13	28	7850	#13	30	275	1705	#13	42	195	2825	655	3480													#13	24	1220	1840	3.0
3.4	560	280	2185				#22	8	460	#13	24	3025	#13	32	7850	#13	38	215	2035	#16	28	295	3225	745	3970													#13	24	1475	2095	3.4
3.7	685	305	2515				#22	9	460	#13	24	3300	#13	36	7850	#13	35	235	2365	#16	37	220	3525	880	4405													#13	24	1680	2300	3.7
4.0	760	305	2820				#22	10	460	#13	24	3600	#13	40	7850	#13	38	215	2670	#16	37	220	3825	1010	4835													#13	24	1910	2530	4.0
4.3	865	305	3150				#22	11	460	#13	24	3900	#13	44	7850	#13	42	195	3000	#16	48	170	4125	1125	5250													#13	24	2135	2755	4.3
4.6	965	305	3530				#22	12	460	#13	24	4200	#13	48	7850	#16	37	220	3380	#22	37	220	4425	1235	5660													#13	24	2415	3035	4.6

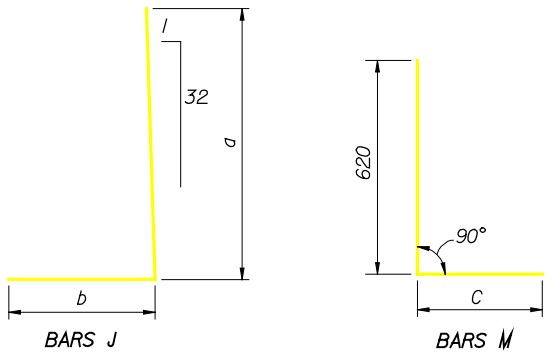
QUANTITIES

H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.02	278	0.63	35
2.1	6.15	338	0.77	42
2.4	7.36	385	0.92	48
2.7	8.60	440	1.08	55
3.0	10.08	531	1.26	66
3.4	11.85	632	1.48	79
3.7	13.82	762	1.73	95
4.0	16.86	851	2.11	106
4.3	18.63	1034	2.33	129
4.6	20.54	1395	2.57	174



NOTE: To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.

BENDING DIAGRAM



NOTE: All bar dimensions are out to out.

NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.

Work this Drawing with Standard Index No.800.
All dimensions are in millimeters unless otherwise noted.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
			98		

DATE	BY	DESCRIPTION

NAMES	DATES
DRAWN BY SHM	12/93
CHECKED BY JMD/NRK	12/93
DESIGNED BY JMD	12/93
CHECKED BY NRK	12/93
APPROVED BY AJG	

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Tallahassee, Florida 32399-0450

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FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE:
CASE III (96 kPa MAX. BEARING
PRESSURE) 1.8 m TO 4.6 m HEIGHT

PROJECT NAME:	INDEX NO.
	810

DRAWING NO.
1 of 1

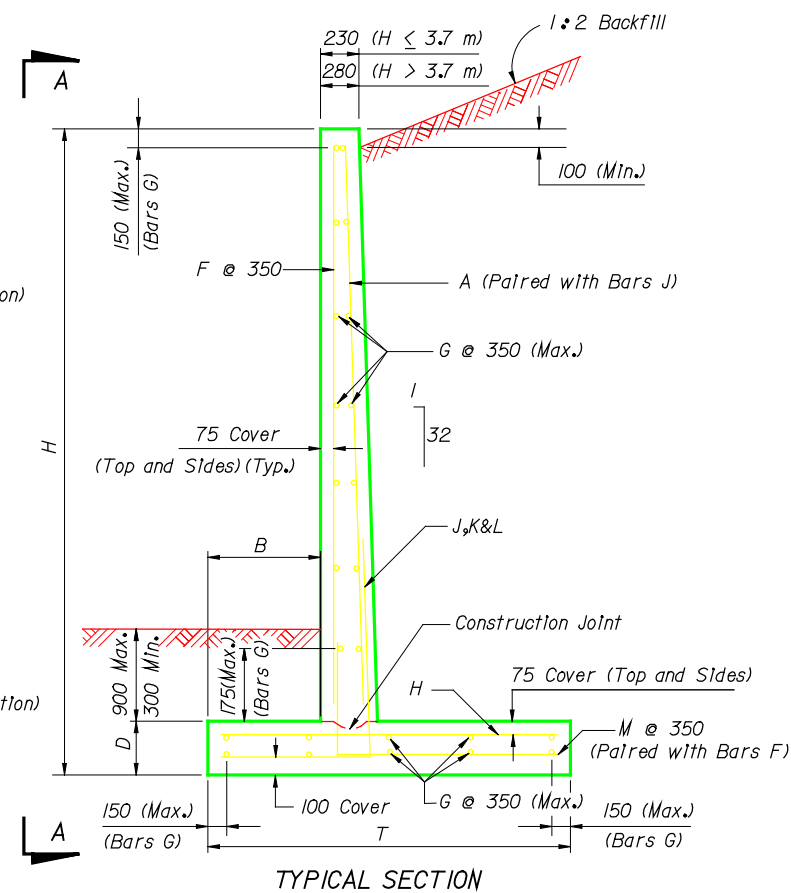
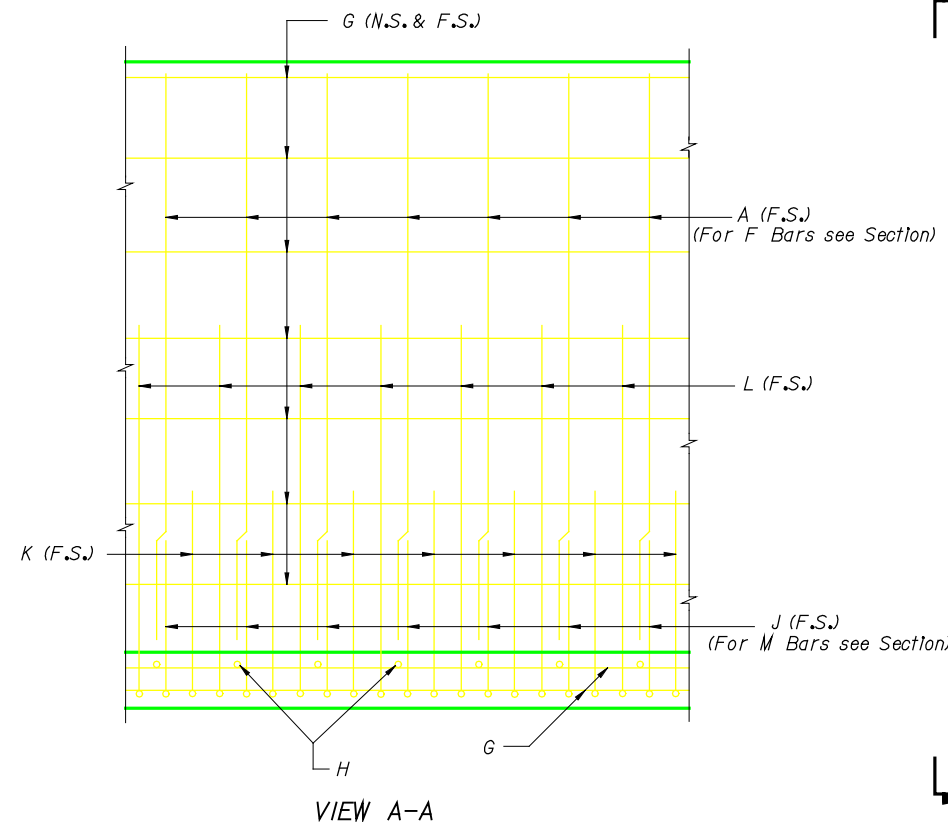
**** NOTE:** For placement details of Bars D see Standard Index No. 800.

NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

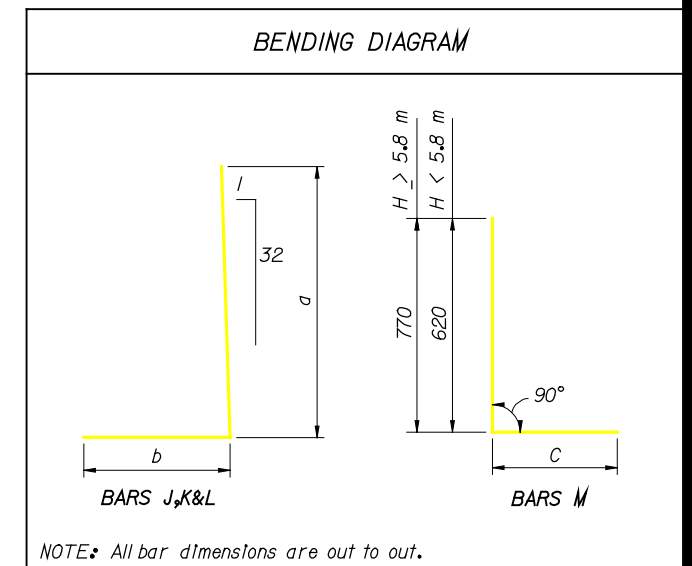
* RETAINING WALL DATA

WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																							
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J					BARS K					BARS L					BARS M				H				
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH	
1.8	205	280	865				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	715	#13	35	235	1625	340	1965												#13	24	510	1130	1.8		
2.1	230	280	1040				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	890	#13	35	235	1925	375	2300												#13	24	660	1280	2.1		
2.4	280	280	1195				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1045	#13	35	235	2225	430	2655												#13	24	765	1385	2.4		
2.7	355	280	1320				#22	6	460	#13	24	2325	#13	22	7850	#13	25	335	1170	#13	38	215	2525	515	3040												#13	24	815	1435	2.7		
3.0	405	280	1600				#22	7	460	#13	24	2625	#13	26	7850	#13	35	235	1450	#13	42	195	2825	575	3400													#13	24	1045	1665	3.0	
3.4	485	280	1880				#22	8	460	#13	24	3025	#13	30	7850	#13	46	175	1730	#16	28	295	3225	670	3895													#13	24	1245	1865	3.4	
3.7	560	305	2135				#22	9	460	#13	24	3300	#13	34	7850	#13	42	195	1985	#16	37	220	3525	755	4280													#13	24	1425	2045	3.7	
4.0	635	305	2415				#22	10	460	#13	24	3600	#13	38	7850	#13	46	175	2265	#16	37	220	3825	885	4710													#13	24	1630	2250	4.0	
4.3	710	305	2720				#22	11	460	#13	24	3900	#13	40	7850	#13	42	195	2570	#16	48	170	4125	970	5095													#13	24	1860	2480	4.3	
4.6	815	305	3025				#22	12	460	#13	24	4200	#13	44	7850	#16	37	220	2875	#16	28	295	4425	1085	5510	#16	27	295	1755	1085	2840								#13	24	2060	2680	4.6
4.9	915	305	3355	#16	23	4500	#22	13	460	#13	24	4500	#13	48	7850	#16	42	195	3205	#16	23	365	865	1195	2060	#16	22	365	1450	1195	2645	#16	22	365	3275	1195	4470	#13	24	2290	2910	4.9	
5.2	1040	355	3710	#22	19	4750	#22	13	460	#13	24	4750	#13	50	7850	#16	33	245	3560	#22	19	450	1040	1330	2370	#22	18	450	1625	1330	2955	#22	18	450	2540	1330	3870	#13	24	2520	3140	5.2	
5.5	1120	355	4165	#22	22	5050	#22	14	460	#13	24	5050	#13	56	7850	#16	37	220	4015	#22	22	390	1040	1420	2460	#22	21	390	1625	1420	3045	#22	21	390	2540	1420	3960	#13	24	2895	3515	5.5	
5.8	1270	510	4445	#22	23	5195	#22	15	460	#13	24	5195	#13	58	7850	#16	33	245	4295	#22	23	370	1475	1580	3055	#22	22	370	1955	1580	3535	#22	22	370	3175	1580	4755	#13	24	3025	3795	5.8	
6.1	1420	510	4650	#22	25	5495	#22	15	460	#13	24	5495	#13	60	7850	#16	33	245	4500	#22	25	330	1475	1740	3215	#22	24	330	2260	1740	4000	#22	24	330	3480	1740	5220	#13	24	3080	3850	6.1	

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.02	278	0.63	35
2.1	6.09	337	0.76	42
2.4	7.14	380	0.89	47
2.7	8.14	414	1.02	52
3.0	9.51	507	1.19	63
3.4	11.17	610	1.40	76
3.7	12.90	734	1.61	92
4.0	15.88	824	1.98	103
4.3	17.58	967	2.20	121
4.6	19.31	1048	2.41	131
4.9	21.12	1256	2.64	157
5.2	24.32	1564	3.04	196
5.5	26.66	1842	3.33	230
5.8	33.48	2040	4.19	255
6.1	35.40	2278	4.42	285



NOTE:
To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

REVISIONS						NAMES		DATES	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY			
			98			CHECKED BY	JMD/NRK		12/93
						DESIGNED BY	JMD		12/93
						CHECKED BY	NRK		12/93
						APPROVED BY	A./IG		

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FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: CASE III (120 kPa MAX. BEARING PRESSURE) 1.8 m TO 6.1 m HEIGHT

PROJECT NAME:	
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DRAWING NO.

1 of 1

INDEX NO.

811

**** NOTE:** For placement details of Bars D see Standard Index No. 800.

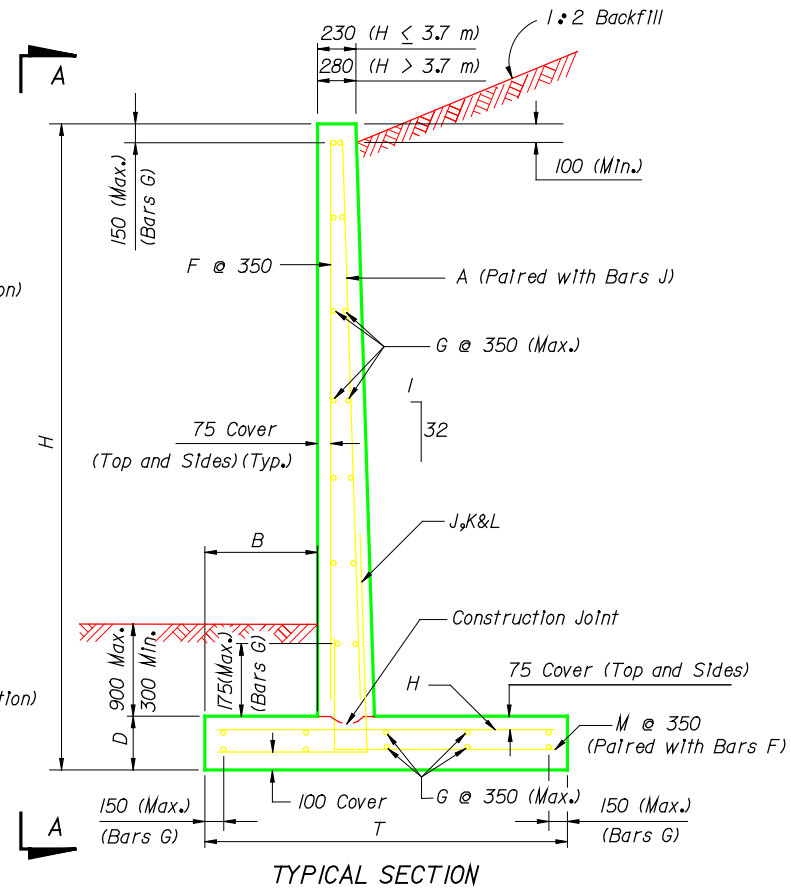
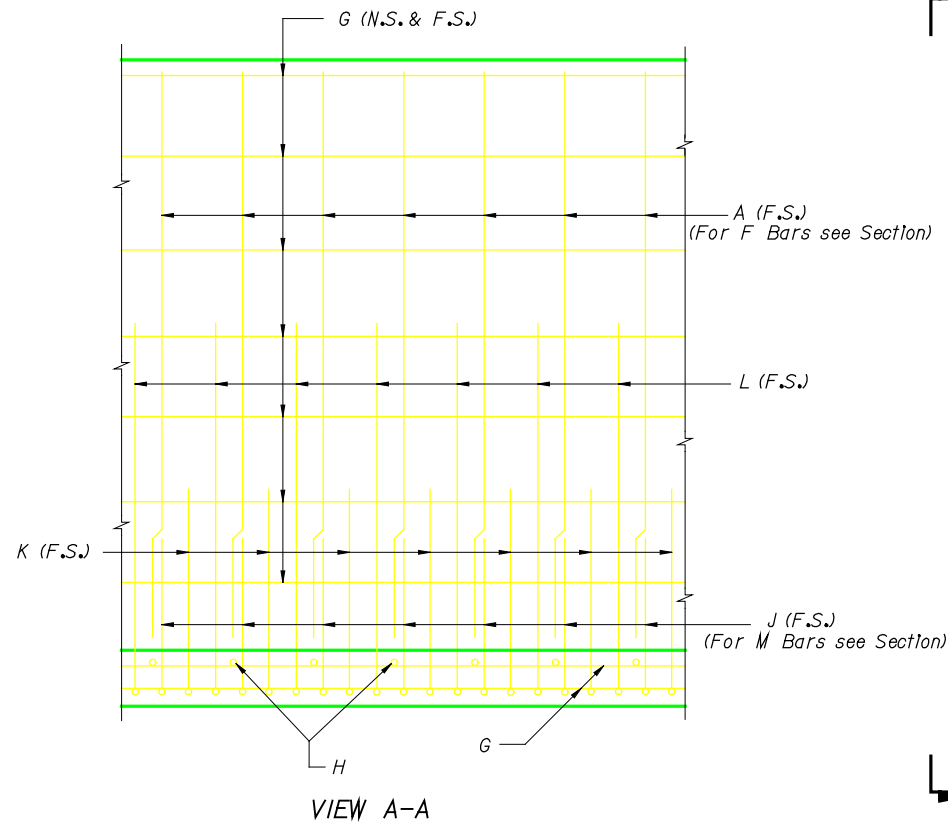
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

* RETAINING WALL DATA

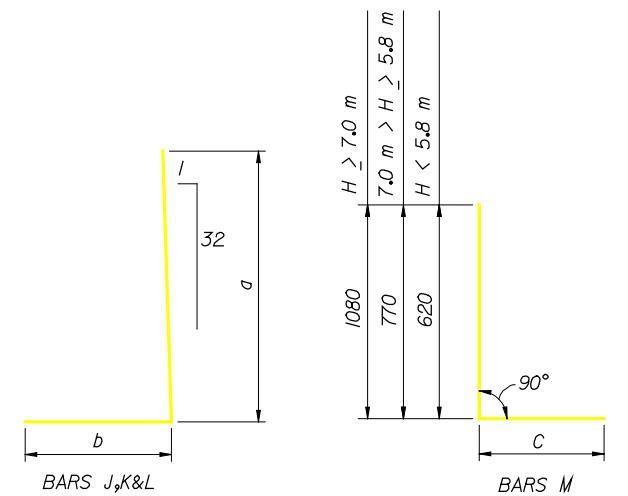
WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																						
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J					BARS K					BARS L					BARS M				H			
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH
1.8	205	280	865				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	715	#13	35	235	1625	340	1965													#13	24	510	1130	1.8
2.1	230	280	1040				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	890	#13	35	235	1925	375	2300												#13	24	660	1280	2.1	
2.4	280	280	1195				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1045	#13	35	235	2225	430	2655												#13	24	765	1385	2.4	
2.7	355	280	1320				#22	6	460	#13	24	2325	#13	22	7850	#13	25	335	1170	#13	38	215	2525	515	3040												#13	24	815	1435	2.7	
3.0	355	280	1475				#22	7	460	#13	24	2625	#13	26	7850	#13	35	235	1325	#13	42	195	2825	525	3350												#13	24	970	1590	3.0	
3.4	405	280	1675				#22	8	460	#13	24	3025	#13	28	7850	#13	52	155	1525	#16	28	295	3225	590	3815												#13	24	1120	1740	3.4	
3.7	485	305	1905				#22	9	460	#13	24	3300	#13	32	7850	#13	46	175	1755	#16	37	220	3525	680	4205												#13	24	1270	1890	3.7	
4.0	560	305	2110				#22	10	460	#13	24	3600	#13	36	7850	#13	52	155	1960	#16	37	220	3825	810	4635												#13	24	1400	2020	4.0	
4.3	635	305	2415				#22	11	460	#13	24	3900	#13	40	7850	#13	46	175	2265	#16	48	170	4125	895	5020												#13	24	1630	2250	4.3	
4.6	710	305	2690				#22	12	460	#13	24	4200	#13	42	7850	#16	42	195	2540	#16	28	295	4425	980	5405	#16	27	295	1755	980	2735							#13	24	1830	2450	4.6
4.9	785	305	2995	#16	23	4500	#22	13	460	#13	24	4500	#13	46	7850	#16	48	170	2845	#16	23	365	865	1065	1930	#16	22	365	1450	1065	2515	#16	22	365	3275	1065	4340	#13	24	2060	2680	4.9
5.2	890	355	3275	#22	19	4750	#22	13	460	#13	24	4750	#13	48	7850	#16	42	195	3125	#22	19	450	1040	1180	2220	#22	18	450	1625	1180	2805	#22	18	450	2540	1180	3720	#13	24	2235	2855	5.2
5.5	965	355	3630	#22	22	5050	#22	14	460	#13	24	5050	#13	52	7850	#22	37	220	3480	#22	22	390	1040	1265	2305	#22	21	390	1625	1265	2890	#22	21	390	2540	1265	3805	#13	24	2515	3135	5.5
5.8	1120	510	3910	#22	23	5195	#22	15	460	#13	24	5195	#13	56	7850	#16	33	245	3760	#22	23	370	1475	1430	2905	#22	22	370	1955	1430	3385	#22	22	370	3175	1430	4605	#13	24	2640	3410	5.8
6.1	1245	510	4115	#22	25	5495	#22	15	460	#13	24	5495	#13	56	7850	#16	37	220	3965	#22	25	330	1475	1565	3040	#22	24	330	2260	1565	3825	#22	24	330	3480	1565	5045	#13	24	2720	3490	6.1
6.4	1370	510	4395	#22	19	5795	#22	16	460	#13	24	5795	#13	60	7850	#16	42	195	4245	#25	19	440	1805	1695	3500	#25	18	440	2770	1695	4465	#25	18	440	3990	1695	5685	#13	24	2875	3645	6.4
6.7	1500	510	4625	#22	22	6095	#22	17	460	#13	24	6095	#13	64	7850	#16	48	170	4475	#25	22	390	1855	1835	3690	#25	21	390	2770	1835	4605	#25	21	390	4295	1835	6130	#13	24	2975	3745	6.7
7.0	1675	660	4955	#22	23	6245	#22	18	460	#13	24	6245	#13	68	7850	#16	48	170	4805	#25	23	365	2005	2020	4025	#25	22	365	2920	2020	4940	#25	22	365	4445	2020	6465	#13	24	3130	4210	7.0
7.3	1805	660	5180	#22	20	6545	#22	18	460	#13	24	6545	#13	68	7850	#16	48	170	5030	#32	20	425	2335	2160	4495	#32	19	425	3125	2160	5285	#32	19	425	4955	2160	7115	#13	24	3225	4305	7.3
7.6	1930	660	5460	#22	21	6845	#22	19	460	#13	24	6845	#13	72	7850	#16	48	170	5310	#32	21	400	2335	2295	4630	#32	20	400	3430	2295	5725	#32	20	400	5260	2295	7555	#13	24	3380	4460	7.6

QUANTITIES

H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.02	278	0.63	35
2.1	6.09	337	0.76	42
2.4	7.14	380	0.89	47
2.7	8.14	414	1.02	52
3.0	9.23	499	1.15	62
3.4	10.71	588	1.34	73
3.7	12.34	708	1.54	88
4.0	15.13	796	1.89	100
4.3	16.84	952	2.10	119
4.6	18.49	1018	2.31	127
4.9	20.24	1224	2.53	153
5.2	23.09	1538	2.89	192
5.5	25.14	1932	3.14	242
5.8	31.30	1957	3.91	245
6.1	33.22	2197	4.15	275
6.4	35.46	2317	4.43	290
6.7	37.53	2717	4.69	340
7.0	45.39	2965	5.67	371
7.3	47.74	3672	5.97	459
7.6	50.39	4014	6.30	502



BENDING DIAGRAM



NOTE:

To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.


NOTE: All bar dimensions are out to out.

NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.

Work this Drawing with Standard Index No. 800.

All dimensions are in millimeters unless otherwise noted.

DATE "" TIME s:\structures\software\structures\cadd\standards\812.dan

<div> <div> <div> <div> <div>DATE</div> <div>BY</div> <div>DESCRIPTION</div> </div> <div> <div>DATE</div> <div>BY</div> <div>DESCRIPTION</div> </div> </div> <div> <div> <div>DATE</div> <div>BY</div> <div>DESCRIPTION</div> </div> <div> <div>DATE</div> <div>BY</div> <div>DESCRIPTION</div> </div> </div> </div> </div>						<div> <div> <div>DRAWN BY</div> <div>CHECKED BY</div> <div>DESIGNED BY</div> <div>CHECKED BY</div> <div>APPROVED BY</div> </div> <div> <div>SHM</div> <div>JMD/NRK</div> <div>JMD</div> <div>NRK</div> <div>AJG</div> </div> <div> <div>12/93</div> <div>12/93</div> <div>12/93</div> <div>12/93</div> <div></div> </div> </div>		<div> <div> <div>NAMES</div> <div>DATES</div> </div> <div> <div>ENGINEER OF RECORD.</div> <div> <div>STRUCTURES DESIGN OFFICE</div> <div>CENTRAL OFFICE</div> <div>605 Suwannee Street, MS 33</div> <div>Tallahassee, Florida 32399-0450</div> </div> </div> </div>		<div> <div>LOGO.</div> <div> <div> <div>FLORIDA DEPARTMENT OF TRANSPORTATION</div> <div>  <div>STRUCTURES DESIGN OFFICE</div> </div> </div> <div> <div>ROAD NO.</div> <div>COUNTY</div> <div>PROJECT NO.</div> </div> </div> </div>		<div> <div> <div>SHEET TITLE.</div> <div>CASE III (144 kPa MAX. BEARING PRESSURE) 1.8 m TO 7.6 m HEIGHT</div> </div> <div> <div>PROJECT NAME.</div> <div></div> </div> </div>		<div> <div> <div>DRAWING NO.</div> <div>1 of 1</div> </div> <div> <div>INDEX NO.</div> <div>8/2</div> </div> </div>	
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DATE: " " TIME: s:\structures\swared\structures\card\08standards\08stds.dgn

* NOTE: Wall Dimension "H" is given in meters (m). All other dimensions, lengths and spacings are given in millimeters (mm).

** NOTE: For placement details of Bars D see Standard Index No. 800.

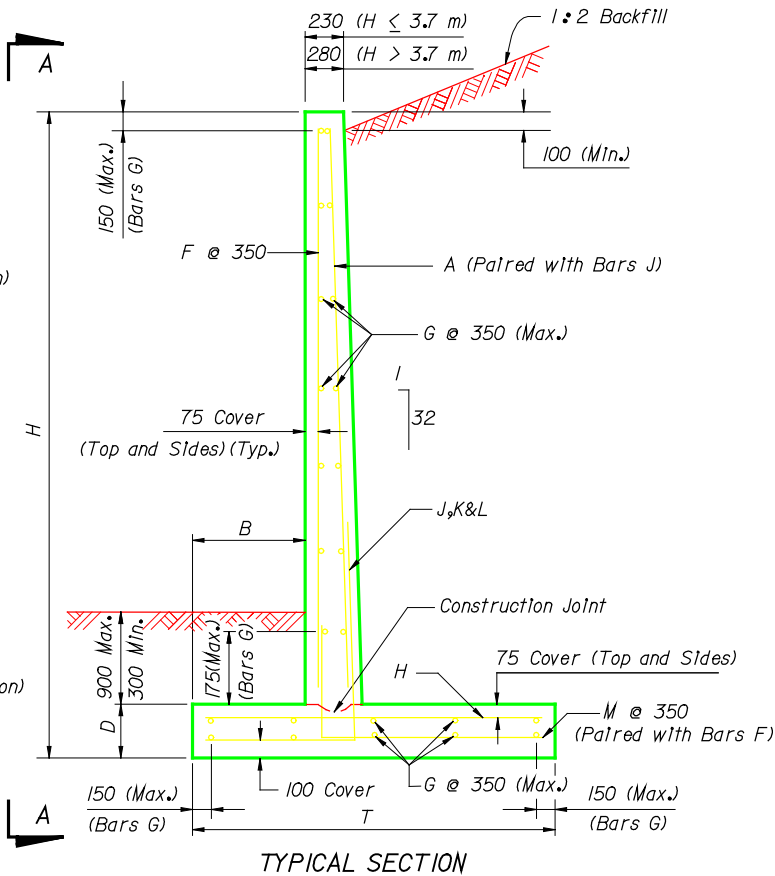
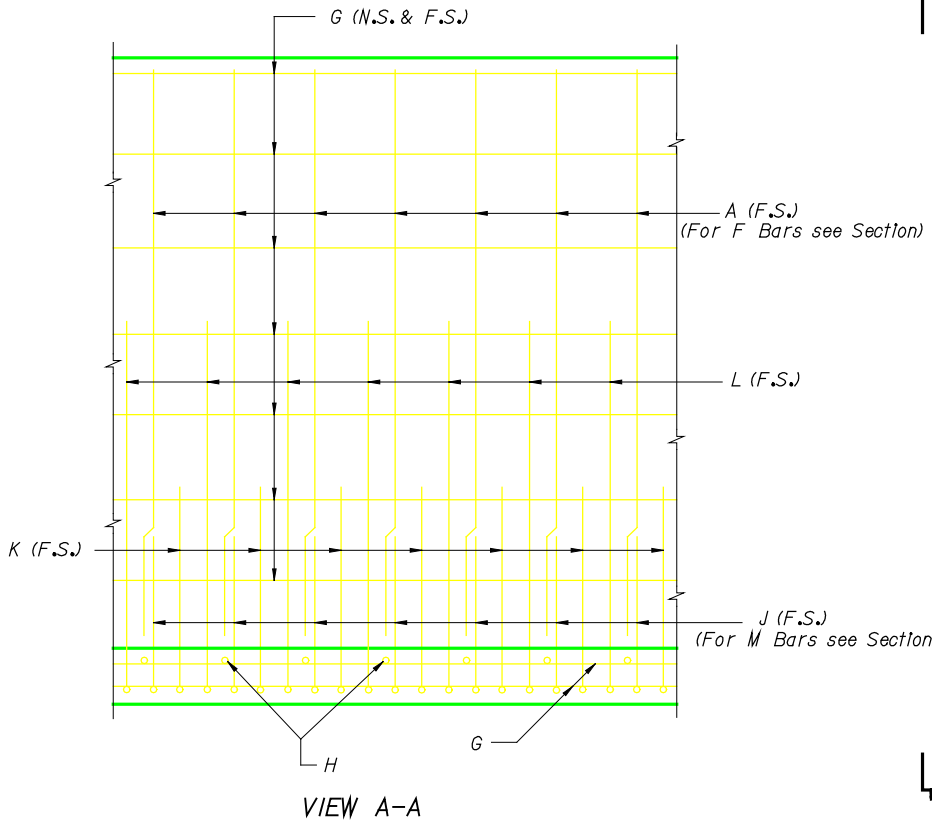
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

SHEET NO.

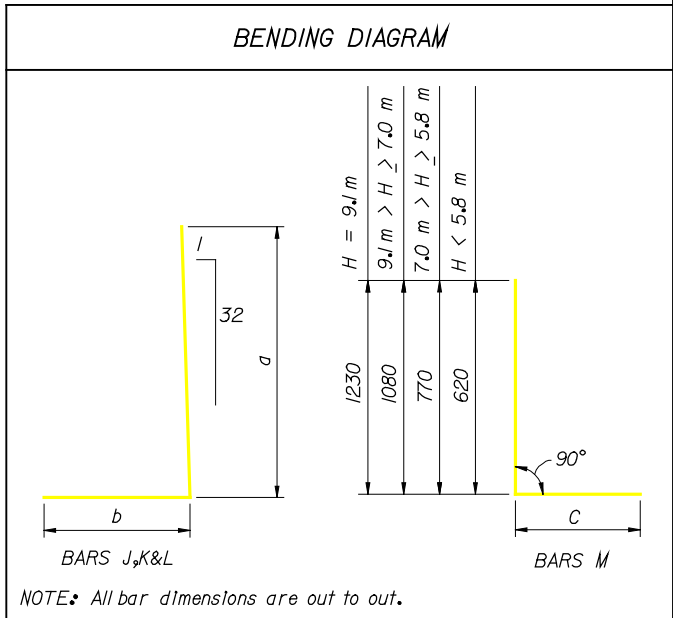
* RETAINING WALL DATA

WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																						
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J				BARS K					BARS L					BARS M				H				
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH		SIZE	NO.	C	LENGTH
1.8	205	280	865				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	715	#13	35	235	1625	340	1965											#13	24	510	1130	1.8		
2.1	230	280	1040				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	890	#13	35	235	1925	375	2300											#13	24	660	1280	2.1		
2.4	280	280	1195				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1045	#13	35	235	2225	430	2655											#13	24	765	1385	2.4		
2.7	355	280	1320				#22	6	460	#13	24	2325	#13	22	7850	#13	25	335	1170	#13	38	215	2525	515	3040											#13	24	815	1435	2.7		
3.0	355	280	1475				#22	7	460	#13	24	2625	#13	26	7850	#13	38	215	1325	#13	42	195	2825	525	3350											#13	24	970	1590	3.0		
3.4	405	280	1675				#22	8	460	#13	24	3025	#13	28	7850	#13	52	155	1525	#16	28	295	3225	590	3815											#13	24	1120	1740	3.4		
3.7	455	305	1755				#22	9	460	#13	24	3300	#13	32	7850	#13	46	175	1605	#16	37	220	3525	650	4175											#13	24	1150	1770	3.7		
4.0	510	305	1930				#22	10	460	#13	24	3600	#13	34	7850	#16	31	265	1780	#16	37	220	3825	760	4585											#13	24	1270	1890	4.0		
4.3	560	305	2160				#22	11	460	#13	24	3900	#13	38	7850	#16	36	225	2010	#16	48	170	4125	820	4945												#13	24	1450	2070	4.3	
4.6	635	305	2440				#22	12	460	#13	24	4200	#13	42	7850	#16	48	170	2290	#16	28	295	4425	905	5330	#16	27	295	1755	905	2660							#13	24	1655	2275	4.6
4.9	710	305	2690	#16	23	4500	#22	13	460	#13	24	4500	#13	44	7850	#22	37	220	2540	#16	23	365	865	990	1855	#16	22	365	1450	990	2440	#16	22	365	3275	990	4265	#13	24	1830	2450	4.9
5.2	785	355	2945	#22	19	4750	#22	13	460	#13	24	4750	#13	46	7850	#22	37	220	2795	#22	19	450	1040	1075	2115	#22	18	450	1625	1075	2700	#22	18	450	2540	1075	3615	#13	24	2010	2630	5.2
5.5	865	355	3300	#22	22	5050	#22	14	460	#13	24	5050	#13	50	7850	#22	44	185	3150	#22	22	390	1040	1165	2205	#22	21	390	1625	1165	2790	#22	21	390	2540	1165	3705	#13	24	2285	2905	5.5
5.8	990	510	3505	#22	23	5195	#22	15	460	#13	24	5195	#13	54	7850	#16	42	195	3355	#22	23	370	1475	1300	2775	#22	22	370	1955	1300	3255	#22	22	370	3175	1300	4475	#13	24	2365	3135	5.8
6.1	1120	510	3735	#22	25	5495	#22	15	460	#13	24	5495	#13	54	7850	#16	42	195	3585	#22	25	330	1475	1440	2915	#22	24	330	2260	1440	3700	#22	24	330	3480	1440	4920	#13	24	2465	3235	6.1
6.4	1245	510	3960	#22	19	5795	#22	16	460	#13	24	5795	#13	58	7850	#16	48	170	3810	#25	19	440	1805	1570	3375	#25	18	440	2770	1570	4340	#25	18	440	3990	1570	5560	#13	24	2565	3335	6.4
6.7	1370	510	4215	#22	22	6095	#22	17	460	#13	24	6095	#13	62	7850	#22	37	220	4065	#25	22	390	1855	1705	3560	#25	21	390	2770	1705	4475	#25	21	390	4295	1705	6000	#13	24	2695	3465	6.7
7.0	1500	660	4495	#22	23	6245	#22	18	460	#13	24	6245	#13	64	7850	#16	48	170	4345	#25	23	365	2005	1845	3850	#25	22	365	2920	1845	4765	#25	22	365	4445	1845	6290	#13	24	2845	3925	7.0
7.3	1625	660	4750	#22	20	6545	#22	18	460	#13	24	6545	#13	66	7850	#16	48	170	4600	#32	20	425	2335	1980	4315	#32	19	425	3430	1980	5410	#32	19	425	4955	1980	6935	#13	24	2975	4055	7.3
7.6	1755	660	5005	#22	21	6845	#22	19	460	#13	24	6845	#13	70	7850	#22	37	220	4855	#32	21	400	2335	2120	4455	#32	20	400	3430	2120	5550	#32	20	400	5260	2120	7380	#13	24	3100	4180	7.6
7.9	1880	660	5260	#22	22	7145	#22	20	460	#13	24	7145	#13	74	7850	#22	37	220	5110	#32	22	380	2490	2255	4745	#32	21	380	3735	2255	5990	#32	21	380	5565	2255	7820	#13	24	3230	4310	7.9
8.2	2030	815	5590	#22	22	7290	#22	21	460	#13	24	7290	#13	78	7850	#22	44	185	5440	#32	22	380	2640	2415	5055	#32	21	380	3885	2415	6300	#32	21	380	5715	2415	8130	#13	24	3410	4490	8.2
8.5	2160	815	5840	#25	24	7590	#22	21	460	#13	24	7590	#13	78	7850	#22	44	185	5690	#32	24	345	2795	2555	5350	#32	23	345	4190	2555	6745	#32	23	345	6020	2555	8575	#13	24	3530	4610	8.5
8.8	2285	815	6095	#25	26	7890	#22	22	460	#13	24	7890	#13	82	7850	#22	44	185	5945	#32	26	320	2945	2685	5630	#32	25	320	4495	2685	7180	#32	25	320	6325	2685	9010	#13	24	3660	4740	8.8
9.1	2465	965	6475	#25	22	8040	#22	23	460	#13	24	8040	#13	86	7850	#22	52	155	6325	#36	22	380	3100	2875	5975	#36	21	380	4650	2875	7525	#36	21	380	6475	2875	9350	#13	24	3860	5090	9.1

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.02	278	0.63	35
2.1	6.09	337	0.76	42
2.4	7.14	380	0.89	47
2.7	8.14	414	1.02	52
3.0	9.23	503	1.15	63
3.4	10.71	588	1.34	73
3.7	11.97	696	1.50	87
4.0	14.69	759	1.84	95
4.3	16.21	935	2.03	117
4.6	17.88	1013	2.24	127
4.9	19.50	1269	2.44	159
5.2	22.15	1610	2.77	201
5.5	24.21	1922	3.03	240
5.8	29.65	1935	3.71	242
6.1	31.67	2153	3.96	269
6.4	33.69	2274	4.21	284
6.7	35.85	2786	4.48	348
7.0	42.96	2846	5.37	356
7.3	45.46	3589	5.68	449
7.6	47.99	4075	6.00	509
7.9	50.54	4458	6.32	557
8.2	59.81	4788	7.48	598
8.5	62.67	5493	7.83	687
8.8	65.60	6112	8.20	764
9.1	76.48	6561	9.56	820



NOTE: To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

REVISIONS				DRAWING NO.			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	INDEX NO.	
			98			1 of 1	
DRAWN BY SHM 12/93				ENGINEER OF RECORD, STRUCTURES DESIGN OFFICE			
CHECKED BY JMD/NRK 12/93				CENTRAL OFFICE			
DESIGNED BY JMD 12/93				605 Suwannee Street, MS 33			
CHECKED BY NRK 12/93				Tallahassee, Florida 32399-0450			
APPROVED BY AJG				FLORIDA DEPARTMENT OF TRANSPORTATION			
				STRUCTURES DESIGN OFFICE			
				ROAD NO. COUNTY PROJECT NO.			
				CASE III (168 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT			
				PROJECT NAME:			
				813			

DATE: " " TIME: s:\structures\water\structures\card\08standards\08standards0814.dgn

* NOTE: Wall Dimension "H" Is given In meters (m). All other dimensions, lengths and spacings are given In millimeters (mm).

** NOTE: For placement details of Bars D see Standard Index No. 800.

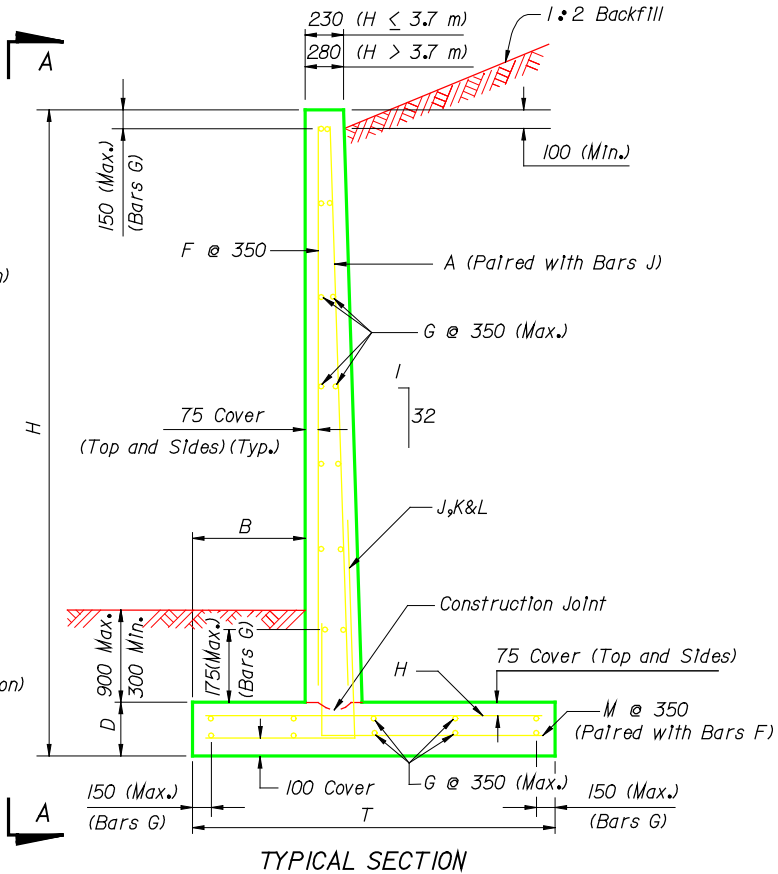
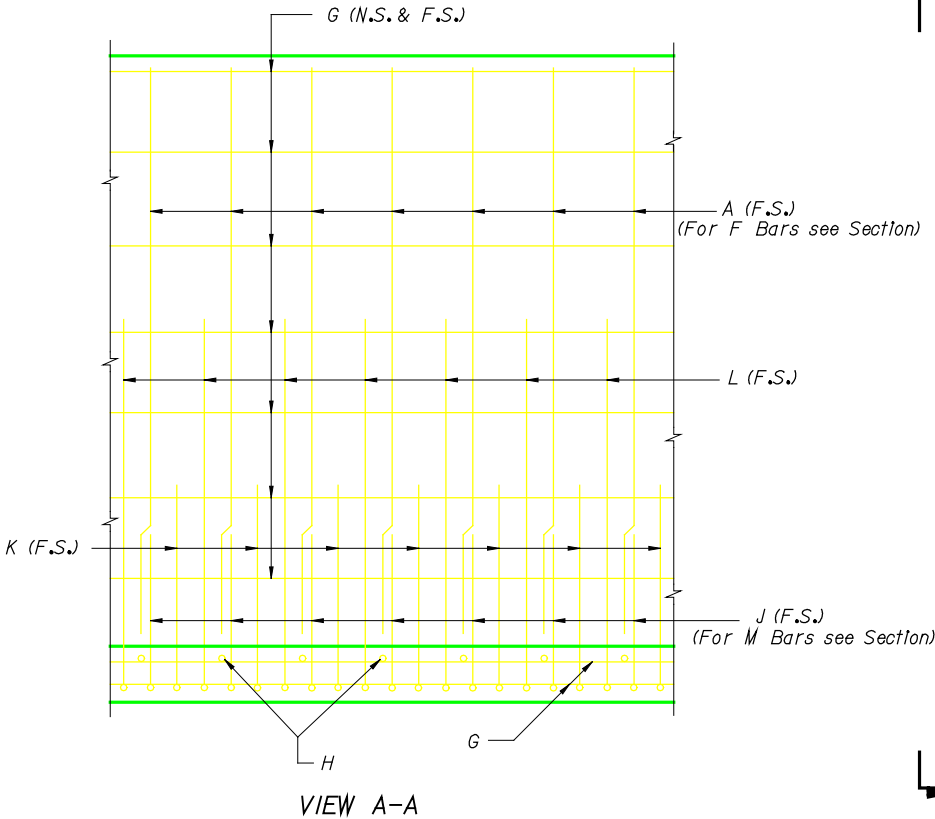
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

SHEET NO.

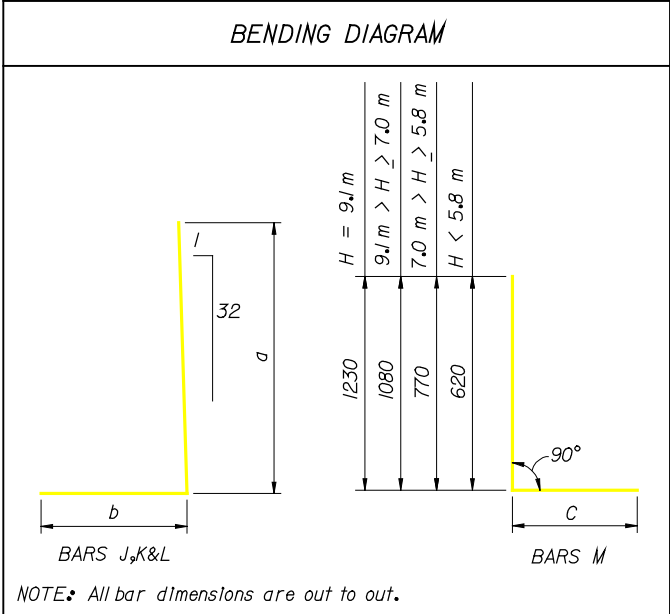
* RETAINING WALL DATA

WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																						
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J				BARS K					BARS L					BARS M				H				
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH		SIZE	NO.	C	LENGTH
1.8	205	280	865				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	715	#13	35	235	1625	340	1965											#13	24	510	1130	1.8		
2.1	230	280	1040				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	890	#13	35	235	1925	375	2300											#13	24	660	1280	2.1		
2.4	280	280	1195				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1045	#13	35	235	2225	430	2655											#13	24	765	1385	2.4		
2.7	355	280	1320				#22	6	460	#13	24	2325	#13	22	7850	#13	25	335	1170	#13	38	215	2525	515	3040											#13	24	815	1435	2.7		
3.0	355	280	1475				#22	7	460	#13	24	2625	#13	26	7850	#13	35	235	1325	#13	42	195	2825	525	3350											#13	24	970	1590	3.0		
3.4	405	280	1625				#22	8	460	#13	24	3025	#13	28	7850	#13	46	175	1475	#16	28	295	3225	590	3815											#13	24	1070	1690	3.4		
3.7	455	305	1755				#22	9	460	#13	24	3300	#13	32	7850	#13	46	175	1605	#16	37	220	3525	650	4175											#13	24	1150	1770	3.7		
4.0	485	305	1905				#22	10	460	#13	24	3600	#13	34	7850	#16	31	265	1755	#16	37	220	3825	735	4560											#13	24	1270	1890	4.0		
4.3	510	305	2055				#22	11	460	#13	24	3900	#13	36	7850	#16	43	190	1905	#16	48	170	4125	770	4895											#13	24	1395	2015	4.3		
4.6	560	305	2235				#22	12	460	#13	24	4200	#13	40	7850	#16	48	170	2085	#16	28	295	4425	830	5255	#16	27	295	1755	830	2585						#13	24	1525	2145	4.6	
4.9	635	305	2490	#16	23	4500	#22	13	460	#13	24	4500	#13	44	7850	#22	44	185	2340	#16	23	365	865	915	1780	#16	22	365	1450	915	2365	#16	22	365	3275	915	4190	#13	24	1705	2325	4.9
5.2	710	355	2690	#22	19	4750	#22	13	460	#13	24	4750	#13	44	7850	#22	37	220	2540	#22	19	450	1040	1000	2040	#22	18	450	1625	1000	2625	#22	18	450	2540	1000	3540	#13	24	1830	2450	5.2
5.5	760	355	2995	#22	22	5050	#22	14	460	#13	24	5050	#13	48	7850	#22	44	185	2845	#22	22	390	1040	1060	2100	#22	21	390	1625	1060	2685	#22	21	390	2540	1060	3600	#13	24	2085	2705	5.5
5.8	890	510	3250	#22	23	5195	#22	15	460	#13	24	5195	#13	52	7850	#16	42	195	3100	#22	23	370	1475	1200	2675	#22	22	370	1955	1200	3155	#22	22	370	3175	1200	4375	#13	24	2210	2980	5.8
6.1	1015	510	3430	#22	25	5495	#22	15	460	#13	24	5495	#13	52	7850	#16	48	170	3280	#22	25	330	1475	1335	2810	#22	24	330	2260	1335	3595	#22	24	330	3480	1335	4815	#13	24	2265	3035	6.1
6.4	1120	510	3660	#22	19	5795	#22	16	460	#13	24	5795	#13	56	7850	#22	37	220	3510	#25	19	440	1805	1445	3250	#25	18	440	2770	1445	4215	#25	18	440	3990	1445	5435	#13	24	2390	3160	6.4
6.7	1245	510	3860	#22	22	6095	#22	17	460	#13	24	6095	#13	60	7850	#22	44	185	3710	#25	22	390	1855	1580	3435	#25	21	390	2770	1580	4350	#25	21	390	4295	1580	5875	#13	24	2465	3235	6.7
7.0	1370	660	4165	#22	23	6245	#22	18	460	#13	24	6245	#13	64	7850	#16	48	170	4015	#25	23	365	2005	1715	3720	#25	22	365	2920	1715	4635	#25	22	365	4445	1715	6160	#13	24	2645	3725	7.0
7.3	1500	660	4370	#22	20	6545	#22	18	460	#13	24	6545	#13	64	7850	#22	37	220	4220	#32	20	425	2335	1855	4190	#32	19	425	3430	1855	5285	#32	19	425	4955	1855	6810	#13	24	2720	3800	7.3
7.6	1625	660	4650	#22	21	6845	#22	19	460	#13	24	6845	#13	68	7850	#22	37	220	4500	#32	21	400	2335	1990	4325	#32	20	400	3430	1990	5420	#32	20	400	5260	1990	7250	#13	24	2875	3955	7.6
7.9	1725	660	4875	#22	22	7145	#22	20	460	#13	24	7145	#13	72	7850	#22	44	185	4725	#32	22	380	2490	2100	4590	#32	21	380	3735	2100	5835	#32	21	380	5565	2100	7665	#13	24	3000	4080	7.9
8.2	1855	815	5180	#22	22	7290	#22	21	460	#13	24	7290	#13	74	7850	#22	44	185	5030	#32	22	380	2640	2240	4880	#32	21	380	3885	2240	6125	#32	21	380	5715	2240	7955	#13	24	3175	4255	8.2
8.5	1980	815	5410	#25	24	7590	#22	21	460	#13	24	7590	#13	76	7850	#22	44	185	5260	#32	24	345	2795	2375	5170	#32	23	345	4190	2375	6565	#32	23	345	6020	2375	8395	#13	24	3280	4360	8.5
8.8	2110	815	5665	#25	26	7890	#22	22	460	#13	24	7890	#13	80	7850	#22	44	185	5515	#32	26	320	2945	2510	5455	#32	25	320	4495	2510	7005	#32	25	320	6325	2510	8835	#13	24	3405	4485	8.8
9.1	2260	965	5995	#25	22	8040	#22	23	460	#13	24	8040	#13	84	7850	#22	52	155	5845	#36	22	380	3100	2670	5770	#36	21	380	4650	2670	7320	#36	21	380	6475	2670	9145	#13	24	3585	4815	9.1


QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.02	278	0.63	35
2.1	6.09	337	0.76	42
2.4	7.14	380	0.89	47
2.7	8.14	414	1.02	52
3.0	9.23	499	1.15	62
3.4	10.60	575	1.32	72
3.7	11.97	696	1.50	87
4.0	14.63	757	1.83	95
4.3	15.96	929	1.99	116
4.6	17.38	972	2.17	122
4.9	19.01	1286	2.38	161
5.2	21.43	1549	2.68	194
5.5	23.34	1840	2.92	230
5.8	28.61	1878	3.58	235
6.1	30.42	2120	3.80	265
6.4	32.46	2338	4.06	292
6.7	34.40	2772	4.30	347
7.0	41.22	2782	5.15	348
7.3	43.46	3653	5.43	457
7.6	46.12	3963	5.76	495
7.9	48.51	4430	6.06	554
8.2	57.13	4624	7.14	578
8.5	59.87	5333	7.48	667
8.8	62.79	5948	7.85	743
9.1	72.78	6359	9.10	795



NOTE: To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

REVISIONS						NAMES		DATES		ENGINEER OF RECORD. <u>STRUCTURES DESIGN OFFICE</u> CENTRAL OFFICE 605 Suwannee Street, MS 33 Tallahassee, Florida 32399-0450	LOGO.	 FLORIDA DEPARTMENT OF TRANSPORTATION <u>STRUCTURES DESIGN OFFICE</u>	SHEET TITLE. CASE III (192 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT	DRAWING NO. 1 of 1				
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION													
			98			DRAWN BY	SHM	12/93										
					CHECKED BY	JMD/NRK	12/93											
					DESIGNED BY	JMD	12/93											
					CHECKED BY	NRK	12/93											
						APPROVED BY	AJG											
ROAD NO.														COUNTY	PROJECT NO.	PROJECT NAME.		INDEX NO.
																		8/4

DATE: "H" TIME: s:\structures\swat\cadd\structures\cadd\08standards\08std015.dwg

* NOTE: Wall Dimension "H" is given in meters (m). All other dimensions, lengths and spacings are given in millimeters (mm).
** NOTE: For placement details of Bars D see Standard Index No. 800.

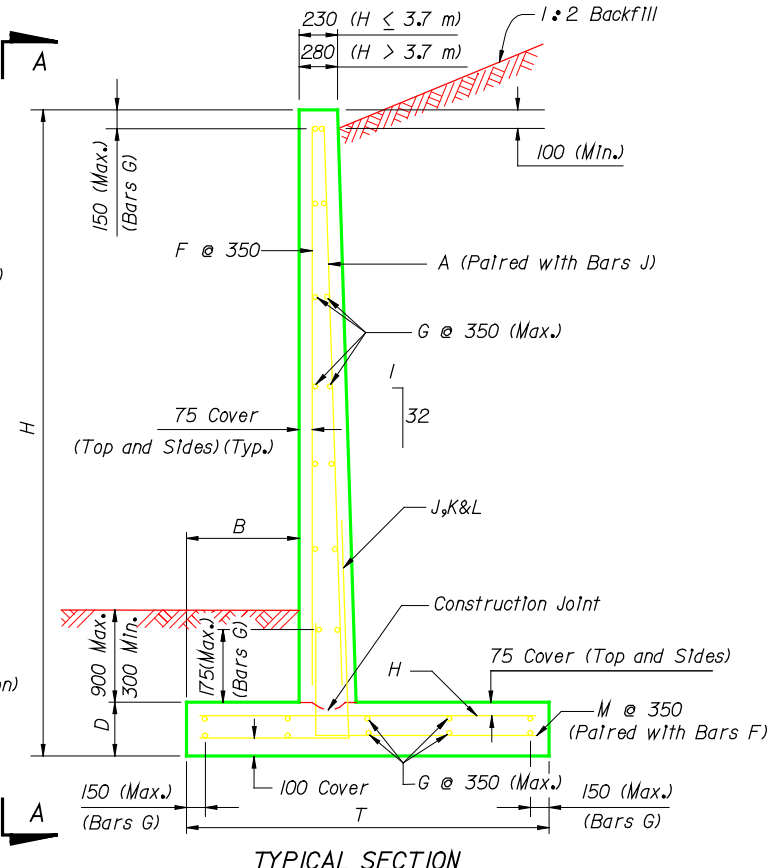
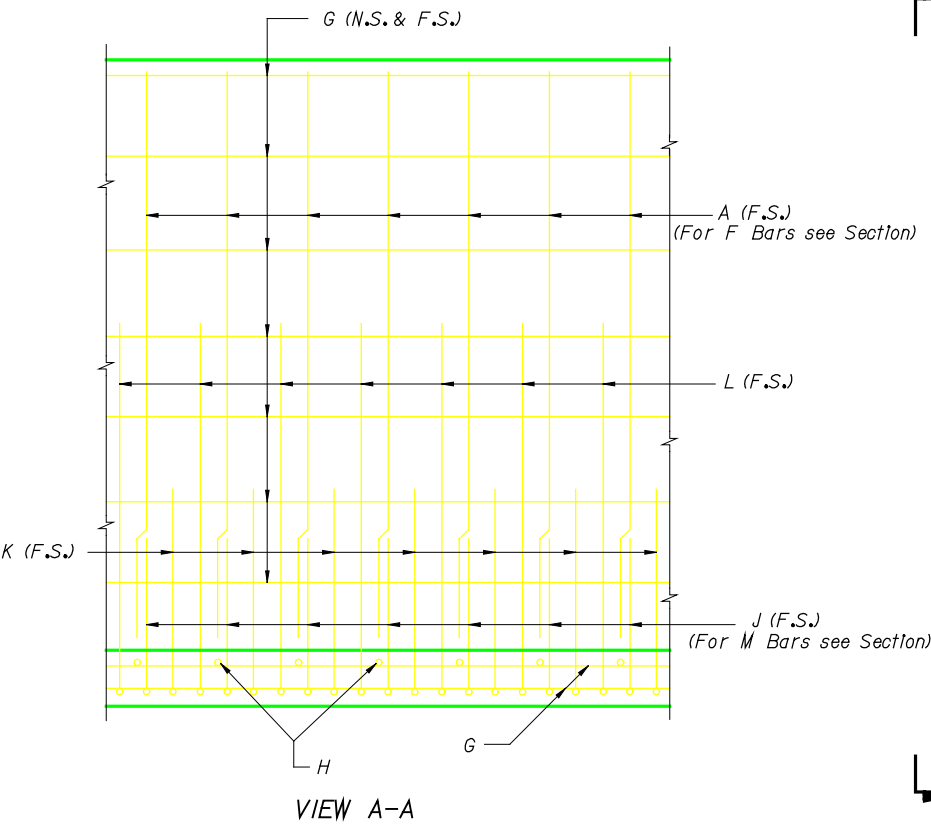
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

SHEET NO.

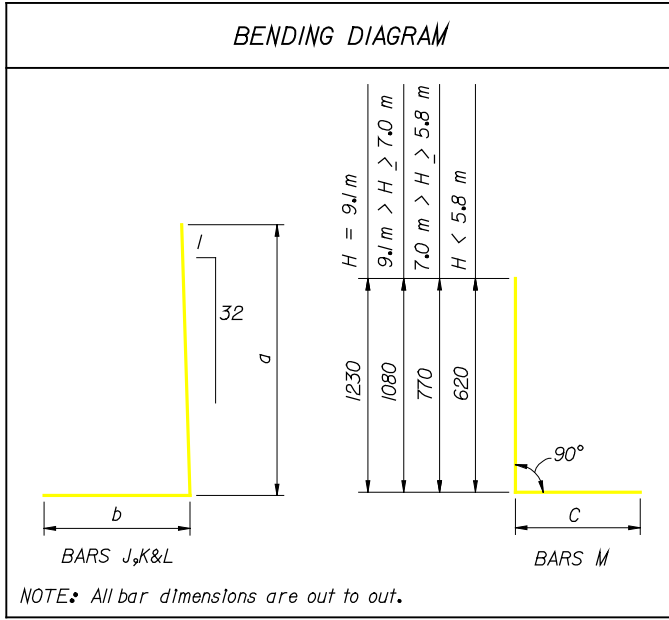
* RETAINING WALL DATA

WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																						
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J				BARS K					BARS L					BARS M				H				
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH		SIZE	NO.	C	LENGTH
1.8	205	280	865				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	715	#13	35	235	1625	340	1965											#13	24	510	1130	1.8		
2.1	230	280	1040				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	890	#13	35	235	1925	375	2300											#13	24	660	1280	2.1		
2.4	280	280	1195				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1045	#13	35	235	2225	430	2655											#13	24	765	1385	2.4		
2.7	355	280	1320				#22	6	460	#13	24	2325	#13	22	7850	#13	25	335	1170	#13	38	215	2525	515	3040											#13	24	815	1435	2.7		
3.0	355	280	1475				#22	7	460	#13	24	2625	#13	26	7850	#13	38	215	1325	#13	42	195	2825	525	3350											#13	24	970	1590	3.0		
3.4	405	280	1625				#22	8	460	#13	24	3025	#13	28	7850	#13	46	175	1475	#16	28	295	3225	590	3815											#13	24	1070	1690	3.4		
3.7	455	305	1755				#22	9	460	#13	24	3300	#13	32	7850	#13	46	175	1605	#16	37	220	3525	650	4175											#13	24	1150	1770	3.7		
4.0	485	305	1905				#22	10	460	#13	24	3600	#13	34	7850	#16	31	265	1755	#16	37	220	3825	735	4560											#13	24	1270	1890	4.0		
4.3	510	305	2055				#22	11	460	#13	24	3900	#13	36	7850	#16	43	190	1905	#16	48	170	4125	770	4895											#13	24	1395	2015	4.3		
4.6	560	305	2185				#22	12	460	#13	24	4200	#13	40	7850	#16	48	170	2035	#16	28	295	4425	830	5255	#16	27	295	1755	830	2585						#13	24	1475	2095	4.6	
4.9	585	305	2310	#16	23	4500	#22	13	460	#13	24	4500	#13	42	7850	#22	44	185	2160	#16	23	365	865	865	1730	#16	22	365	1450	865	2315	#16	22	365	3275	865	4140	#13	24	1575	2195	4.9
5.2	660	355	2540	#22	19	4750	#22	13	460	#13	24	4750	#13	44	7850	#22	37	220	2390	#22	19	450	1040	950	1990	#22	18	450	1625	950	2575	#22	18	450	2540	950	3490	#13	24	1730	2350	5.2
5.5	710	355	2795	#22	22	5050	#22	14	460	#13	24	5050	#13	48	7850	#22	44	185	2645	#22	22	390	1040	1010	2050	#22	21	390	1625	1010	2635	#22	21	390	2540	1010	3550	#13	24	1935	2555	5.5
5.8	840	510	3025	#22	23	5195	#22	15	460	#13	24	5195	#13	50	7850	#16	48	170	2875	#22	23	370	1475	1150	2625	#22	22	370	1955	1150	3105	#22	22	370	3175	1150	4325	#13	24	2035	2805	5.8
6.1	940	510	3225	#22	25	5495	#22	15	460	#13	24	5495	#13	52	7850	#22	37	220	3075	#22	25	330	1475	1260	2735	#22	24	330	2260	1260	3520	#22	24	330	3480	1260	4740	#13	24	2135	2905	6.1
6.4	1040	510	3380	#22	19	5795	#22	16	460	#13	24	5795	#13	54	7850	#22	37	220	3230	#25	19	440	1805	1365	3170	#25	18	440	2770	1365	4135	#25	18	440	3990	1365	5355	#13	24	2190	2960	6.4
6.7	1145	510	3630	#22	22	6095	#22	17	460	#13	24	6095	#13	58	7850	#22	44	185	3480	#25	22	390	1855	1480	3335	#25	21	390	2770	1480	4250	#25	21	390	4295	1480	5775	#13	24	2335	3105	6.7
7.0	1270	660	3885	#22	23	6245	#22	18	460	#13	24	6245	#13	62	7850	#22	37	220	3735	#25	23	365	2005	1615	3620	#25	22	365	2920	1615	4535	#25	22	365	4445	1615	6060	#13	24	2465	3545	7.0
7.3	1395	660	4115	#22	20	6545	#22	18	460	#13	24	6545	#13	62	7850	#22	37	220	3965	#32	20	425	2335	1750	4085	#32	19	425	3430	1750	5180	#32	19	425	4955	1750	6705	#13	24	2570	3650	7.3
7.6	1500	660	4320	#22	21	6845	#22	19	460	#13	24	6845	#13	66	7850	#22	44	185	4170	#32	21	400	2335	1865	4200	#32	20	400	3430	1865	5295	#32	20	400	5260	1865	7125	#13	24	2670	3750	7.6
7.9	1600	660	4570	#22	22	7145	#22	20	460	#13	24	7145	#13	70	7850	#22	44	185	4420	#32	22	380	2490	1975	4465	#32	21	380	3735	1975	5710	#32	21	380	5565	1975	7540	#13	24	2820	3900	7.9
8.2	1725	815	4825	#22	22	7290	#22	21	460	#13	24	7290	#13	72	7850	#22	44	185	4675	#32	22	380	2640	2110	4750	#32	21	380	3885	2110	5995	#32	21	380	5715	2110	7825	#13	24	2950	4030	8.2
8.5	1855	815	5080	#25	24	7590	#22	21	460	#13	24	7590	#13	74	7850	#22	44	185	4930	#32	24	345	2795	2250	5045	#32	23	345	4190	2250	6440	#32	23	345	6020	2250	8270	#13	24	3075	4155	8.5
8.8	1955	815	5335	#25	26	7890	#22	22	460	#13	24	7890	#13	78	7850	#22	44	185	5185	#32	26	320	2945	2355	5300	#32	25	320	4495	2355	6850	#32	25	320	6325	2355	8680	#13	24	3230	4310	8.8
9.1	2110	965	5615	#25	22	8040	#22	23	460	#13	24	8040	#13	82	7850	#22	52	155	5465	#36	22	380	3100	2520	5620	#36	21	380	4650	2520	7170	#36	21	380	6475	2520	8995	#13	24	3355	4585	9.1

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.02	278	0.63	35
2.1	6.09	337	0.76	42
2.4	7.14	380	0.89	47
2.7	8.14	414	1.02	52
3.0	9.23	503	1.15	63
3.4	10.60	575	1.32	72
3.7	11.97	696	1.50	87
4.0	14.63	757	1.83	95
4.3	15.96	929	1.99	116
4.6	17.26	967	2.16	121
4.9	18.57	1238	2.32	155
5.2	21.00	1522	2.63	190
5.5	22.77	1800	2.85	225
5.8	27.69	1861	3.46	233
6.1	29.59	2202	3.70	275
6.4	31.32	2269	3.92	284
6.7	33.47	2697	4.18	337
7.0	39.74	2857	4.97	357
7.3	42.11	3566	5.26	446
7.6	44.38	3945	5.55	493
7.9	46.90	4318	5.86	540
8.2	54.82	4503	6.85	563
8.5	57.72	5213	7.21	652
8.8	60.64	5808	7.58	726
9.1	69.84	6202	8.73	775



NOTE: To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTE: All bar dimensions are out to out.
NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

DATE: "H" TIME: s:\structures\swat\cadd\structures\cadd\08standards\08std015.dwg

REVISIONS				NAMES		DATES		ENGINEER OF RECORD.	LOGO.	FLORIDA DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN OFFICE	SHEET TITLE: CASE III (215 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT	DRAWING NO. 1 of 1
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION							
			98			DRAWN BY SHM 12/93						
					CHECKED BY JMD/NRK 12/93							
					DESIGNED BY JMD 12/93							
					CHECKED BY NRK 12/93			STRUCTURES DESIGN OFFICE CENTRAL OFFICE 605 Suwannee Street, MS 33 Tallahassee, Florida 32399-0450				INDEX NO. 815
					APPROVED BY AJG							

ROAD NO.	COUNTY	PROJECT NO.

DATE: "H" TIME: s:\structures\swat\csl\structures\card\08standards\0817.dgn

*NOTE: Wall Dimension "H" is given in meters (m). All other dimensions, lengths and spacings are given in millimeters (mm).
**NOTE: For placement details of Bars D see Standard Index No. 800.

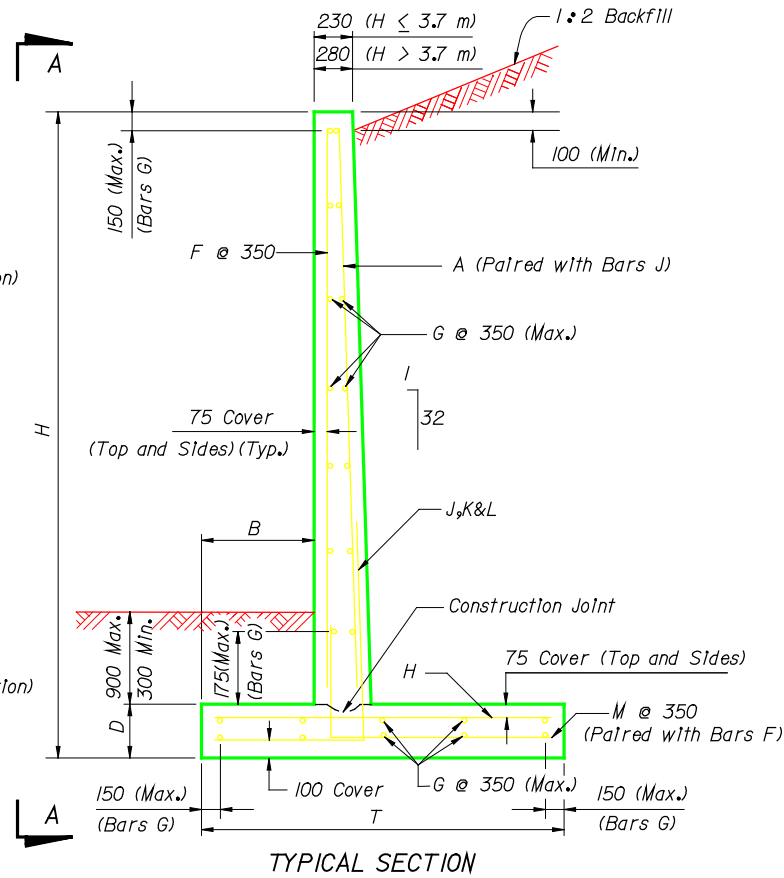
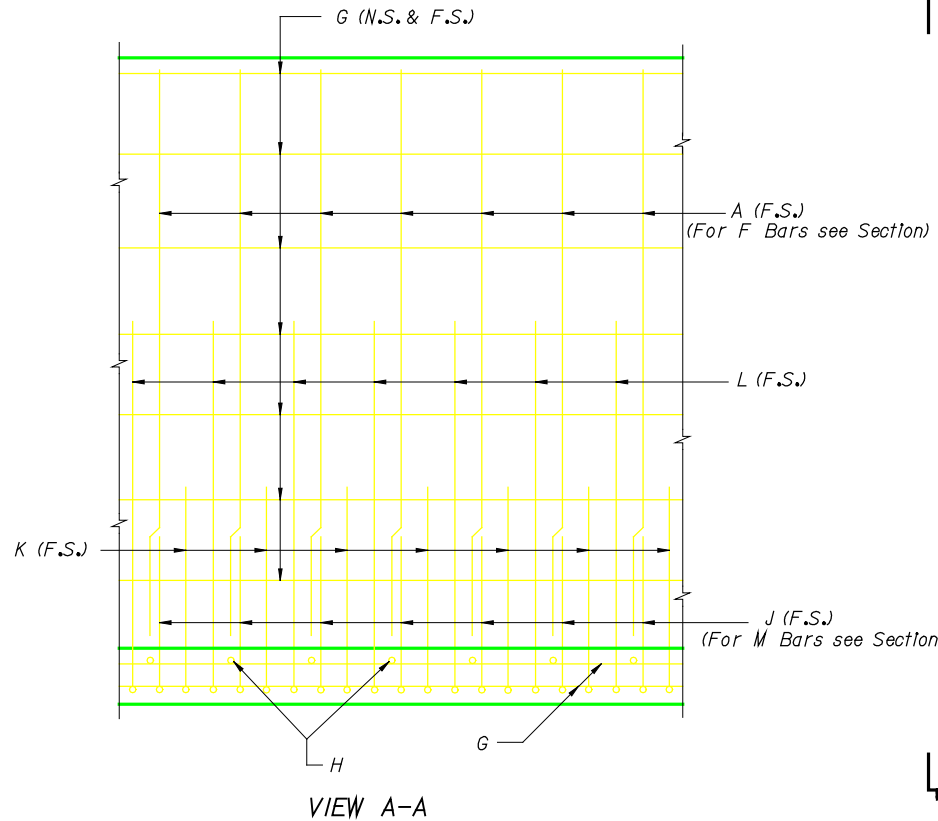
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

SHEET NO.

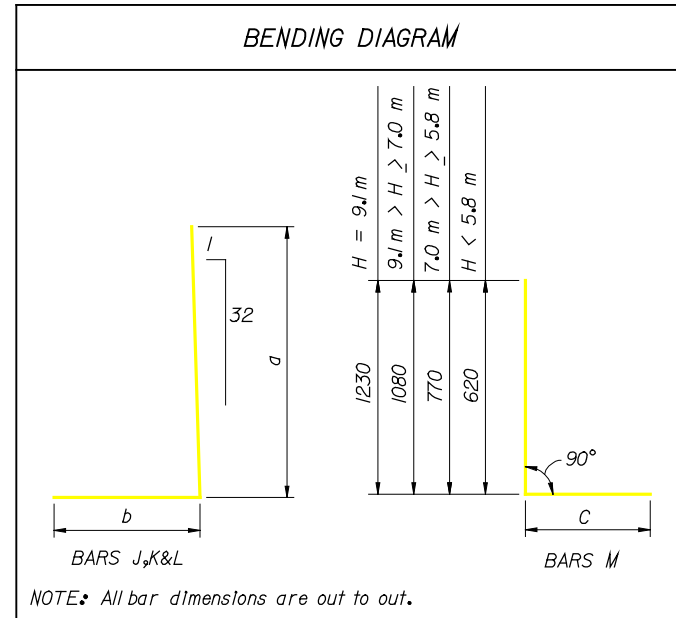
* RETAINING WALL DATA

* RETAINING WALL DATA																																										
WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																						
H	B	D	T	BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J					BARS K					BARS L					BARS M				H			
				SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH
1.8	205	280	865				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	715	#13	35	235	1625	340	1965													#13	24	510	1130	1.8
2.1	230	280	1040				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	890	#13	35	235	1925	375	2300												#13	24	660	1280	2.1	
2.4	280	280	1195				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1045	#13	35	235	2225	430	2655												#13	24	765	1385	2.4	
2.7	355	280	1320				#22	6	460	#13	24	2325	#13	22	7850	#13	25	335	1170	#13	38	215	2525	515	3040												#13	24	815	1435	2.7	
3.0	355	280	1475				#22	7	460	#13	24	2625	#13	26	7850	#13	38	215	1325	#13	42	195	2825	525	3350												#13	24	970	1590	3.0	
3.4	405	280	1625				#22	8	460	#13	24	3025	#13	28	7850	#13	52	155	1475	#16	28	295	3225	590	3815												#13	24	1070	1690	3.4	
3.7	455	305	1755				#22	9	460	#13	24	3300	#13	32	7850	#13	46	175	1605	#16	37	220	3525	650	4175												#13	24	1150	1770	3.7	
4.0	485	305	1905				#22	10	460	#13	24	3600	#13	34	7850	#16	31	265	1755	#16	37	220	3825	735	4560												#13	24	1270	1890	4.0	
4.3	510	305	2055				#22	11	460	#13	24	3900	#13	36	7850	#16	43	190	1905	#16	48	170	4125	770	4895												#13	24	1395	2015	4.3	
4.6	560	305	2185				#22	12	460	#13	24	4200	#13	40	7850	#16	48	170	2035	#16	28	295	4425	830	5255	#16	27	295	1755	830	2585							#13	24	1475	2095	4.6
4.9	585	305	2310	#16	23	4500	#22	13	460	#13	24	4500	#13	42	7850	#22	44	185	2160	#16	23	365	865	865	1730	#16	22	365	1450	865	2315	#16	22	365	3275	865	4140	#13	24	1575	2195	4.9
5.2	660	355	2490	#22	19	4750	#22	13	460	#13	24	4750	#13	44	7850	#22	37	220	2340	#22	19	450	1040	950	1990	#22	18	450	1625	950	2575	#22	18	450	2540	950	3490	#13	24	1680	2300	5.2
5.5	660	355	2665	#22	22	5050	#22	14	460	#13	24	5050	#13	46	7850	#22	52	155	2515	#22	22	390	1040	960	2000	#22	21	390	1625	960	2585	#22	21	390	2540	960	3500	#13	24	1855	2475	5.5
5.8	735	510	2745	#22	24	5195	#22	15	460	#13	24	5195	#13	48	7850	#16	48	170	2595	#22	24	345	1475	1045	2520	#22	23	345	1955	1045	3000	#22	23	345	3175	1045	4220	#13	24	1860	2630	5.8
6.1	840	510	2895	#22	25	5495	#22	15	460	#13	24	5495	#13	50	7850	#22	37	220	2745	#22	25	330	1475	1160	2635	#22	24	330	2260	1160	3420	#22	24	330	3480	1160	4640	#13	24	1905	2675	6.1
6.4	915	510	3025	#22	19	5795	#22	16	460	#13	24	5795	#13	52	7850	#22	44	185	2875	#25	19	440	1805	1240	3045	#25	18	440	2770	1240	4010	#25	18	440	3990	1240	5230	#13	24	1960	2730	6.4
6.7	1015	510	3225	#22	22	6095	#22	17	460	#13	24	6095	#13	56	7850	#22	45	180	3075	#25	22	390	1855	1350	3205	#25	21	390	2770	1350	4120	#25	21	390	4295	1350	5645	#13	24	2060	2830	6.7
7.0	1120	660	3430	#22	23	6245	#22	18	460	#13	24	6245	#13	58	7850	#22	37	220	3280	#25	23	365	2005	1465	3470	#25	22	365	2920	1465	4385	#25	22	365	4445	1465	5910	#13	24	2160	3240	7.0
7.3	1220	660	3630	#22	20	6545	#22	18	460	#13	24	6545	#13	60	7850	#22	44	185	3480	#32	20	425	2335	1575	3910	#32	19	425	3430	1575	5005	#32	19	425	4955	1575	6530	#13	24	2260	3340	7.3
7.6	1320	660	3835	#22	21	6845	#22	19	460	#13	24	6845	#13	64	7850	#22	45	180	3685	#32	21	400	2335	1685	4020	#32	20	400	3430	1685	5115	#32	20	400	5260	1685	6945	#13	24	2365	3445	7.6
7.9	1395	660	4090	#22	22	7145	#22	20	460	#13	24	7145	#13	66	7850	#22	52	155	3940	#32	22	380	2490	1770	4260	#32	21	380	3735	1770	5505	#32	21	380	5565	1770	7335	#13	24	2545	3625	7.9
8.2	1525	815	4320	#22	22	7290	#22	21	460	#13	24	7290	#13	70	7850	#22	39	210	4170	#32	22	380	2640	1910	4550	#32	21	380	3885	1910	5795	#32	21	380	5715	1910	7625	#13	24	2645	3725	8.2
8.5	1625	815	4520	#25	24	7590	#22	21	460	#13	24	7590	#13	72	7850	#22	45	180	4370	#32	24	345	2795	2020	4815	#32	23	345	4190	2020	6210	#32	23	345	6020	2020	8040	#13	24	2745	3825	8.5
8.8	1725	815	4775	#25	26	7890	#22	22	460	#13	24	7890	#13	74	7850	#22	52	155	4625	#32	26	320	2945	2125	5070	#32	25	320	4495	2125	6620	#32	25	320	6325	2125	8450	#13	24	2900	3980	8.8
9.1	1855	965	5005	#25	22	8040	#22	23	460	#13	24	8040	#13	78	7850	#22	52	155	4855	#36	22	380	3100	2265	5365	#36	21	380	4650	2265	6915	#36	21	380	6475	2265	8740	#13	24	3000	4230	9.1

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.02	278	0.63	35
2.1	6.09	337	0.76	42
2.4	7.14	380	0.89	47
2.7	8.14	414	1.02	52
3.0	9.23	503	1.15	63
3.4	10.60	584	1.32	73
3.7	11.97	696	1.50	87
4.0	14.63	757	1.83	95
4.3	15.96	929	1.99	116
4.6	17.26	967	2.16	121
4.9	18.57	1238	2.32	155
5.2	20.86	1515	2.61	189
5.5	22.40	1816	2.80	227
5.8	26.55	1844	3.32	230
6.1	28.24	2122	3.53	265
6.4	29.87	2242	3.73	280
6.7	31.81	2597	3.98	325
7.0	37.34	2727	4.67	341
7.3	39.55	3497	4.94	437
7.6	41.81	3798	5.23	475
7.9	44.37	4228	5.55	529
8.2	51.53	4267	6.44	533
8.5	54.07	5024	6.76	628
8.8	56.99	5695	7.12	712
9.1	65.13	5937	8.14	742



NOTE: To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

DATE: "H" TIME: s:\structures\swat\csl\structures\card\08standards\0817.dgn

REVISIONS				NAMES		DATES		ENGINEER OF RECORD.	LOGO.	FLORIDA DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN OFFICE	SHEET TITLE: CASE III (263 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT	DRAWING NO. 1 of 1
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	SHM					
						CHECKED BY	JMD/NRK					
						DESIGNED BY	JMD					
						CHECKED BY	NRK					
						APPROVED BY	AUG	STRUCTURES DESIGN OFFICE CENTRAL OFFICE 605 Suwannee Street, MS 33 Tallahassee, Florida 32399-0450			PROJECT NAME:	INDEX NO. 817

DATE: "H" TIME: s:\structures\water\structures\card\09standards\09standards0818.dgn

NOTE: Wall Dimension "H" is given in meters (m). All other dimensions, lengths and spacings are given in millimeters (mm).
** NOTE: For placement details of Bars D see Standard Index No. 800.

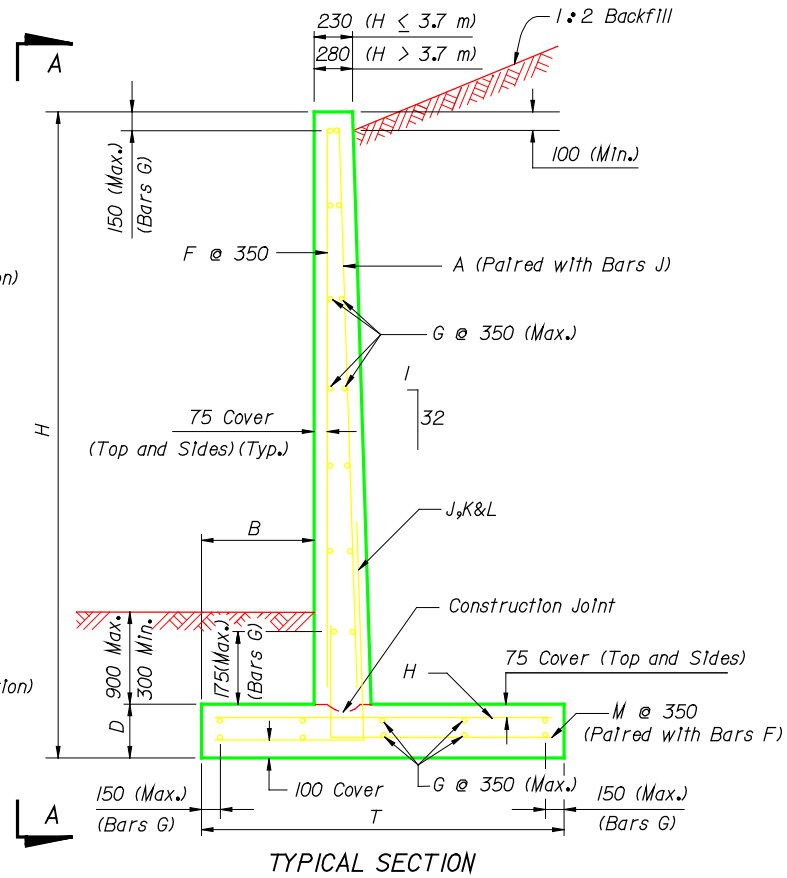
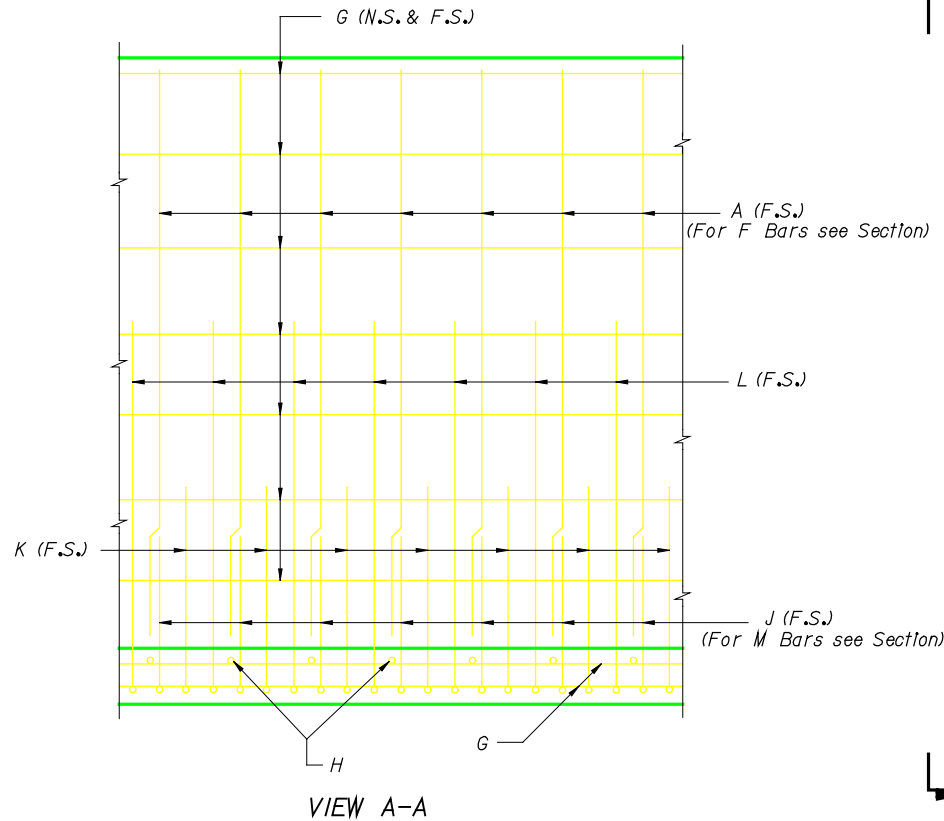
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

SHEET NO.

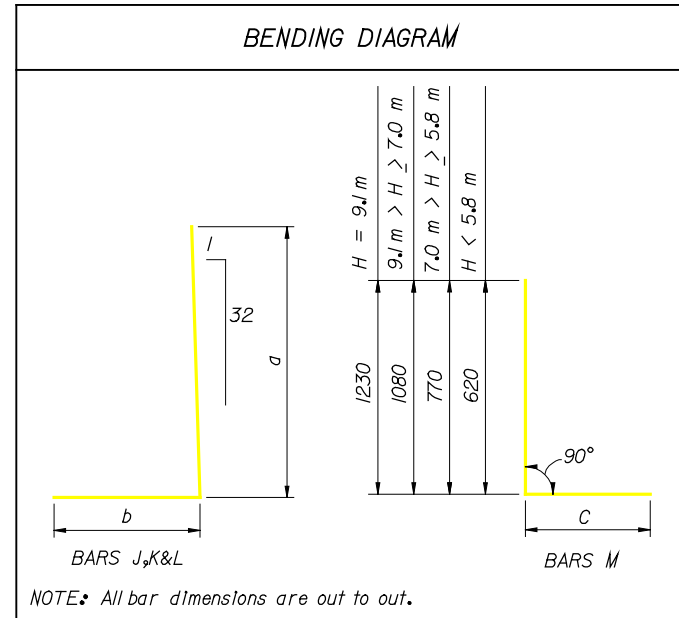
* RETAINING WALL DATA

* RETAINING WALL DATA																																												
WALL DIMENSIONS				REINFORCING STEEL SCHEDULE																																								
				BARS A			** BARS D			BARS F			BARS G			BARS H				BARS J					BARS K					BARS L					BARS M				H					
H	B	D	T	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE		NO.	C	LENGTH		
1.8	205	280	865				#22	4	460	#13	24	1425	#13	16	7850	#13	25	335	715	#13	35	235	1625	340	1965															#13	24	510	1130	1.8
2.1	230	280	1040				#22	5	460	#13	24	1725	#13	20	7850	#13	25	335	890	#13	35	235	1925	375	2300															#13	24	660	1280	2.1
2.4	280	280	1170				#22	6	460	#13	24	2025	#13	22	7850	#13	25	335	1020	#13	35	235	2225	430	2655															#13	24	740	1360	2.4
2.7	355	280	1320				#22	6	460	#13	24	2325	#13	22	7850	#13	25	335	1170	#13	38	215	2525	515	3040															#13	24	815	1435	2.7
3.0	355	280	1475				#22	7	460	#13	24	2625	#13	26	7850	#13	38	215	1325	#13	42	195	2825	525	3350															#13	24	970	1590	3.0
3.4	405	280	1625				#22	8	460	#13	24	3025	#13	28	7850	#13	46	175	1475	#16	28	295	3225	590	3815															#13	24	1070	1690	3.4
3.7	455	305	1755				#22	9	460	#13	24	3300	#13	32	7850	#13	46	175	1605	#16	37	220	3525	650	4175															#13	24	1150	1770	3.7
4.0	485	305	1905				#22	10	460	#13	24	3600	#13	34	7850	#16	31	265	1755	#16	37	220	3825	735	4560															#13	24	1270	1890	4.0
4.3	510	305	2055				#22	11	460	#13	24	3900	#13	36	7850	#16	43	190	1905	#16	48	170	4125	770	4895															#13	24	1395	2015	4.3
4.6	560	305	2185				#22	12	460	#13	24	4200	#13	40	7850	#16	48	170	2035	#16	28	295	4425	830	5255	#16	27	295	1755	830	2585									#13	24	1475	2095	4.6
4.9	585	305	2335	#16	23	4500	#22	13	460	#13	24	4500	#13	42	7850	#22	44	185	2185	#16	23	365	865	865	1730	#16	22	365	1450	865	2315	#16	22	365	3275	865	4140	#13	24	1600	2220	4.9		
5.2	660	355	2490	#22	19	4750	#22	13	460	#13	24	4750	#13	44	7850	#22	37	220	2340	#22	19	450	1040	950	1990	#22	18	450	1625	950	2575	#22	18	450	2540	950	3490	#13	24	1680	2300	5.2		
5.5	660	355	2665	#22	22	5050	#22	14	460	#13	24	5050	#13	46	7850	#22	52	155	2515	#22	22	390	1040	960	2000	#22	21	390	1625	960	2585	#22	21	390	2540	960	3500	#13	24	1855	2475	5.5		
5.8	735	510	2745	#22	24	5195	#22	15	460	#13	24	5195	#13	48	7850	#16	48	170	2595	#22	24	345	1475	1045	2520	#22	23	345	1955	1045	3000	#22	23	345	3175	1045	4220	#13	24	1860	2630	5.8		
6.1	840	510	2895	#22	25	5495	#22	15	460	#13	24	5495	#13	50	7850	#22	35	235	2745	#22	25	330	1475	1160	2635	#22	24	330	2260	1160	3420	#22	24	330	3480	1160	4640	#13	24	1905	2675	6.1		
6.4	915	510	3025	#22	19	5795	#22	16	460	#13	24	5795	#13	52	7850	#22	39	210	2875	#25	19	440	1805	1240	3045	#25	18	440	2770	1240	4010	#25	18	440	3990	1240	5230	#13	24	1960	2730	6.4		
6.7	990	510	3150	#22	22	6095	#22	17	460	#13	24	6095	#13	56	7850	#22	45	180	3000	#25	22	390	2005	1325	3330	#25	21	390	2770	1325	4095	#25	21	390	4295	1325	5620	#13	24	2010	2780	6.7		
7.0	1065	660	3300	#22	23	6245	#22	18	460	#13	24	6245	#13	58	7850	#22	35	235	3150	#25	23	365	2005	1410	3415	#25	22	365	2920	1410	4330	#25	22	365	4445	1410	5855	#13	24	2085	3165	7.0		
7.3	1145	660	3480	#22	20	6545	#22	18	460	#13	24	6545	#13	60	7850	#22	44	185	3330	#32	20	425	2335	1500	3835	#32	19	425	3125	1500	4625	#32	19	425	4955	1500	6455	#13	24	2185	3265	7.3		
7.6	1245	660	3660	#22	21	6845	#22	19	460	#13	24	6845	#13	62	7850	#22	44	185	3510	#32	21	400	2335	1610	3945	#32	20	400	3430	1610	5040	#32	20	400	5260	1610	6870	#13	24	2265	3345	7.6		
7.9	1320	660	3885	#22	22	7145	#22	20	460	#13	24	7145	#13	66	7850	#22	48	170	3735	#32	22	380	2490	1695	4185	#32	21	380	3735	1695	5430	#32	21	380	5565	1695	7260	#13	24	2415	3495	7.9		
8.2	1450	815	4115	#22	22	7290	#22	21	460	#13	24	7290	#13	68	7850	#22	39	210	3965	#32	22	380	2640	1835	4475	#32	21	380	3885	1835	5720	#32	21	380	5715	1835	7550	#13	24	2515	3595	8.2		
8.5	1550	815	4345	#25	24	7590	#22	21	460	#13	24	7590	#13	70	7850	#22	43	190	4195	#32	24	345	2795	1945	4740	#32	23	345	4190	1945	6135	#32	23	345	6020	1945	7965	#13	24	2645	3725	8.5		
8.8	1650	815	4545	#25	26	7890	#22	22	460	#13	24	7890	#13	74	7850	#22	52	155	4395	#32	26	320	2945	2050	4995	#32	25	320	4495	2050	6545	#32	25	320	6325	2050	8375	#13	24	2745	3825	8.8		
9.1	1755	965	4800	#25	22	8040	#22	23	460	#13	24	8040	#13	76	7850	#22	52	155	4650	#36	22	380	3100	2165	5265	#36	21	380	4650	2165	6815	#36	21	380	6475	2165	8640	#13	24	2895	4125	9.1		

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.02	278	0.63	35
2.1	6.09	337	0.76	42
2.4	7.08	379	0.89	47
2.7	8.14	414	1.02	52
3.0	9.23	503	1.15	63
3.4	10.60	575	1.32	72
3.7	11.97	696	1.50	87
4.0	14.63	757	1.83	95
4.3	15.96	929	1.99	116
4.6	17.26	967	2.16	121
4.9	18.63	1241	2.33	155
5.2	20.86	1515	2.61	189
5.5	22.40	1816	2.80	227
5.8	26.55	1844	3.32	230
6.1	28.24	2105	3.53	263
6.4	29.87	2198	3.73	275
6.7	31.51	2593	3.94	324
7.0	36.65	2677	4.58	335
7.3	38.76	3411	4.84	426
7.6	40.89	3717	5.11	465
7.9	43.28	4117	5.41	515
8.2	50.19	4193	6.27	524
8.5	52.93	4923	6.62	615
8.8	55.49	5618	6.94	702
9.1	63.55	5805	7.94	726



NOTE: To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars A are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

DATE: "H" TIME: s:\structures\water\structures\card\09standards\09standards0818.dgn

DATE		BY		DESCRIPTION		DATE		BY		DESCRIPTION		DRAWN BY		NAMES		DATES		ENGINEER OF RECORD		LOGO		FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET TITLE		DRAWING NO.	
												DRAWN BY		SHM		12/93		STRUCTURES DESIGN OFFICE				STRUCTURES DESIGN OFFICE		CASE III (287 kPa MAX. BEARING PRESSURE) 1.8 m TO 9.1 m HEIGHT		1 of 1	
												CHECKED BY		JMD/NRK		12/93		CENTRAL OFFICE									
												DESIGNED BY		JMD		12/93		605 Suwannee Street, MS 33									
												CHECKED BY		NRK		12/93		Tallahassee, Florida 32399-0450									
												APPROVED BY		AUG												818	

**** NOTE:** For placement details of Bars D see Standard Index No. 800.

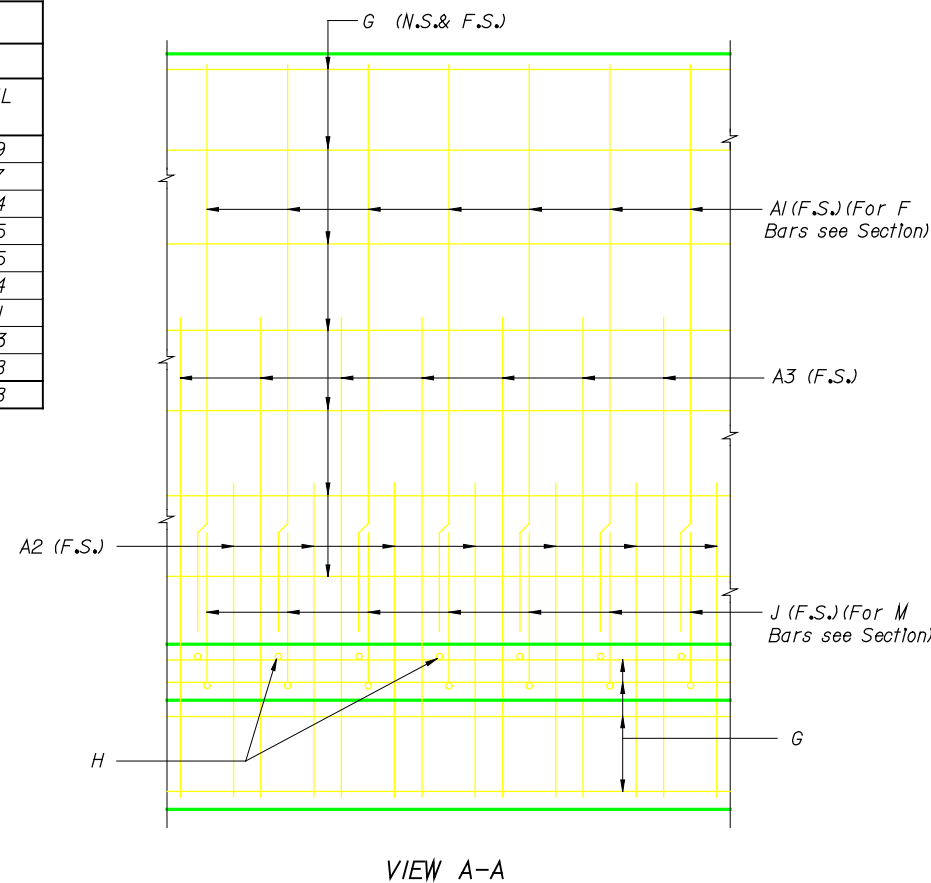
NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

* *RETAINING WALL DATA*

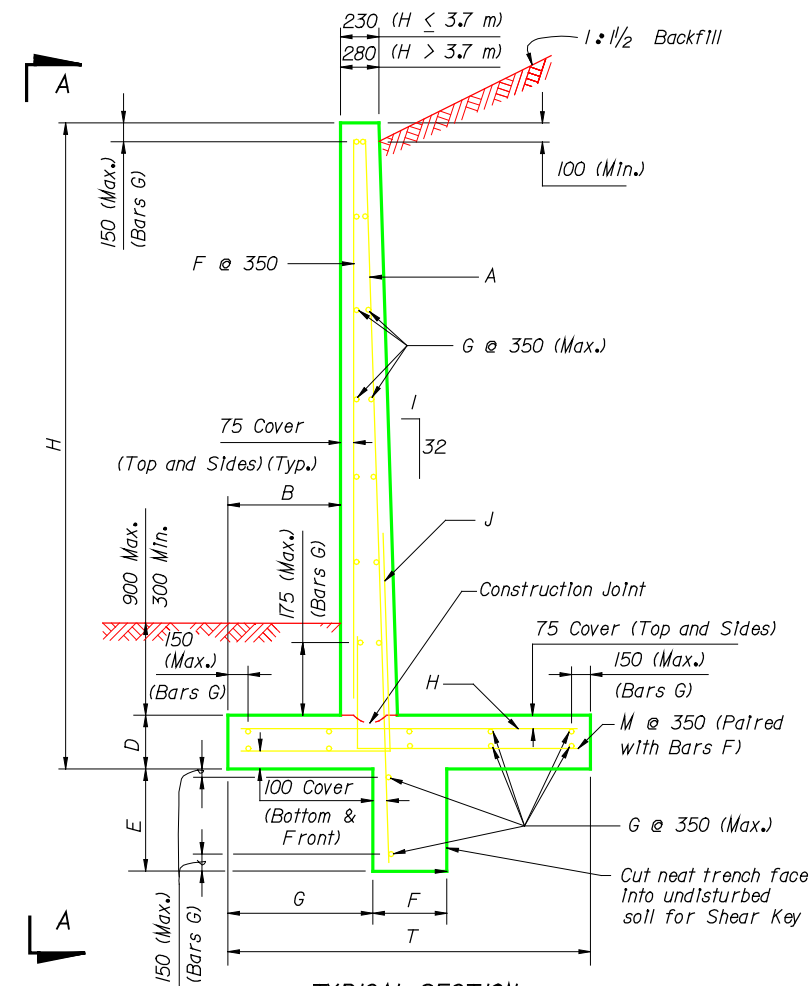
* RETAINING WALL DATA																																									
WALL DIMENSIONS				SHEAR KEY DIMENSIONS			REINFORCING STEEL SCHEDULE																																		
H	B	D	T	E	F	G	BARS A1			BARS A2				BARS A3				** BARS D			BARS F			BARS G			BARS H				BARS J					BARS M				H	
							SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a		LENGTH	SIZE	NO.	C	LENGTH				
1.8	255	280	1195												#22	4	460	#13	24	1425	#13	18	7850	#13	25	335	1045	#13	35	235	1625	390	2015	#13	24	790	1410	1.8			
2.1	380	280	1420												#22	5	460	#13	24	1725	#13	22	7850	#13	25	335	1270	#13	35	235	1925	525	2450	#13	24	890	1510	2.1			
2.4	380	305	1625												#22	6	460	#13	24	2000	#13	24	7850	#13	32	255	1475	#13	38	215	2225	530	2755	#13	24	1095	1715	2.4			
2.7	510	305	1905	305	305	635				#13	27	295	1725		#22	6	460	#13	24	2300	#13	28	7850	#13	32	255	1755	#13	28	295	2525	670	3195	#13	24	1245	1865	2.7			
3.0	685	355	2515	305	305	815				#13	37	215	1500		#22	7	460	#13	24	2550	#13	34	7850	#13	42	195	2365	#13	38	215	2825	855	3680	#13	24	1680	2300	3.0			
3.4	915	355	3200	305	305	1065				#16	25	320	1805		#22	8	460	#13	24	2950	#13	40	7850	#13	42	195	3050	#16	26	320	3225	1100	4325	#13	24	2135	2755	3.4			
3.7	1065	430	3505	305	305	1220				#16	29	270	2055		#22	9	460	#13	24	3175	#13	44	7850	#16	28	295	3355	#16	30	270	3525	1260	4785	#13	24	2290	3060	3.7			
4.0	1220	430	4040	305	305	1420				#16	29	270	2160		#22	10	460	#13	24	3475	#13	48	7850	#16	28	295	3890	#16	30	270	3825	1470	5295	#13	24	2670	3440	4.0			
4.3	1525	510	4955	305	305	1755				#22	25	315	2285		#22	10	460	#13	24	3695	#13	54	7850	#16	33	245	4805	#22	26	315	4125	1785	5910	#13	24	3280	4050	4.3			
4.6	2135	510	6780	305	305	2360	#16	22	3995	#22	21	385	2390	#22	21	385	3300	#22	11	460	#13	24	3995	#13	66	7850	#22	48	170	6630	#22	22	385	1195	2405	3600	#13	24	4495	5265	4.6

QUANTITIES

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.76	310	0.72	39
2.1	6.94	373	0.87	47
2.4	8.37	435	1.05	54
2.7	10.52	517	1.31	65
3.0	13.63	684	1.70	85
3.4	16.59	831	2.07	104
3.7	20.15	966	2.52	121
4.0	24.23	1066	3.03	133
4.3	31.25	1507	3.91	188
4.6	39.66	2460	4.96	308

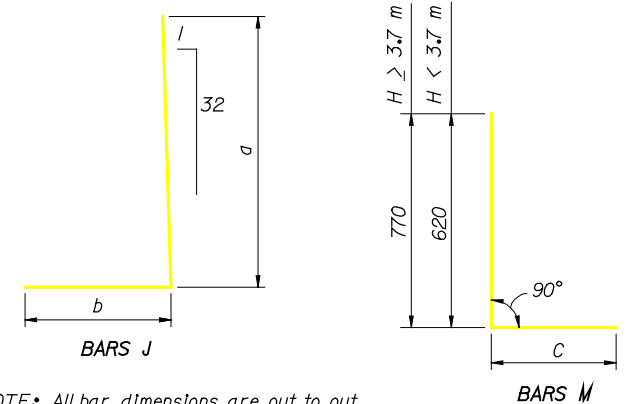


VIEW A-A



TYPICAL SECTION

BENDING DIAGRAM



NOTE:

To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.

NOTE: All bar dimensions are out to out.

NOTES: Bars M are paired with Bars F and Bars A1 are paired with Bars J.

Work this Drawing with Standard Index No. 800.

All dimensions are in millimeters (mm) unless otherwise noted.

REVISIONS						NAMES	DATES
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		
			98			DRAWN BY	<i>SHM</i> 12/93
						CHECKED BY	<i>JMD/NRK</i> 12/93
						DESIGNED BY	<i>JMD</i> 12/93
						CHECKED BY	<i>NRK</i> 12/93
						APPROVED BY	A/G

ENGINEER OF RECORD.
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO:



FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.
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SHEET TITLE:
CASE IV (144 kPa MAX. BEARING
PRESSURE) 1.8 m TO 4.6 m HEIGHT

PROJECT NAME:

DRAWING NO.

of 1

INDEX NO.

19 |

DATE: "H" TIME: s:\01structures\water\structures\cadd\08\standard\c820.dgn

* NOTE: Wall Dimension "H" Is given In meters (m). All other dimensions, lengths and spacings are given In millimeters (mm).
** NOTE: For placement details of Bars D see Standard Index No. 800.

NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

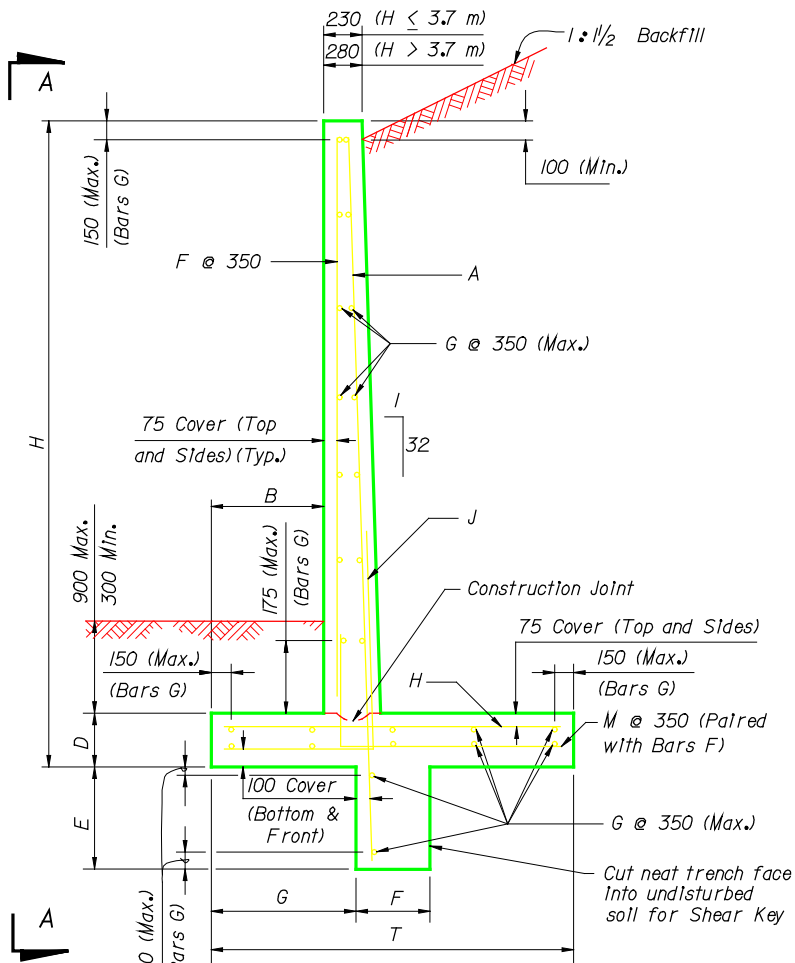
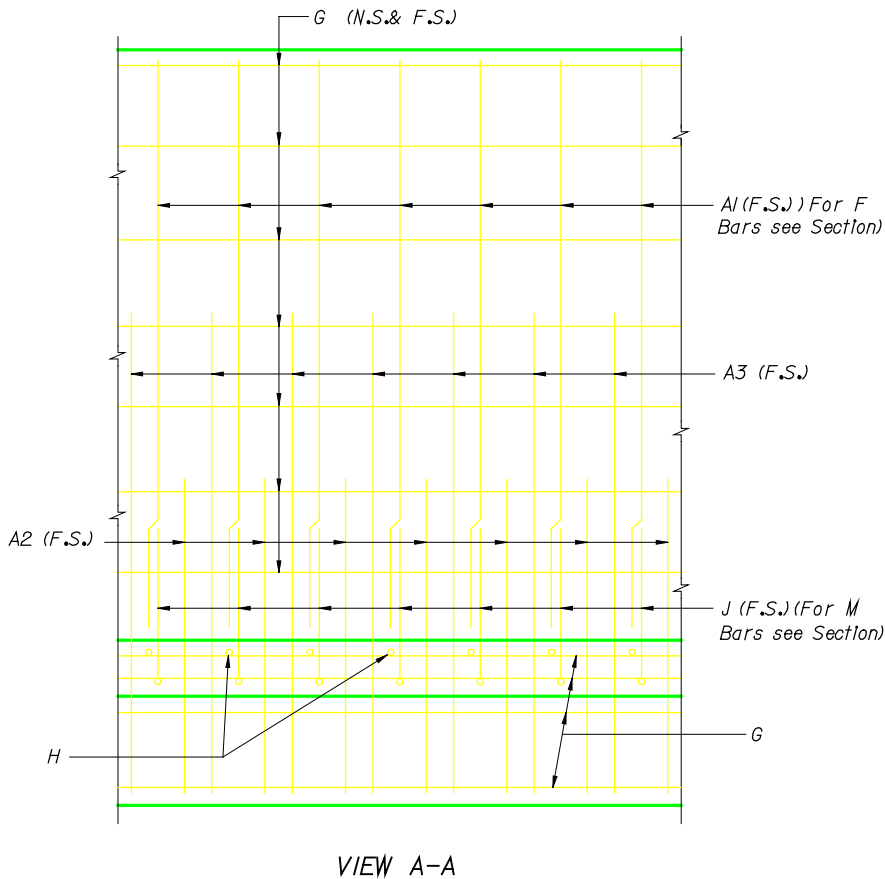
SHEET NO.

* RETAINING WALL DATA

WALL DIMENSIONS				SHEAR KEY DIMENSIONS			REINFORCING STEEL SCHEDULE																																		
H	B	D	T	E	F	G	BARS A1			BARS A2				BARS A3				** BARS D			BARS F			BARS G			BARS H				BARS J					BARS M				H	
							SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	C	LENGTH				
1.8	255	280	1195													#22	4	460	#13	24	1425	#13	18	7850	#13	25	335	1045	#13	35	235	1625	390	2015	#13	24	790	1410	1.8		
2.1	380	280	1420													#22	5	460	#13	24	1725	#13	22	7850	#13	25	335	1270	#13	35	235	1925	525	2450	#13	24	890	1510	2.1		
2.4	380	305	1625													#22	6	460	#13	24	2000	#13	24	7850	#13	32	255	1475	#13	38	215	2225	530	2755	#13	24	1095	1715	2.4		
2.7	455	305	1780	305	305	585				#13	27	295	1725			#22	6	460	#13	24	2300	#13	28	7850	#13	32	255	1630	#13	28	295	2525	615	3140	#13	24	1175	1795	2.7		
3.0	510	355	2005	305	305	635				#13	37	215	1500			#22	7	460	#13	24	2550	#13	30	7850	#13	42	195	1855	#13	38	215	2825	680	3505	#13	24	1345	1965	3.0		
3.4	560	355	2260	305	305	710				#16	25	320	1805			#22	8	460	#13	24	2950	#13	34	7850	#16	28	295	2110	#16	26	320	3225	745	3970	#13	24	1550	2170	3.4		
3.7	685	430	2820	305	305	840				#16	29	270	2055			#22	9	460	#13	24	3175	#13	40	7850	#16	28	295	2670	#16	30	270	3525	880	4405	#13	24	1985	2755	3.7		
4.0	915	430	3275	305	305	1120				#16	29	270	2160			#22	10	460	#13	24	3475	#13	44	7850	#16	28	295	3125	#16	30	270	3825	1165	4990	#13	24	2210	2980	4.0		
4.3	1065	510	3580	380	330	1295				#22	25	315	2285			#22	10	460	#13	24	3695	#13	46	7850	#16	37	220	3430	#22	26	315	4125	1325	5450	#13	24	2365	3135	4.3		
4.6	1220	510	4040	485	380	1450	#16	22	3995	#22	21	385	2390	#22	21	385	3300	#22	11	460	#13	24	3995	#13	50	7850	#16	37	220	3890	#22	22	385	1195	1490	2685	#13	24	2670	3440	4.6
4.9	1370	660	4495	405	330	1625	#16	20	4145	#22	19	425	2540	#22	19	425	3760	#22	12	460	#13	24	4145	#13	54	7850	#16	48	170	4345	#22	20	425	1625	1650	3275	#13	24	2975	4055	4.9
5.2	1675	815	5410	255	305	1930	#16	22	4290	#22	21	375	2995	#22	21	375	3910	#22	12	460	#13	24	4290	#13	60	7850	#22	44	185	5260	#22	22	375	2160	1965	4125	#13	24	3585	4665	5.2
5.5	1980	815	6350	305	305	2235	#16	19	4590	#22	18	450	3300	#22	18	450	4215	#22	13	460	#13	24	4590	#13	68	7850	#22	44	185	6200	#25	19	450	2665	2280	4945	#13	24	4220	5300	5.5
5.8	2285	815	7265	330	305	2565	#16	19	4890	#25	18	450	3810	#25	18	450	5945	#22	14	460	#13	24	4890	#13	74	7850	#22	44	185	7115	#32	19	450	2490	2595	5085	#13	24	4830	5910	5.8

QUANTITIES

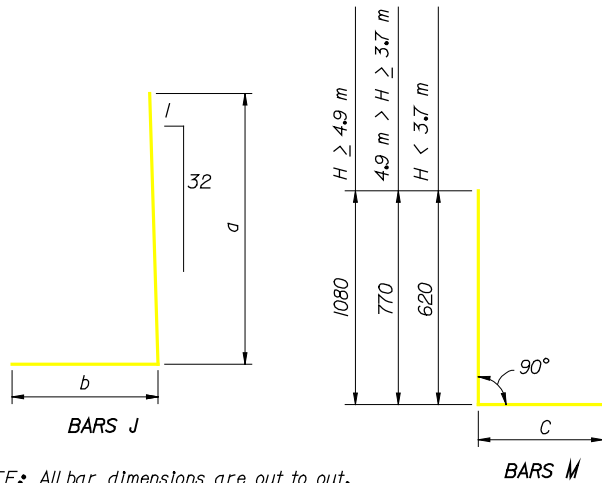
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.76	310	0.72	39
2.1	6.94	373	0.87	47
2.4	8.37	435	1.05	54
2.7	10.21	510	1.28	64
3.0	12.18	617	1.52	77
3.4	13.92	721	1.74	90
3.7	17.80	880	2.22	110
4.0	21.60	977	2.70	122
4.3	25.89	1338	3.24	167
4.6	29.21	1486	3.65	186
4.9	36.55	1649	4.57	206
5.2	48.12	2266	6.02	283
5.5	55.38	2535	6.92	317
5.8	62.45	3268	7.81	408



NOTE:

To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.

BENDING DIAGRAM



NOTE: All bar dimensions are out to out.

NOTES: Bars M are paired with Bars F and Bars A1 are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters (mm) unless otherwise noted.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
			98		

DRAWN BY	NAMES	DATES
SHM		12/93
JMD/NRK		12/93
JMD		12/93
NRK		12/93
APPROVED BY	AUG	

ENGINEER OF RECORD,
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO.

FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE:		DRAWING NO.
CASE IV (192 kPa MAX. BEARING PRESSURE) 1.8 m TO 5.8 m HEIGHT		1 of 1
PROJECT NAME:		INDEX NO.
		820

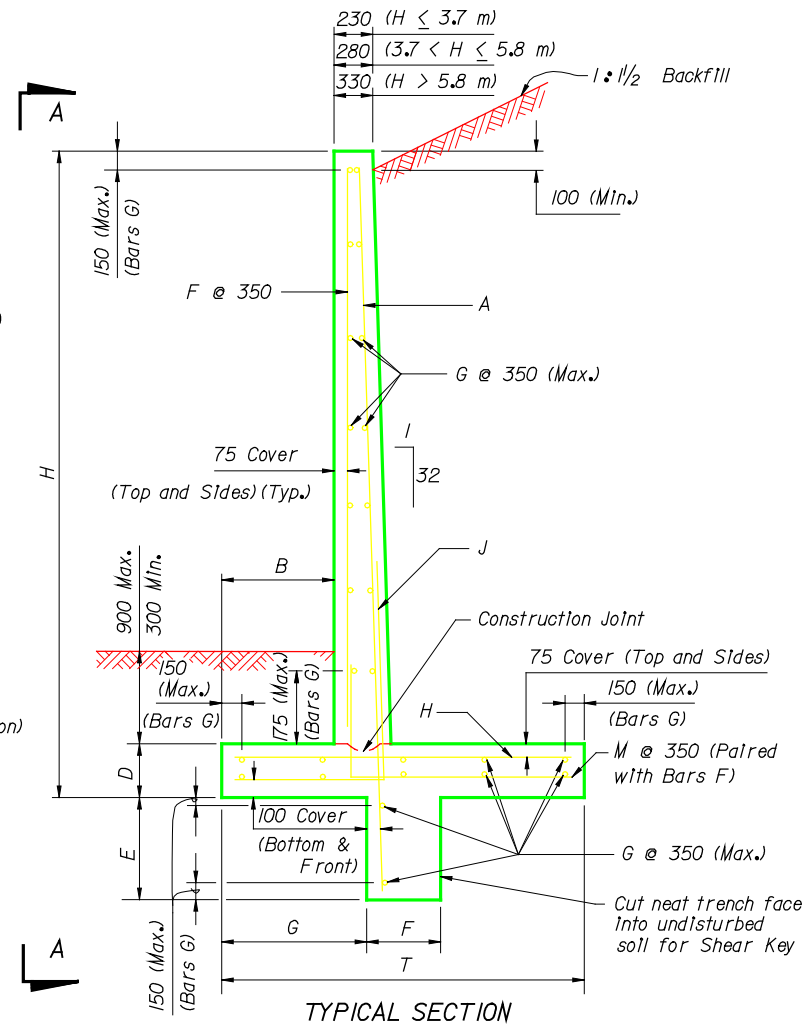
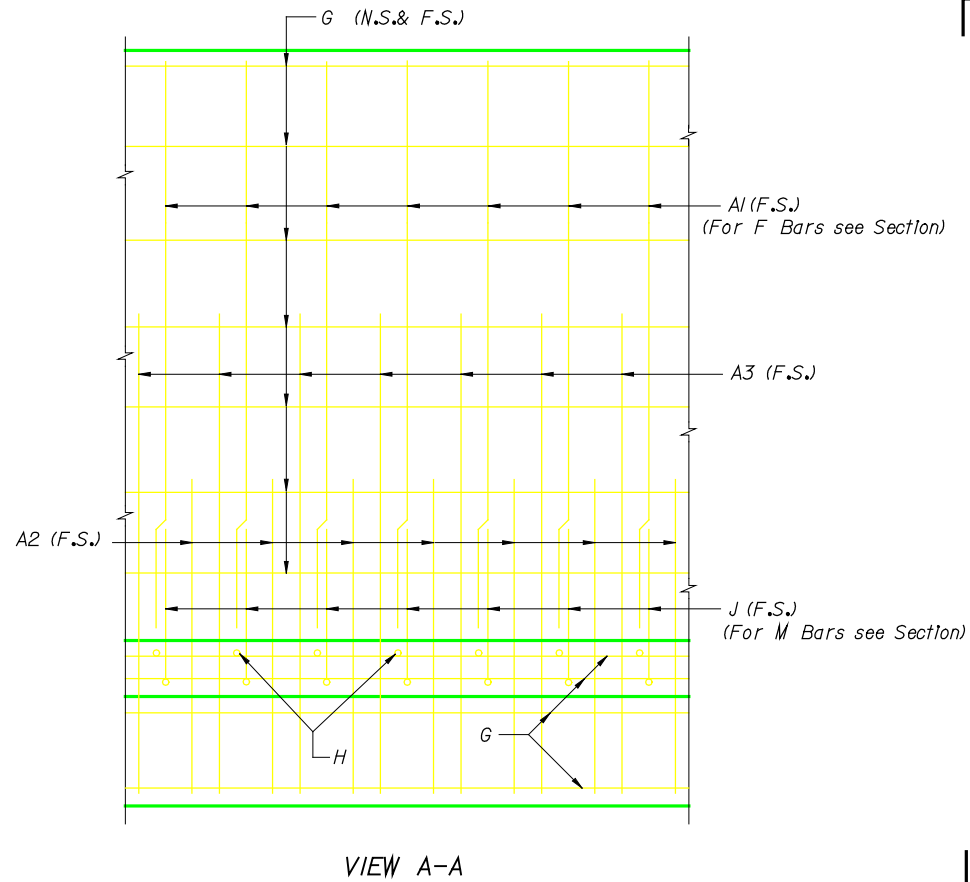
**** NOTE:** For placement details of Bars D see Standard Index No.800.

NOTE: The spacings shown are the maximum values allowed by design. These values shall be used for wall units shorter than 8 meters long. Units 8 meters long shall utilize the number of bars tabulated at equal spacings.

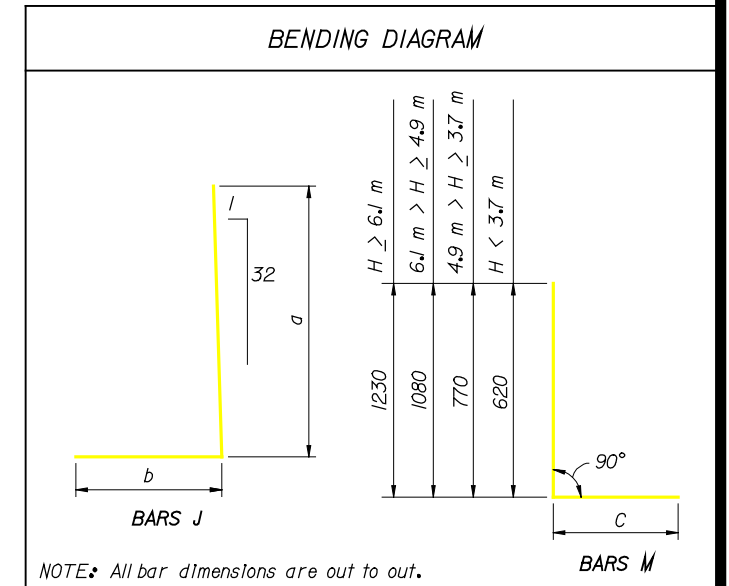
* RETAINING WALL DATA

* RETAINING WALL DATA																																									
WALL DIMENSIONS				SHEAR KEY DIMENSIONS			REINFORCING STEEL SCHEDULE																																		
H	B	D	T	E	F	G	BARS A1			BARS A2				BARS A3				** BARS D			BARS F			BARS G			BARS H				BARS J						BARS M				H
							SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	C	LENGTH				
1.8	255	280	1195													#22	4	460	#13	24	1425	#13	18	7850	#13	25	335	1045	#13	35	235	1625	390	2015	#13	24	790	1410	1.8		
2.1	380	280	1420													#22	5	460	#13	24	1725	#13	22	7850	#13	25	335	1270	#13	35	235	1925	525	2450	#13	24	890	1510	2.1		
2.4	380	305	1625													#22	6	460	#13	24	2000	#13	24	7850	#13	32	255	1475	#13	38	215	2225	530	2755	#13	24	1095	1715	2.4		
2.7	455	305	1780	305	305	585				#13	27	295	1725				#22	6	460	#13	24	2300	#13	28	7850	#13	32	255	1630	#13	28	295	2525	615	3140	#13	24	1175	1795	2.7	
3.0	510	355	2005	305	305	635				#13	37	215	1500				#22	7	460	#13	24	2550	#13	30	7850	#13	42	195	1855	#13	38	215	2825	680	3505	#13	24	1345	1965	3.0	
3.4	560	355	2160	305	305	710				#16	25	320	1805				#22	8	460	#13	24	2950	#13	34	7850	#16	28	295	2010	#16	26	320	3225	745	3970	#13	24	1450	2070	3.4	
3.7	610	430	2440	380	355	760				#16	29	270	2055				#22	9	460	#13	24	3175	#13	38	7850	#16	28	295	2290	#16	30	270	3525	805	4330	#13	24	1680	2450	3.7	
4.0	685	430	2590	430	355	890				#16	29	270	2160				#22	10	460	#13	24	3475	#13	40	7850	#16	30	270	2440	#16	30	270	3825	935	4760	#13	24	1755	2525	4.0	
4.3	760	510	2970	455	380	990				#22	25	315	2285				#22	10	460	#13	24	3695	#13	42	7850	#22	23	365	2820	#22	26	315	4125	1020	5145	#13	24	2060	2830	4.3	
4.6	915	510	3275	560	380	1145	#16	22	3995	#22	21	385	2390	#22	21	385	3300	#22	11	460	#13	24	3995	#13	46	7850	#22	24	340	3125	#22	22	385	1195	1185	2380	#13	24	2210	2980	4.6
4.9	1065	660	3580	535	380	1320	#16	20	4145	#22	19	425	2540	#22	19	425	3760	#22	12	460	#13	24	4145	#13	50	7850	#22	32	260	3430	#22	20	425	1625	1345	2970	#13	24	2365	3445	4.9
5.2	1220	815	4040	405	405	1475	#16	22	4290	#22	21	375	2995	#22	21	375	3910	#22	12	460	#13	24	4290	#13	52	7850	#22	43	190	3890	#22	22	375	2160	1510	3670	#13	24	2670	3750	5.2
5.5	1370	815	4520	535	405	1625	#16	19	4590	#22	18	450	3300	#22	18	450	4215	#22	13	460	#13	24	4590	#13	58	7850	#22	43	190	4370	#25	19	450	2665	1670	4335	#13	24	3000	4080	5.5
5.8	1525	815	4980	610	455	1805	#16	19	4890	#25	18	450	3810	#25	18	450	5945	#22	14	460	#13	24	4890	#13	62	7850	#22	43	190	4830	#32	19	450	2465	1835	4300	#13	24	3305	4385	5.8
6.1	1675	890	5510	610	455	2005	#22	19	5115	#25	18	450	3660	#25	18	450	4875	#22	14	460	#13	24	5115	#13	64	7850	#25	28	290	5360	#32	19	450	2565	2045	4610	#13	24	3685	4915	6.1
6.4	1980	890	6425	660	455	2310	#22	21	5415	#25	20	405	4065	#25	20	405	5285	#22	15	460	#13	24	5415	#13	73	7850	#25	28	290	6275	#32	21	405	2565	2355	4920	#13	24	4295	5525	6.4
6.7	2135	890	6885	760	455	2490	#22	19	5715	#32	18	445	4370	#32	18	445	5895	#22	16	460	#13	24	5715	#13	77	7850	#25	28	290	6735	#32	19	445	3125	2520	5645	#13	24	4600	5830	6.7
7.0	2440	965	7825	760	510	2795	#22	25	5940	#32	24	330	4775	#32	24	330	6300	#22	17	460	#13	24	5940	#13	85	7850	#25	31	265	7675	#32	25	330	3125	2835	5960	#13	24	5235	6465	7.0

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.76	310	0.72	39
2.1	6.94	373	0.87	47
2.4	8.37	435	1.05	54
2.7	10.21	510	1.28	64
3.0	12.18	617	1.52	77
3.4	13.64	714	1.71	89
3.7	16.83	837	2.10	105
4.0	19.72	902	2.47	113
4.3	23.79	1275	2.97	159
4.6	26.32	1428	3.29	179
4.9	32.27	1595	4.03	199
5.2	39.88	1956	4.98	245
5.5	44.44	2123	5.56	265
5.8	48.96	2721	6.12	340
6.1	58.60	2821	7.32	353
6.4	66.49	3300	8.31	413
6.7	71.35	3848	8.92	481
7.0	83.99	5036	10.50	630



To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars AI are paired with Bars J.
Work this Drawing with Standard Index No. 800.
All dimensions are in millimeters unless otherwise noted.

REVISIONS							NAMES	DATES
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	SHM	12/93
			98			CHECKED BY	JMD/NRK	12/93
						DESIGNED BY	JMD	12/93
						CHECKED BY	NRK	12/93
						APPROVED BY	AJG	

ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO:



FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.
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SHEET TITLE:
CASE IV (239 kPa MAX. BEARING
PRESSURE) 1.8 m TO 7.0 m HEIGHT

PROJECT NAME:

AWING NO.

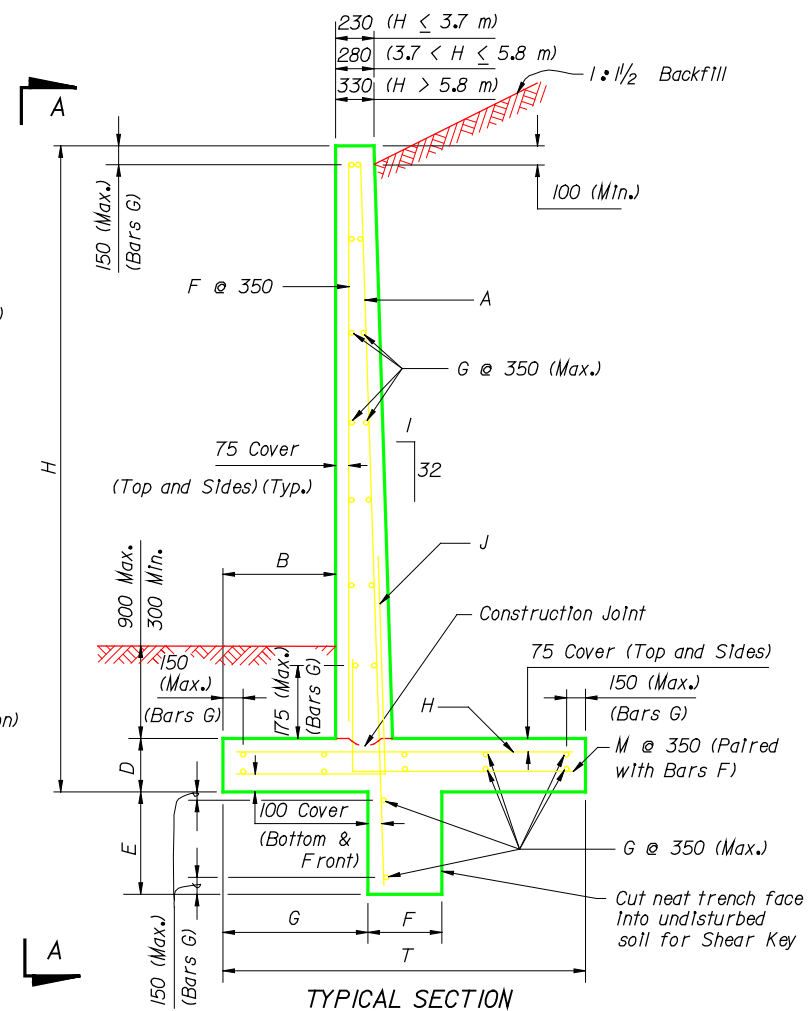
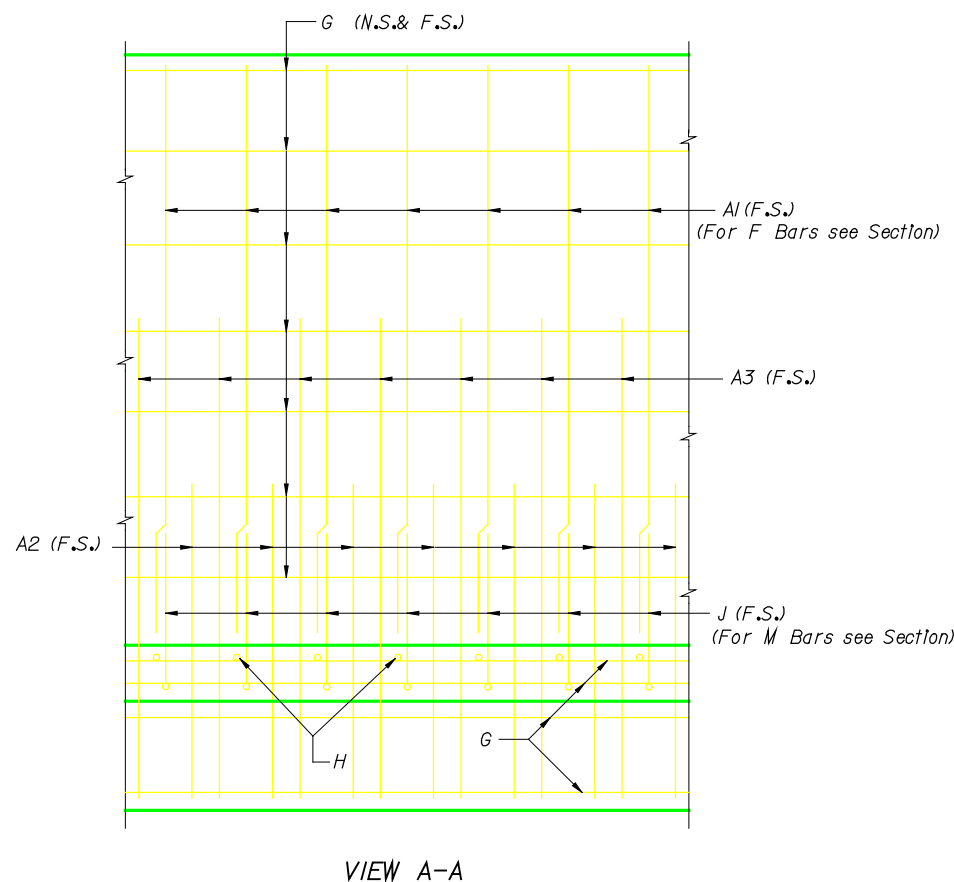
of 1

INDEX NO.

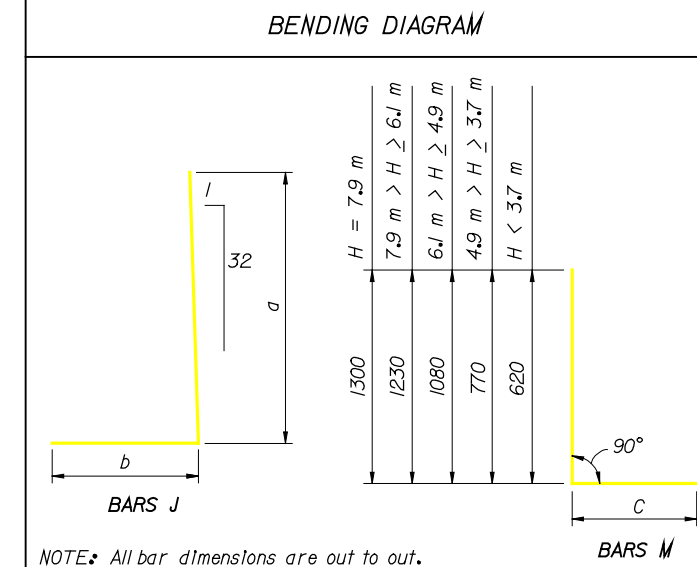
82/

* RETAINING WALL DATA																																									
WALL DIMENSIONS				SHEAR KEY DIMENSIONS			REINFORCING STEEL SCHEDULE																																		
H	B	D	T	E	F	G	BARS A1			BARS A2				BARS A3				** BARS D			BARS F			BARS G			BARS H				BARS J					BARS M				H	
							SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	LENGTH	SIZE	NO.	SPACING	LENGTH	SIZE	NO.	SPACING	a	b	LENGTH	SIZE	NO.	C	LENGTH				
1.8	255	280	1195													#22	4	460	#13	24	1425	#13	18	7850	#13	25	335	1045	#13	35	235	1625	390	2015	#13	24	790	1410	1.8		
2.1	380	280	1420													#22	5	460	#13	24	1725	#13	22	7850	#13	25	335	1270	#13	35	235	1925	525	2450	#13	24	890	1510	2.1		
2.4	380	305	1625													#22	6	460	#13	24	2000	#13	24	7850	#13	32	255	1475	#13	38	215	2225	530	2755	#13	24	1095	1715	2.4		
2.7	455	305	1780	305	305	585				#13	27	295	1725			#22	6	460	#13	24	2300	#13	28	7850	#13	32	255	1630	#13	38	295	2525	615	3140	#13	24	1175	1795	2.7		
3.0	510	355	2005	305	305	635				#13	37	215	1500			#22	7	460	#13	24	2550	#13	30	7850	#13	42	195	1855	#13	38	215	2825	680	3505	#13	24	1345	1965	3.0		
3.4	560	355	2160	305	305	710				#16	25	320	1805			#22	8	460	#13	24	2950	#13	34	7850	#13	35	235	2010	#16	26	320	3225	745	3970	#13	24	1450	2070	3.4		
3.7	610	430	2440	380	355	760				#16	29	270	2055			#22	9	460	#13	24	3175	#13	38	7850	#13	35	235	2290	#16	30	270	3525	805	4330	#13	24	1680	2450	3.7		
4.0	685	430	2590	430	355	890				#16	29	270	2160			#22	10	460	#13	24	3475	#13	40	7850	#13	38	215	2440	#16	30	270	3825	935	4760	#13	24	1755	2525	4.0		
4.3	685	510	2895	455	330	915				#22	25	315	2285			#22	10	460	#13	24	3695	#13	42	7850	#16	37	220	2745	#22	26	315	4125	945	5070	#13	24	2060	2830	4.3		
4.6	760	510	2970	610	380	990	#16	22	3995	#22	21	385	2390	#22	21	385	3300	#22	11	460	#13	24	3995	#13	44	7850	#16	42	195	2820	#22	22	385	1195	1030	2225	#13	24	2060	2830	4.6
4.9	915	660	3275	535	380	1170	#16	20	4145	#22	19	425	2540	#22	19	425	3760	#22	12	460	#13	24	4145	#13	48	7850	#16	48	170	3125	#22	20	425	1625	1195	2820	#13	24	2210	3290	4.9
5.2	1065	815	3580	455	355	1320	#16	22	4290	#22	21	375	2995	#22	21	375	3910	#22	12	460	#13	24	4290	#13	50	7850	#22	44	185	3430	#22	22	375	2160	1355	3515	#13	24	2365	3445	5.2
5.5	1065	815	3910	610	380																																				

QUANTITIES				
H	PER 8 m UNIT		PER LIN. METER	
	CONCRETE m ³	STEEL kg	CONCRETE m ³	STEEL kg
1.8	5.76	310	0.72	39
2.1	6.94	373	0.87	47
2.4	8.37	435	1.05	54
2.7	10.21	510	1.28	64
3.0	12.18	617	1.52	77
3.4	13.64	696	1.71	87
3.7	16.83	817	2.10	102
4.0	19.72	880	2.47	110
4.3	23.30	1230	2.91	154
4.6	25.22	1354	3.15	169
4.9	30.66	1466	3.83	183
5.2	36.86	1873	4.61	234
5.5	40.59	1993	5.07	249
5.8	43.08	2523	5.38	315
6.1	52.08	2759	6.51	345
6.4	57.30	3128	7.16	391
6.7	62.34	3693	7.79	462
7.0	70.10	4811	8.76	601
7.3	75.47	4942	9.43	618
7.6	84.01	5684	10.50	711
7.9	93.53	6337	11.69	792



NOTE:
To accommodate the variable height of a wall unit, vertical bars may be field cut to fit and the number of horizontal Bars G required by the highest wall dimension within an 8 m unit shall be equally spaced at each end of the unit.



NOTES: Bars M are paired with Bars F and Bars AI are paired with Bars J.

Work this Drawing with Standard Index No. 800.

All dimensions are in millimeters unless otherwise noted.

REVISIONS						NAMES	DATES
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		
			98			DRAWN BY	<i>SHM</i> <i>12/93</i>
						CHECKED BY	<i>JMD/NRK</i> <i>12/93</i>
						DESIGNED BY	<i>JMD</i> <i>12/93</i>
						CHECKED BY	<i>NRK</i> <i>12/93</i>
						APPROVED BY	A/G

ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO:



FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.
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SHEET TITLE: CASE IV (287 kPa MAX. BEARING PRESSURE) 1.8 m TO 7.9 m HEIGHT

PROJECT NAME

DRAWING NO.

1 of 1

INDEX NO.

822

DATE: " " TIME: s:\structures\software\structures\addl\standards\standards\825.dgn

GENERAL NOTES

1. CONSTRUCTION SPECIFICATIONS: Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", (199_) and supplements thereto.

2. DESIGN SPECIFICATIONS: Design shall be in accordance with the following specifications:

AASHTO "Standard Specifications for Highway Bridges", 16th Edition, and applicable Interim specifications.

Florida Department of Transportation "Structures Design Guidelines".

"In situ Soil Improvement Techniques" AASHTO-AGC-ARTBA Task Force 27 Ground Modification Techniques, January 1990.

3. MATERIAL STRESSES: All allowable stresses shall be in accordance with the current AASHTO Specifications for all the materials shown on the plans.

a. Concrete Compressive Strength: Class_____ f'c = _____ MPa min.

b. Reinforcing Steel: ASTM A615/A615M-96, Grade 420.

4. DESIGN METHOD: Load Factor, except that internal and external stability shall be designed for service loads.

The following minimum factors of safety shall be utilized in the design of the walls:

Overturning	F.S. = 2.0
Sliding	F.S. = 1.5
Bearing Capacity	F.S. = 2.5
Internal Pullout	F.S. = 1.5 (Allowable Deflection = 19 mm)
Overall Stability	F.S. = 1.5
Steel	0.55 Fy (Straps)
	0.47 Fy (Wire Mat or Grid)
Plastics	0.19 Fy (HDPE) (Permanent Walls)
	0.29 Fy (Polyester and HDPE) (Temporary Walls)
Steel Connections	See AASHTO Specifications

5. DESIGN LOADS: Live Loading: MS18 Sidewalk Loading: 4.1kN per square meter

6. For Typical Sections through roadway, see Roadway Plans.

7. Concrete facing panel surface treatment shall be _____

8. Longitudinal dimensions shown in the plans are measured along the exterior face of the wall. Elevations shown are to the top of coping, top of leveling pad or top of wall footing.

9. Leveling Pad: The leveling pad shall be 500 mm min. below final ground line.

10. A structural extension of the connection of the wall panel to the soil reinforcement shall be used whenever necessary to avoid the cutting or excessive skewing (greater than 15 degrees) of the soil reinforcements at piles or other obstructions.

11. The reinforcing straps and fasteners (if required) for the abutment backwall shall be designed and furnished by the MSE wall company. The straps shall be designed to resist a horizontal load of _ kN per meter of backwall width. The cost of the straps and fasteners is to be included in the cost of the Retaining Wall System. Installation shall be by the bridge contractor.

12. These walls are to be designed for the settlements noted for each wall. Long term settlement is measured from the beginning of wall construction.

GEOTECHNICAL INFORMATION

	Reinforced Soil & Random Backfill	Loose Fine Sand	Firm Fine Sand	Loose Clayey Fine Sand	Firm Clayey Fine Sand
Depth Below Existing Ground Line for:					
Walls 1 & 2	-	0-2 m	2 - 10 m	10-12 m	-
Walls 3 & 4	-	0-3 m	3 - 8 m	-	8-12 m
Unit Weight:	17.3 kN/m ³ Moist Weight In-Place	18.5 kN/m ³	18.5 kN/m ³	18.9 kN/m ³	17.3 kN/m ³
Cohesion:	0	0	0	19.2 kN/m ²	19.2 kN/m ²
Internal Friction:	30°	30°	32°	18°	18°

If the unit weight and/or ϕ angle of the fill proposed by the Contractor differs from the above, the Project Engineer shall contact both the District Geotechnical Engineer and the Wall Designer for a possible redesign.

Design Based Internal Friction Angle = 30 degrees (Sand Backfill)
34 degrees (Limerock) (Dade, Monroe Co.)

Refer to Plan and Elevation sheets of individual walls for minimum reinforcement strip/mesh length, allowable bearing capacities, minimum wall embedment and anticipated long term and differential settlements.

SOIL REINFORCEMENT LENGTHS FOR EXTERNAL STABILITY (0.7h):

Wall Height (meter)										
* Reinforcement Length (meter)										
Bearing Pressure (kPa)										

*The reinforcement strap lengths shown in this column are minimum lengths required for external stability. The proprietary wall companies are responsible for internal stability of the retaining walls. The reinforcement lengths used in the construction of the retaining walls shall be the longer of that required for internal or external stability.

The applicable wall systems for each wall location are listed below. Wall systems not listed have been deemed unacceptable for use at that specific site due to the environment, excessive settlement etc. and shall not be used, and will not be considered for future substitution during construction.

Wall No. _____	Environment: _____	Aggressive
	Long Term Settlement	_____ mm
	Short Term Settlement	_____ mm
	Differential Settlement	_____ mm/m


The following wall systems are acceptable for use at this location:


INSTRUCTIONS TO DESIGNER:

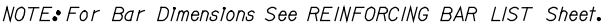
Fill in missing values and add or delete notes as applicable. List each wall separate and show the environment, settlement values and applicable wall systems for each site.

Values shown for soil properties are an example, and need to be revised, based on soil conditions for this particular project.

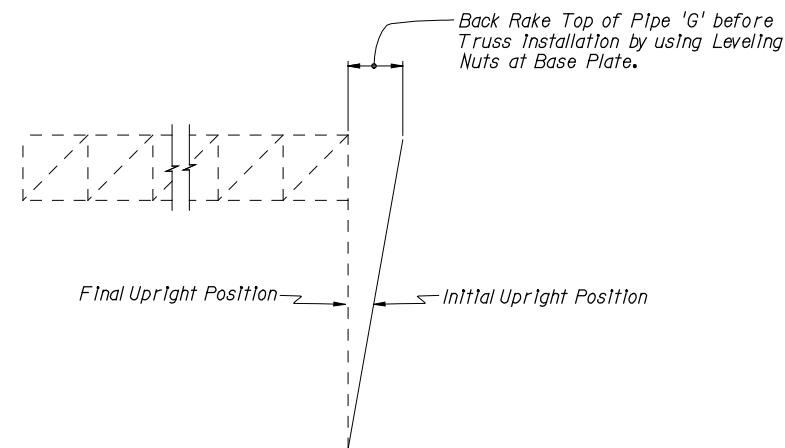
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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY					
			98			CHECKED BY					
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						APPROVED BY					
							ROAD NO. _____ COUNTY _____ PROJECT NO. _____		PROJECT NAME: _____		INDEX NO. S-825

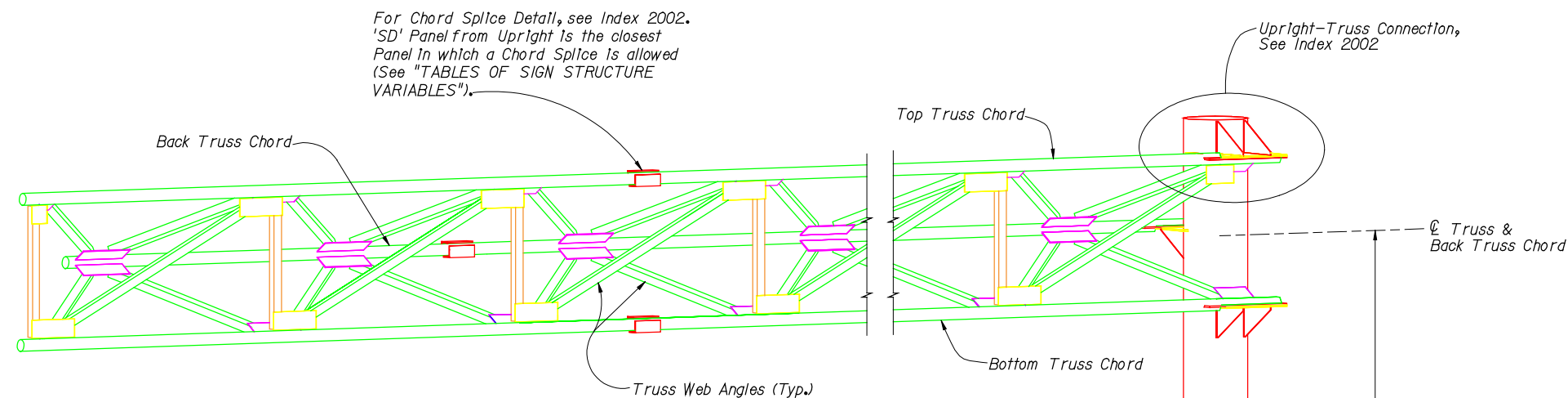
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DATE	BY	DESCRIPTION			DATE	BY	DESCRIPTION			DRAWN BY	NAMES	DATES	<div>STRUCTURES DESIGN OFFICE CENTRAL OFFICE 605 Suwannee Street, MS 33 Tallahassee, Florida 32399-0450</div>			<div><div>STRUCTURES DESIGN OFFICE</div></div>			APPROACH SLABS		1 of 1	



SHEET TITLE:	DRAWING NO.
STANDARD BAR BENDING DETAILS	1 of 1
PROJECT NAME:	INDEX NO.
	1300



CAMBER DIAGRAM



CANTILEVER SIGN STRUCTURE NOTES

1) Sign Structure Materials shall be as follows:

Upright & Chords (Steel Pipe) → API-5L-X42 (289 MPa yield) or ASTM A500 Grade B

Webs and Splines (Steel Angles) → ASTM A709M Grade 250

Steel Plates → ASTM A709M Grade 250

Weld Metal → E70XX

Bolts (except Anchor Bolts) → ASTM F568 Class 4.6 (see Note)

Anchor Bolts → ASTM F1554 Grade 380

Nuts for Anchor Bolts → ASTM A563M Class 8S or 8S3

Washers for Anchor Bolts → ASTM F436M Type I

Note - All Bolts (except Anchor Bolts) shall have Single Self-Locking Nuts or, in lieu thereof, regular nuts with a galvanized 'Palnut' locking nut manufactured by TRW, installed in accordance with the manufacturer's recommendations. Anchor Bolts shall have Double nuts.

2) Reinforcing Steel shall be ASTM A615M-96, Grade 420.

3) Concrete shall be Class IV with a minimum 28-day compressive strength of 38 MPa for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 35 MPa and shall meet the requirements of Section 934.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition)

6) All Steel Items shall be galvanized as follows:

All Nuts, Bolts and Washers → ASTM A153 Class C or D depending on size

All other steel items → ASTM A123

7) The Structure must be assembled after galvanizing and prior to shipment to the site to assure fit up. It may be disassembled for shipping.

8) The Design Wind Speed is in conformance with the "Plans Preparation Manual," (current edition).

9) Alternate Designs for this Structure are not allowed.

10) Shop Drawings for this Structure are required and fabrication shall not begin until these Shop Drawings are approved. Shop Drawings shall include the Contractor's field verification of all Upright heights and foundation elevations necessary to insure minimum vertical clearances as per traffic plans. Shop Drawings shall also include anchor bolt orientation with respect to ℄ Truss and the direction of traffic.



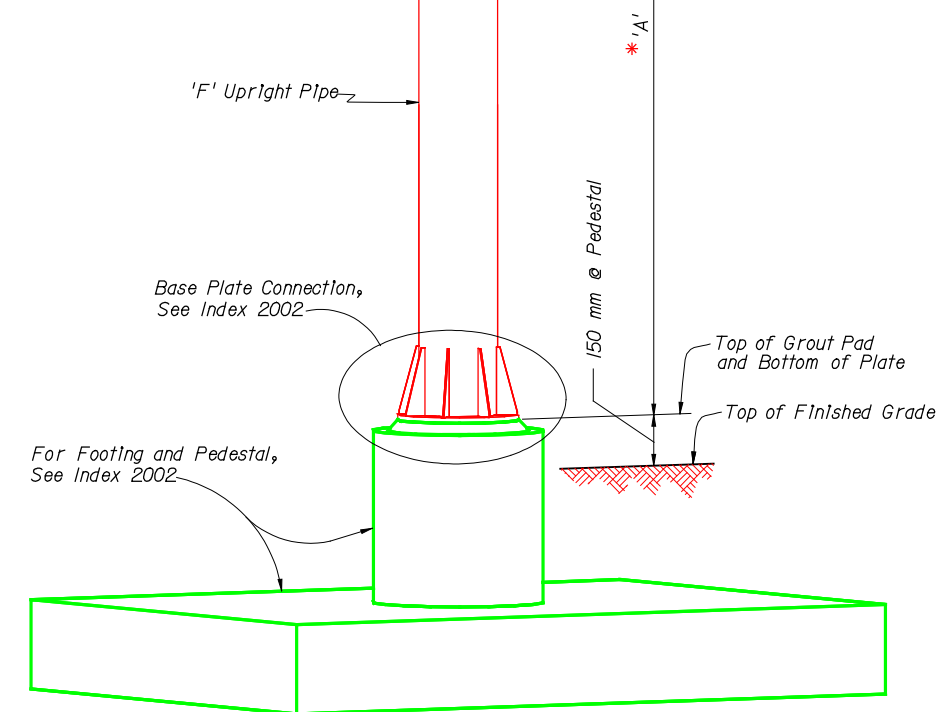
11) The foundation for the Sign Structure shall be constructed in accordance with Section 455 of the Specifications except that no payment for the foundation shall be made under Section 455. The cost of providing the foundation shall be included in the pay item for providing the complete Sign Structure. Payment for any incidental items incurred in furnishing and installing this Sign Structure shall be included in the pay item for providing the complete Sign Structure. The backfill must be in place prior to the installation of the Sign Panels and may not be removed or reduced in height without prior approval of the Engineer.

12) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 2 mm, prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 13 mm.

13) See Elevation Drawing for size and location of Sign Panel. Sign Panels shall be aluminum.

14) Provide the back rake as indicated on the Camber Diagram by adjusting the leveling nuts beneath the base plate after placement of the Upright and prior to installation of the Truss.

15) Splines shall be located a minimum distance of 2 Truss Panel lengths apart. The number and location of Splines are at the Contractor's discretion except for the limitation noted on the Isometric View on this sheet.



ISOMETRIC VIEW

*NOTE: Contractor shall verify these Dimensions prior to Fabrication of Upright.

NOTE: Work this Standard with Structures Standard Index Nos. 2002, 2003 & S-2004.

NOTE: See 'TABLES OF SIGN STRUCTURE VARIABLES' for referenced dimensions, sizes and quantities.

NOTE: See Roadway Index Drawing 11037 and 17505 for information on sign connection, fabrication and installation of lighting.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
10-99	JP	Revised Note 11.	98R		

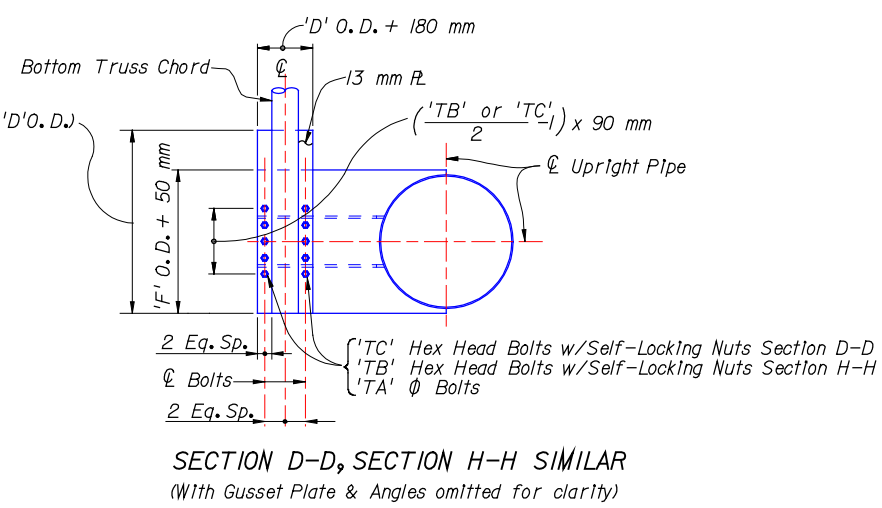
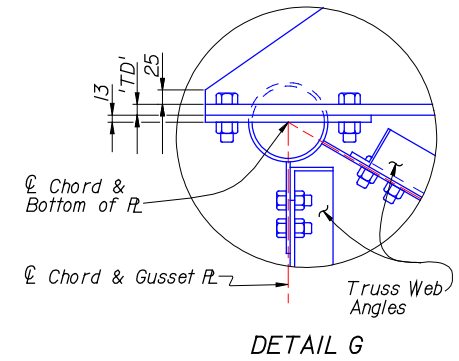
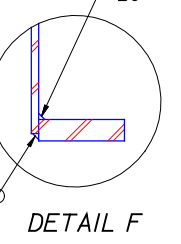
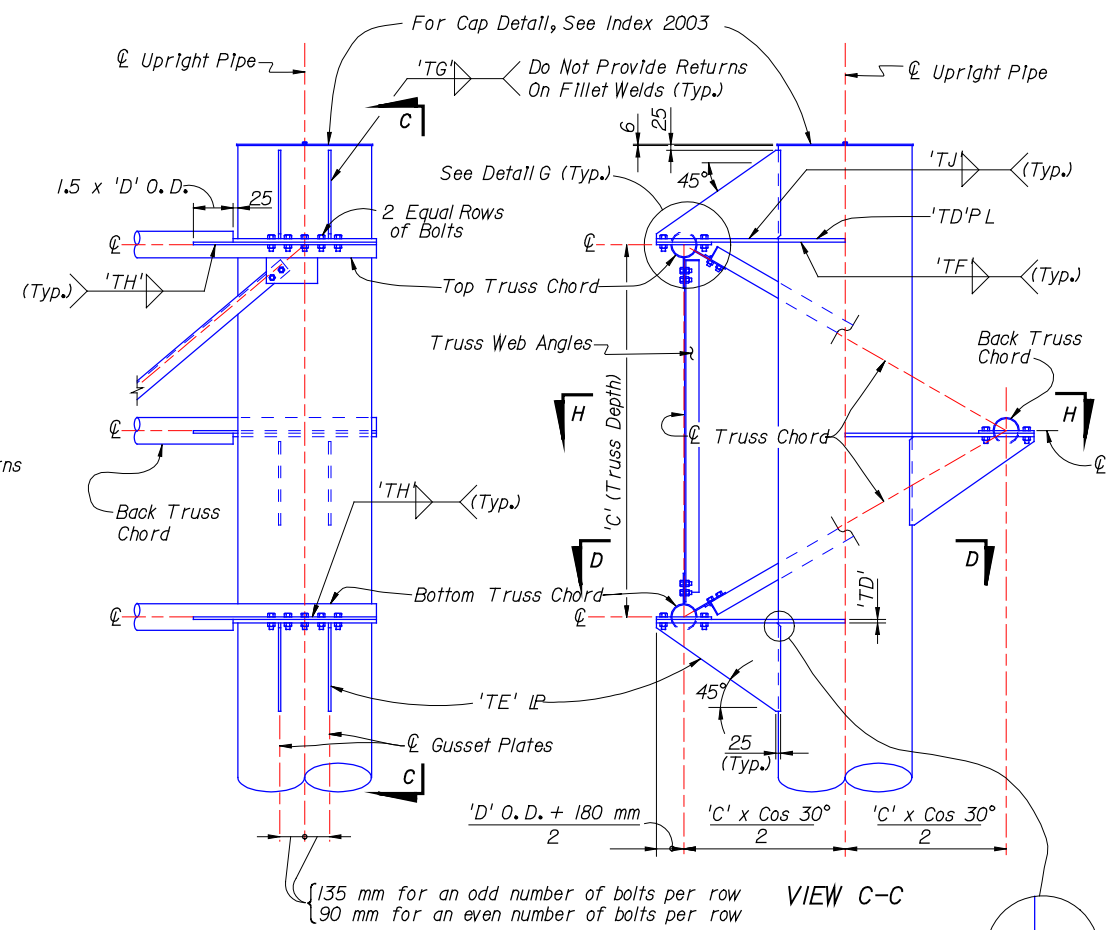
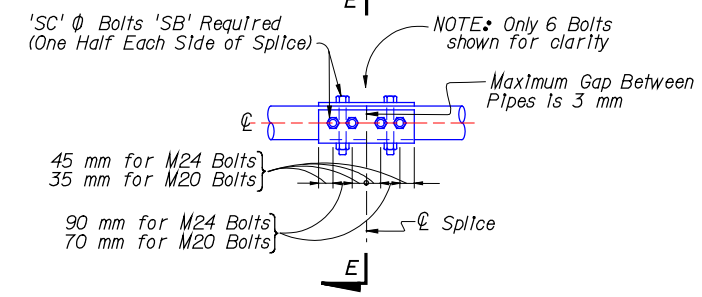
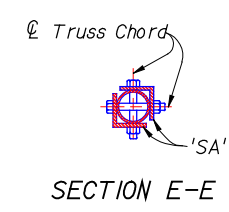
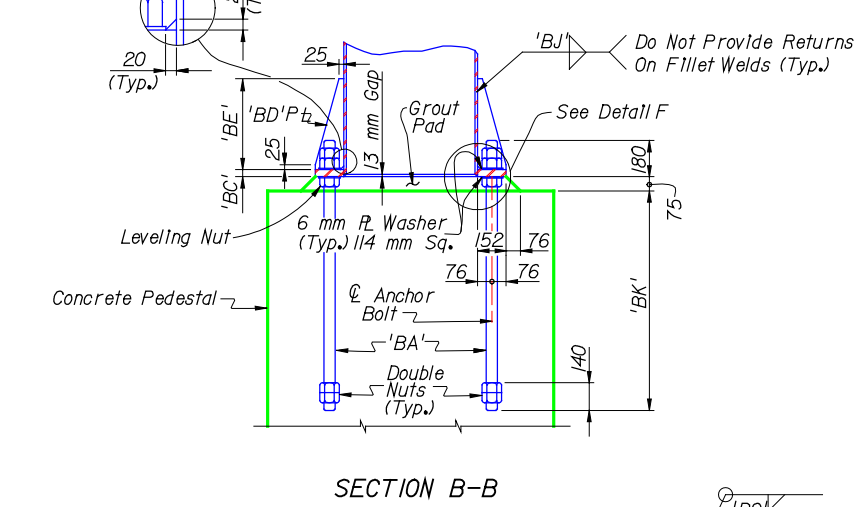
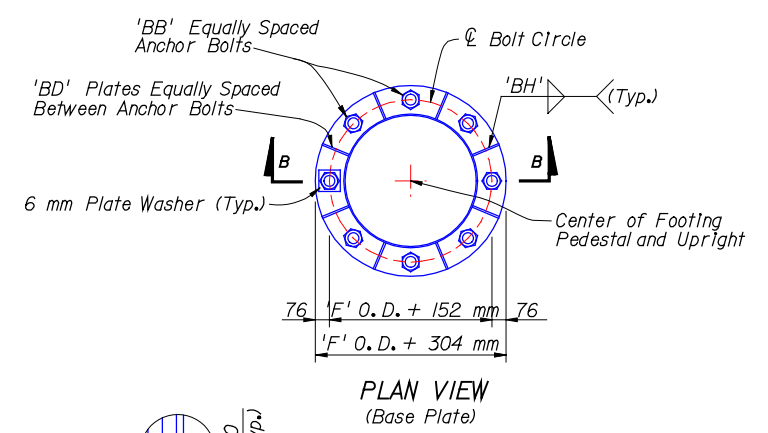
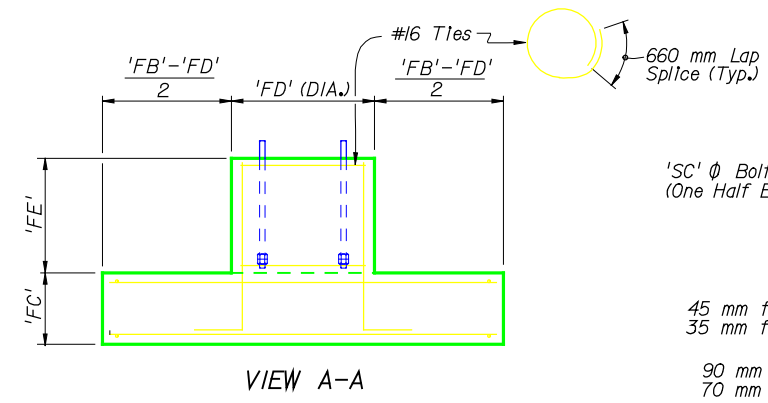
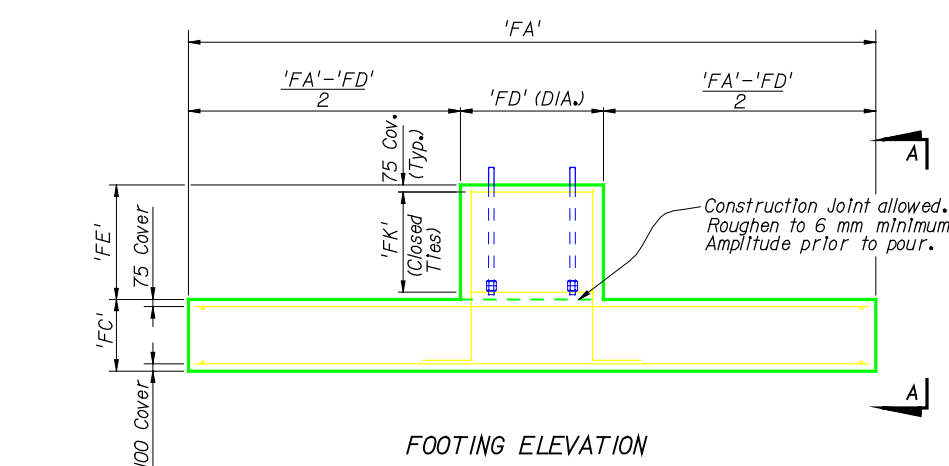
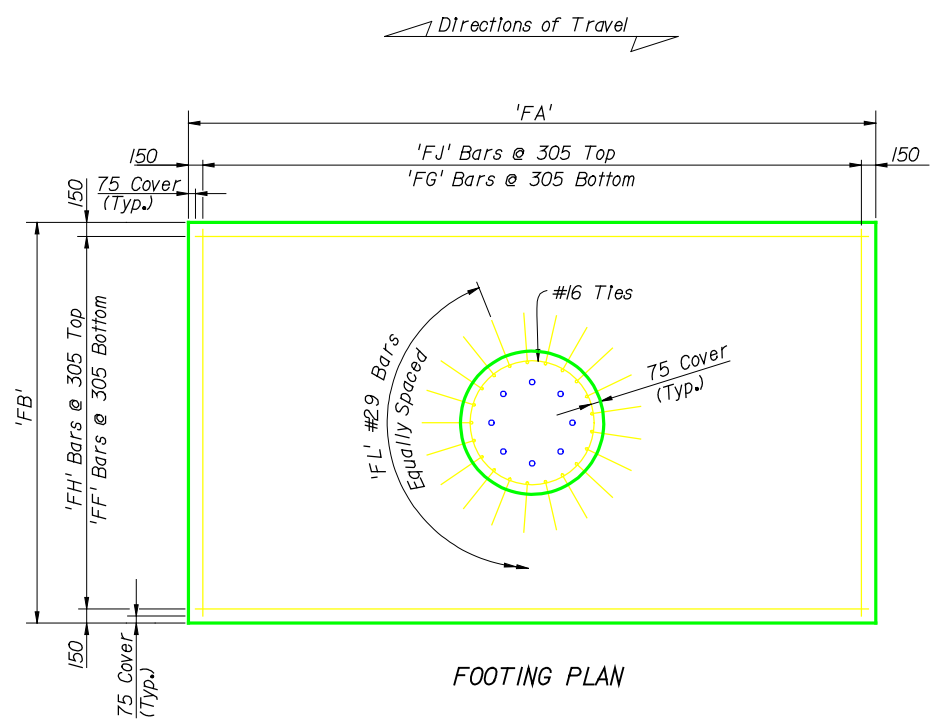
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CHECKED BY	WEH	3-90
DESIGNED BY	MHA	3-90
CHECKED BY	MHA	3-90
CHECKED BY	REN	3-90
APPROVED BY	REN	

ENGINEER OF RECORD,
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

LOGO.

FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

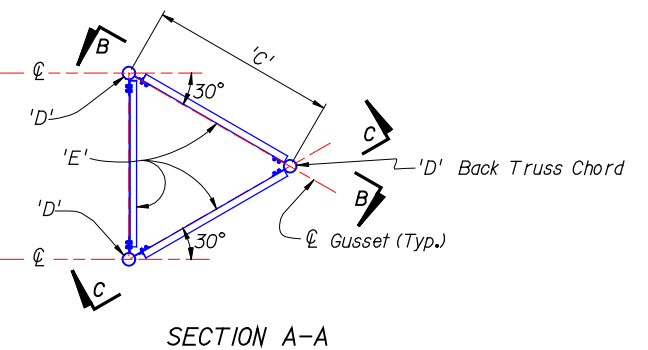
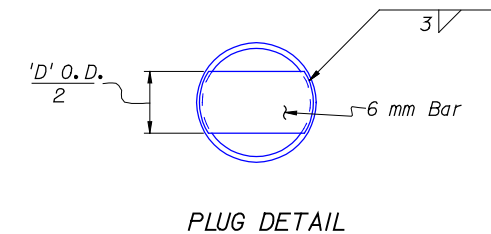
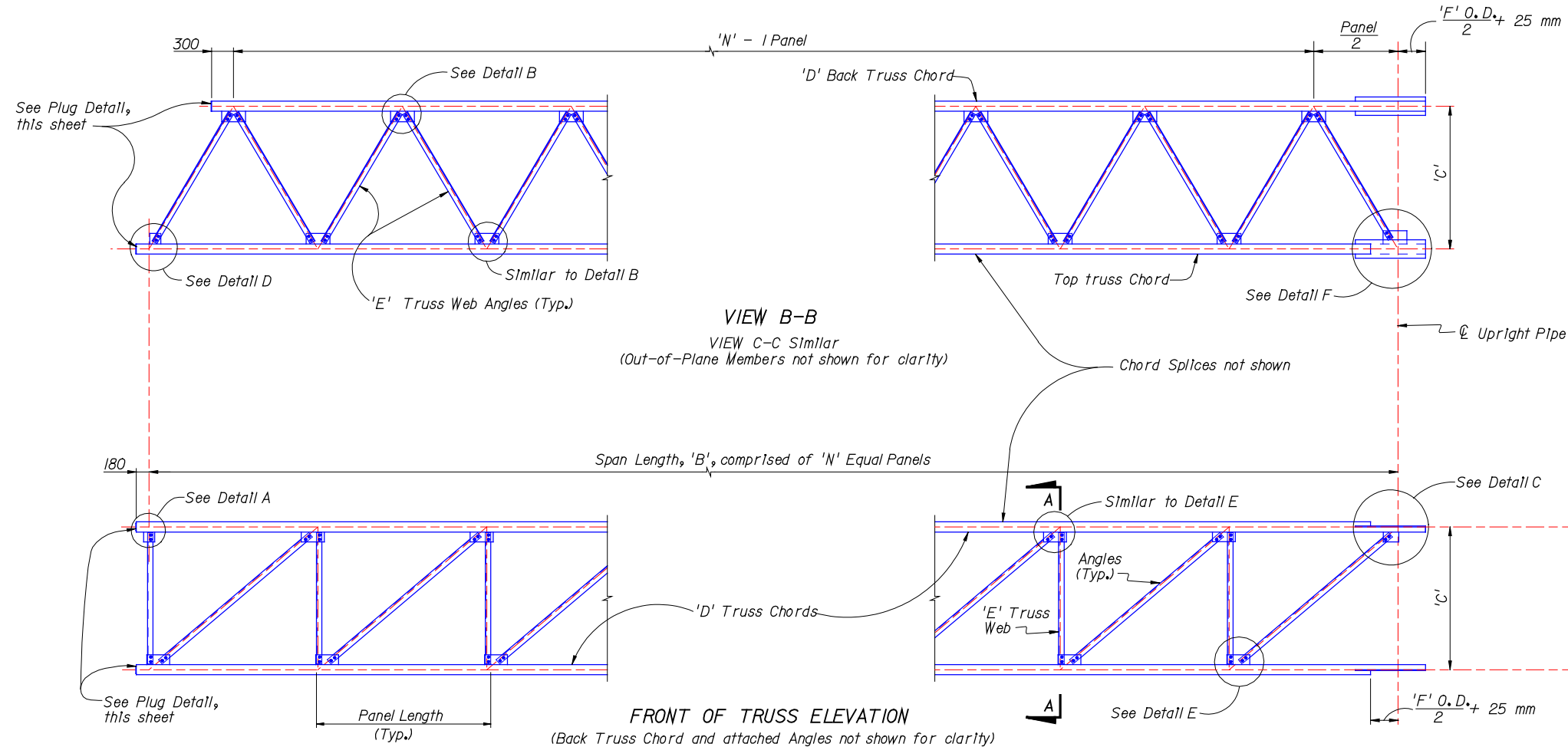
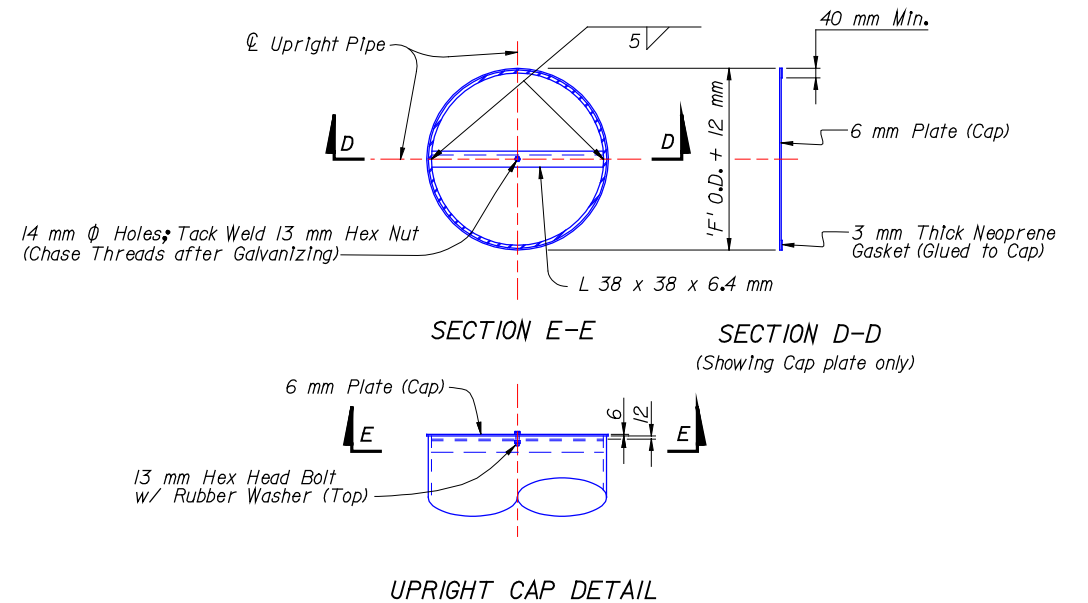
SHEET TITLE:	CANTILEVER SIGN STRUCTURE NOTES, CAMBER, ISOMETRIC VIEW	DRAWING NO.	1 of 1
PROJECT NAME:		INDEX NO.	2001



NOTE: All dimensions are in millimeters (mm), except as noted.
NOTE: Work this Standard with Standard Index Nos. 2001, 2003 & S-2004.
NOTE: See 'TABLE OF SIGN STRUCTURE VARIABLES' for referenced dimensions, sizes and quantities.

DATE: 11/11/2002 TIME: 10:00 AM


REVISIONS				DRAWING NO.			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY
			98				
DRAWN BY: REN				ENGINEER OF RECORD: MHA			
CHECKED BY: MHA				STRUCTURES DESIGN OFFICE			
DESIGNED BY: REN				CENTRAL OFFICE			
CHECKED BY: REN				605 Suwannee Street, MS 33			
APPROVED BY: REN				Tallahassee, Florida 32399-0450			
ROAD NO.				COUNTY			
PROJECT NO.				PROJECT NAME:			
CANTILEVER SIGN STRUCTURE CONNECTION DETAILS				1 of 1			
2002							



NOTE: Work this Standard with Standard Index Nos. 2001, 2002 & S-2004.

NOTE: See 'TABLES OF SIGN STRUCTURE VARIABLES' for referenced dimensions, sizes and quantities.

NOTE: All dimensions are in millimeters (mm), except as noted.

REVISIONS						NAMES	DATES	ENGINEER OF RECORD: STRUCTURES DESIGN OFFICE CENTRAL OFFICE 605 Suwannee Street, MS 33 Tallahassee, Florida 32399-0450	LOGO.	 FLORIDA DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN OFFICE	SHEET TITLE:		DRAWING NO.:
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	8-89				CANTILEVER SIGN STRUCTURE TRUSS ELEVATION		1 of 1
			98			CHECKED BY	8-89						
						DESIGNED BY	8-89						
						CHECKED BY	8-89						
						APPROVED BY	REN			PROJECT NAME:	INDEX NO.:		
											2003		

DATE: "H" TIME: s:\03\structures\materials\structures\addl\03standard\std02004s.dgn

TABLE OF SIGN STRUCTURE VARIABLES

TABLE OF SIGN STRUCTURE VARIABLES																																
SIGN NO.	STATION	DIMENSIONS			NO. OF PANELS	MEMBER SIZES			BACKRAKE	GUSSET PLATES									TRUSS CONNECTION								SPLICE					
		A	B	C		N	D (CHORD)	E (WEB)		F (UPRIGHT)	G	GA	GB	GC	GD	GE	GF	GG	GH	GJ	GK	TA	TB	TC	TD	TE	TF	TG	TH	TJ	SA	SB

TABLE OF SIGN STRUCTURE VARIABLES (CONT.)

SIGN NO.	BASE CONNECTION									ANCHOR BOLT EMBEDMENT		FOOTING DIMENSIONS					FOOTING REINFORCING				PEDESTAL REINFORCING		ESTIMATED QUANTITIES		
	BA		BC	BD	BE	BF	BG	BH	BJ	BK		FA	FB	FC	FD	FE	FF	FG	FH	FJ	FK	FL	Concrete (m ³)	Reinf. Steel (kg)	Excavation (m ³)

FOUNDATION NOTES:

1) Design based on Borings taken ____ sealed by ____

2) Assumptions and Values used in design:

- Cohesionless / Cohesive Soil (Fine Sand / Clay)
- Soil Layer Thickness = ____ m
- Soil Friction Angle = ____ Degrees
- Soil Weight = ____ kN/m³
- Design Water Table Is ____ meters below surface.

NOTE: Design Wind Speed = ____ km/h

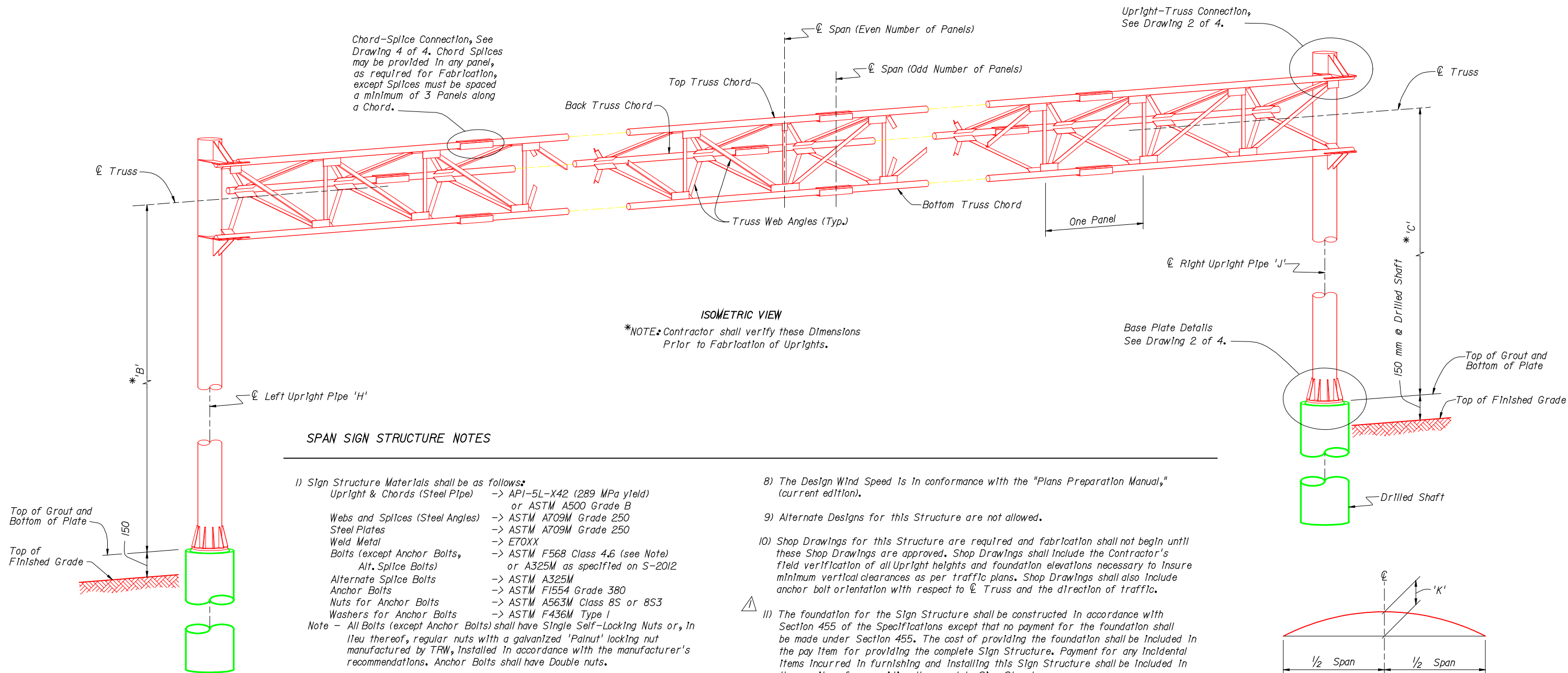
NOTE: Work this Semi-Standard with Standard Index Nos. 2001, 2002 & 2003.

REVISIONS										DRAWN BY		NAMES	DATES	ENGINEER OF RECORD.	LOGO.	FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:					DRAWING NO.	
DATE	BY	DESCRIPTION			DATE	BY	DESCRIPTION			CHECKED BY						STRUCTURES DESIGN OFFICE			TABLES OF SIGN STRUCTURE VARIABLES					1 of 1	
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										CHECKED BY															
										APPROVED BY														S-2004	

ROAD NO.

COUNTY

PROJECT NO.



SPAN SIGN STRUCTURE NOTES

1) Sign Structure Materials shall be as follows:

- Upright & Chords (Steel Pipe) \rightarrow API-5L-X42 (289 MPa yield) or ASTM A500 Grade B
- Webs and Splices (Steel Angles) \rightarrow ASTM A709M Grade 250
- Steel Plates \rightarrow ASTM A709M Grade 250
- Weld Metal \rightarrow E70XX
- Bolts (except Anchor Bolts, Alt. Splice Bolts) \rightarrow ASTM F568 Class 4.6 (see Note) or A325M as specified on S-2012
- Alternate Splice Bolts \rightarrow ASTM A325M
- Anchor Bolts \rightarrow ASTM F1554 Grade 380
- Nuts for Anchor Bolts \rightarrow ASTM A563M Class 8S or 8S3
- Washers for Anchor Bolts \rightarrow ASTM F436M Type I

Note - All Bolts (except Anchor Bolts) shall have Single Self-Locking Nuts or, in lieu thereof, regular nuts with a galvanized 'Palnut' locking nut manufactured by TRW, installed in accordance with the manufacturer's recommendations. Anchor Bolts shall have Double nuts.

2) Reinforcing Steel shall be ASTM A615M-96, Grade 420.

3) Concrete shall be Class **IV** (Drilled Shaft) with a minimum 28-day compressive strength of 28 MPa for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 35 MPa and shall meet the requirements of Section 934.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition)

6) All Steel Items shall be galvanized as follows:

- All Nuts, Bolts and Washers \rightarrow ASTM A153 Class C or D depending on size
- All other steel Items \rightarrow ASTM A123

7) The Structure must be assembled after galvanizing and prior to shipment to the site to assure fit up. It may be disassembled for shipping.

8) The Design Wind Speed is in conformance with the "Plans Preparation Manual," (current edition).

9) Alternate Designs for this Structure are not allowed.

10) Shop Drawings for this Structure are required and fabrication shall not begin until these Shop Drawings are approved. Shop Drawings shall include the Contractor's field verification of all Upright heights and foundation elevations necessary to insure minimum vertical clearances as per traffic plans. Shop Drawings shall also include anchor bolt orientation with respect to Truss and the direction of traffic.



11) The foundation for the Sign Structure shall be constructed in accordance with Section 455 of the Specifications except that no payment for the foundation shall be made under Section 455. The cost of providing the foundation shall be included in the pay item for providing the complete Sign Structure. Payment for any incidental items incurred in furnishing and installing this Sign Structure shall be included in the pay item for providing the complete Sign Structure.

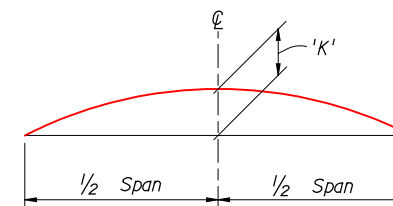
12) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 2 mm, prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 13 mm.

13) See Elevation Drawing for size and location of Sign Panel. Sign Panels shall be aluminum.

14) Provide a parabolic camber with the maximum upward deflection as called for on the Camber Diagram. Indicate on the Shop Drawings the method to be used to provide required camber. Member dimensions may be altered slightly to provide camber.

15) Chord Splices are either the Standard Splice or the Alternate Splice. Splice types shall not be mixed on a structure.

16) Prior to erection, the as built location of the Anchor Bolts shall be surveyed and this information reported to the Engineer.



CAMBER DIAGRAM

NOTES: See Roadway Standard Index Drawing I1037 for information on Sign Panel Fabrication.

See Roadway Standard Index Drawing I7505 for information on Fabrication and Installation of Lighting.

See 'Tables Of Sign Structure Variables' (Index No. S-2012) for referenced dimensions, sizes and quantities.

DATE: 10-99 BY: JP DESCRIPTION: Revised Note II. 98R

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DRAWN BY	NAMES	DATES	ENGINEER OF RECORD	LOGO
10-99	JP	Revised Note II.	98R			DRAWN BY	DCP	6-89	STRUCTURES DESIGN OFFICE	
						CHECKED BY	MHA	6-89	CENTRAL OFFICE	
						DESIGNED BY	MHA	6-89	605 Suwannee Street, MS 33	
						CHECKED BY	REN	6-89	Tallahassee, Florida 32399-0450	
						APPROVED BY	REN			

FLORIDA DEPARTMENT OF TRANSPORTATION		
STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE	DRAWING NO.
SPAN SIGN STRUCTURE NOTES, CAMBER, ISOMETRIC VIEW	1 of 4
PROJECT NAME	INDEX NO.
	2011

DATE: " " TIME: s:\structures\assof\tables\structures\addl\standards\addl\standards\2012s.dwg

TABLE OF SIGN STRUCTURE VARIABLES																			
SIGN NO.	STATION	DIMENSIONS			MEMBER SIZES							SPLICE			ALTERNATE SPLICE				
		A	B	C	D	E (DEPTH)	F (CHORD)	G (WEB)	H (LFT UPRIGHT)	J (RHT UPRIGHT)	K (CM/BR)	SA	SB	SC	PA	PB	PC	PD	PE

Bolts (except Anchor Bolts and Alt. Splice Bolts) are _____.

FOUNDATION NOTES:


- 1) Design based on Borings taken _____ sealed by _____
- 2) Assumptions and Values used in design:
- Cohesionless / Cohesive Soil (Fine Sand / Clay)
- Soil Layer Thickness = _____ m
- Soil Friction Angle = _____ Degrees
- Soil Weight = _____ kN/m³
- Design Water Table is _____ meters below surface.

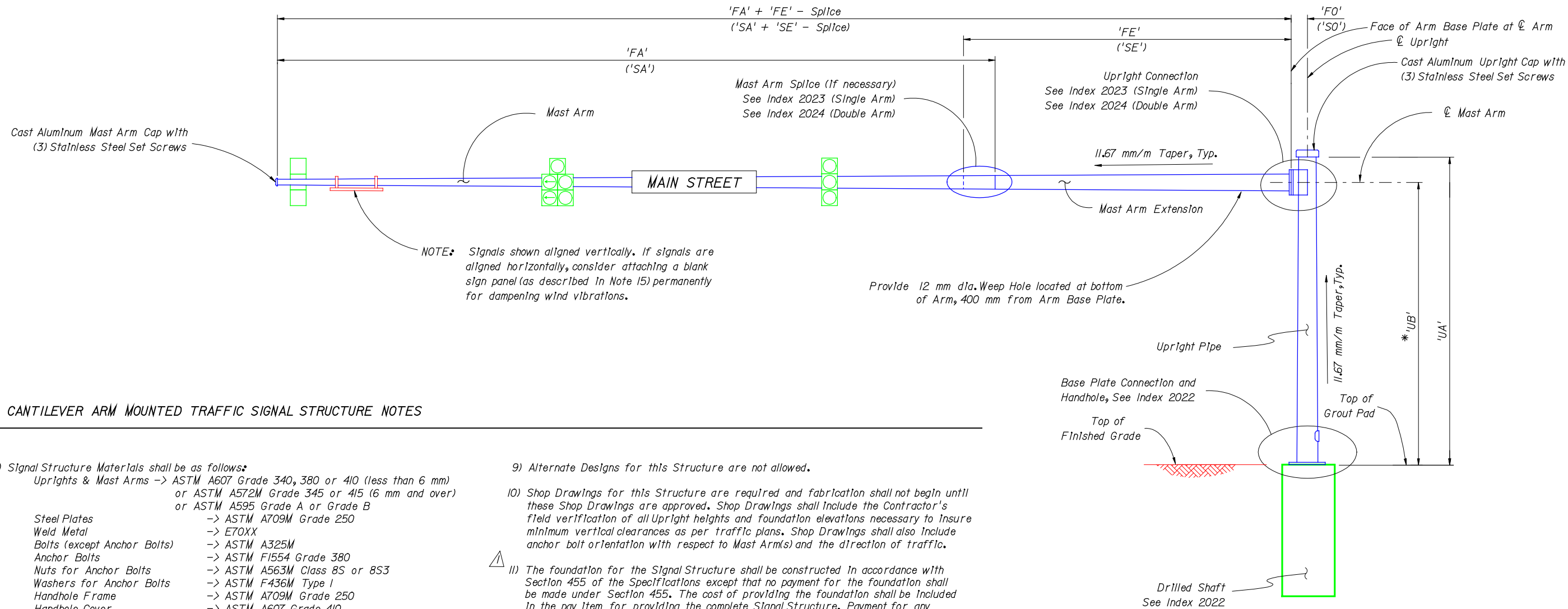
NOTES: 1) Design Wind Speed = _____ km/h
2) Erection is the Contractor's responsibility.
To facilitate erection the Contractor should consider using two vertical lift points, each located near a panel point approximately 20 to 25% of the truss length from each end.

TABLE OF SIGN STRUCTURE VARIABLES (CONT.)																											
SIGN NO.	GUSSET PLATES											LEFT UPRIGHT CONNECTION								RIGHT UPRIGHT CONNECTION							
	GA	GB	GC	GD	GE	GF	GG	GH	GJ	GK	GL	LA	LB	LC	LD	LE	LF	LG	LH	RA	RB	RC	RD	RE	RF	RG	RH

TABLE OF SIGN STRUCTURE VARIABLES (CONT.)																									ESTIMATED QUANTITIES					
SIGN NO.	LEFT BASE CONNECTION									RIGHT BASE CONNECTION								LEFT DRILLED SHAFT					RIGHT DRILLED SHAFT							
	BA	BB	BC	BD	BE	BF	BG	BH	BJ	CA	CB	CC	CD	CE	CF	CG	CH	CJ	DA	DB	DC	DD	DE	FA	FB	FC	FD	FE	SHAFT EXCAVATION (m)	DRILLED SHAFT (m)

NOTES: Work this Semi-Standard With Standard Index No. 2011.
'DC' and 'FC' shall include quantity and size of reinforcing steel.
All dimensions are in millimeters (mm), except as noted.

REVISIONS										NAMES		DATES	ENGINEER OF RECORD.	LOGO.	<div><div></div><div>FLORIDA DEPARTMENT OF TRANSPORTATION</div><div>STRUCTURES DESIGN OFFICE</div></div>	SHEET TITLE:		DRAWING NO.	
DATE	BY	DESCRIPTION			DATE	BY	DESCRIPTION			DRAWN BY						TABLES OF SIGN STRUCTURE VARIABLES			
					98R					CHECKED BY									
										DESIGNED BY									
										CHECKED BY									
										APPROVED BY						PROJECT NAME:		INDEX NO.	
																		S-2012	



CANTILEVER ARM MOUNTED TRAFFIC SIGNAL STRUCTURE NOTES

1) Signal Structure Materials shall be as follows:

Uprights & Mast Arms → ASTM A607 Grade 340, 380 or 410 (less than 6 mm)
or ASTM A572M Grade 345 or 415 (6 mm and over)
or ASTM A595 Grade A or Grade B

Steel Plates → ASTM A709M Grade 250
Weld Metal → E70XX
Bolts (except Anchor Bolts) → ASTM A325M
Anchor Bolts → ASTM F1554 Grade 380
Nuts for Anchor Bolts → ASTM A563M Class 8S or 8S3
Washers for Anchor Bolts → ASTM F436M Type I
Handhole Frame → ASTM A709M Grade 250
Handhole Cover → ASTM A607 Grade 410
Aluminum Caps and Covers → ASTM B26 (356-T6)
Stainless Steel Screws → AISI Type 316

2) Reinforcing Steel shall be ASTM A615M-96, Grade 420.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 28 MPa for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 35 MPa and shall meet the requirements of Section 934.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition)

6) All Steel Items shall be galvanized as follows:

All Nuts, Bolts and Washers → ASTM A153 Class C or D
depending on size
All other steel items → ASTM A123

7) The Structure must be assembled after galvanizing and prior to shipment to the site to assure fit up. It may be disassembled for shipping.

8) The Design Wind Speed is in conformance with the "Plans Preparation Manual" (current edition).

9) Alternate Designs for this Structure are not allowed.

10) Shop Drawings for this Structure are required and fabrication shall not begin until these Shop Drawings are approved. Shop Drawings shall include the Contractor's field verification of all Upright heights and foundation elevations necessary to insure minimum vertical clearances as per traffic plans. Shop Drawings shall also include anchor bolt orientation with respect to Mast Arm(s) and the direction of traffic.



11) The foundation for the Signal Structure shall be constructed in accordance with Section 455 of the Specifications except that no payment for the foundation shall be made under Section 455. The cost of providing the foundation shall be included in the pay item for providing the complete Signal Structure. Payment for any incidental items incurred in furnishing and installing this Signal Structure shall be included in the pay item for providing the complete Signal Structure.

12) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 2 mm, prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 13 mm.

13) Sign Panels and Signals attached to the Mast Arm shall be centered in elevation on the arm. Sign Panels shall be aluminum. Wire access holes shall not exceed 20 mm in diameter.

14) The Upright pipe shall be installed vertically. Camber shall be accounted for in the Mast Arm connection as detailed.

15) If the Traffic Signals or Sign Panels are not in place within two working days after the Mast Arm is erected, a 1.0 m by 0.6 m (min.) blank Sign Panel shall be attached to the bottom of the Mast Arm within two meters of the Mast Arm tip. This blank Sign Panel shall remain in place until the permanent Signals and Signs are mounted.

16) The Upright tube shall not be erected until the foundation concrete has been allowed to cure for a minimum of seven days.

17) Mast Arms and Upright pipes shall be tapered with the diameter changing at a rate of 11.67 mm per meter.

ELEVATION VIEW

(Single Arm Shown, Double Arm Similar)
(Luminaire Arm Not Shown)

*NOTE: Contractor shall verify these Dimensions Prior to Fabrication of Upright.

NOTE: Work this Drawing with Index Nos. 2022, 2023, 2024 (Optional), 2025 (Optional), and S-2026.

NOTE: See Index S-2026 for referenced dimensions, sizes, and quantities.

NOTE: Details for the 'J' Hook, Ground Rod, Signal and Sign Locations, Signal Head Attachment, Sign Attachment, Pedestrian Head Attachment, and Foundation Conduit can be found elsewhere.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
10-99	JP	Revised Note 11.	98R		

DRAWN BY	NAMES	DATES
CHECKED BY	AVP	10-94
DESIGNED BY	MHA	10-94
CHECKED BY	AVP	10-94
CHECKED BY	MHA	10-94
APPROVED BY	REN	

ENGINEER OF RECORD.

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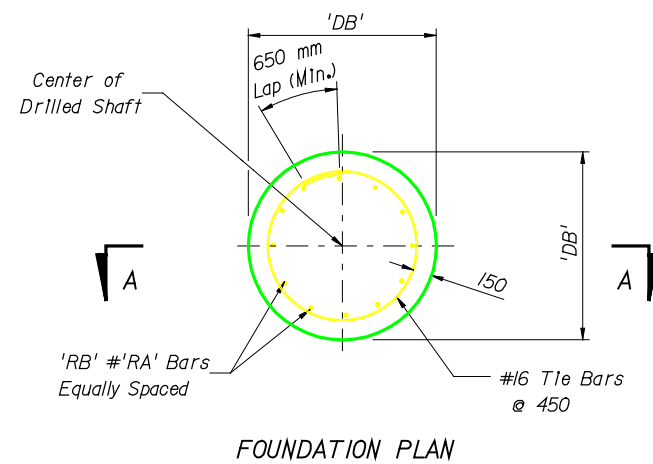
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STRUCTURES DESIGN OFFICE

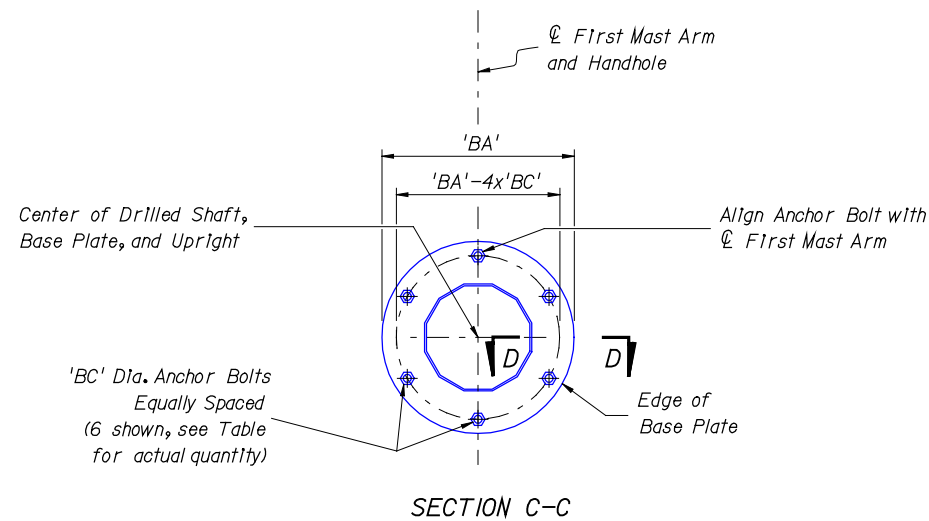
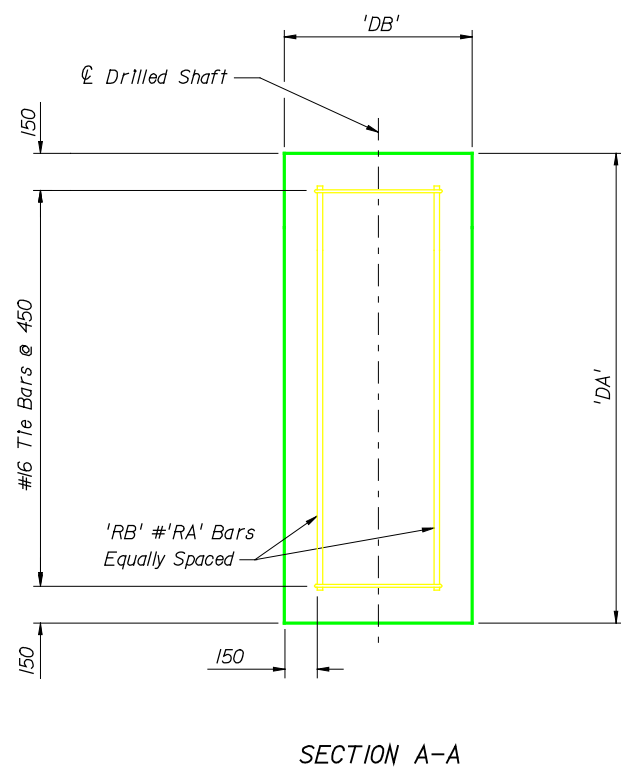
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: CANTILEVER SIGNAL STRUCTURE
ELEVATION AND NOTES

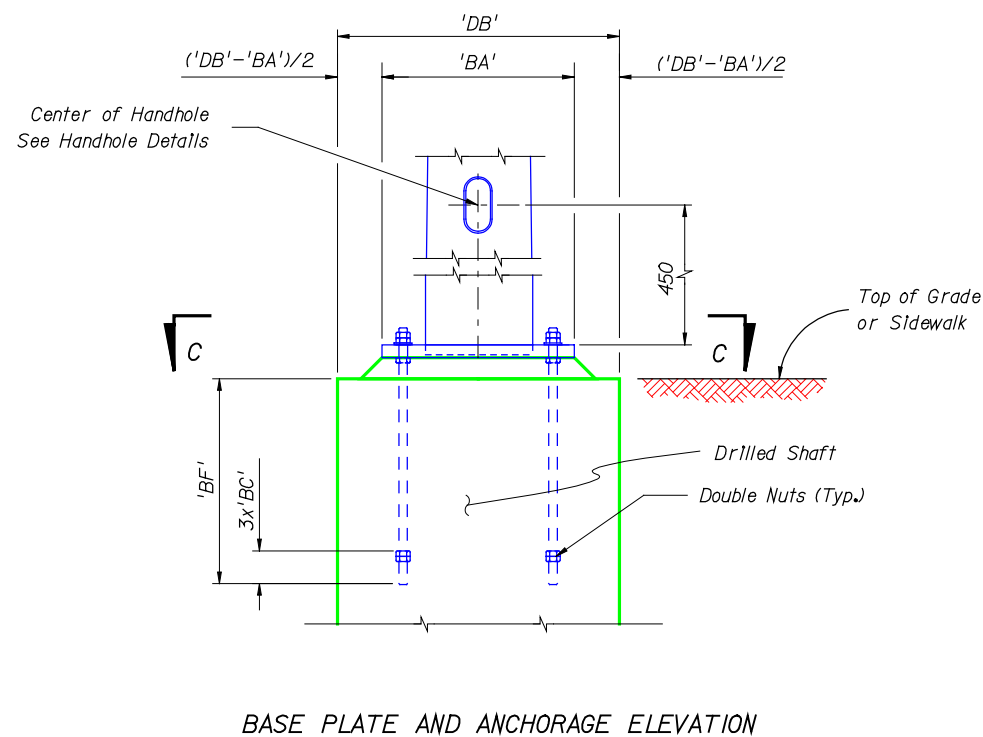
PROJECT NAME:	DRAWING NO.
	1 of 1
	INDEX NO.
	2021



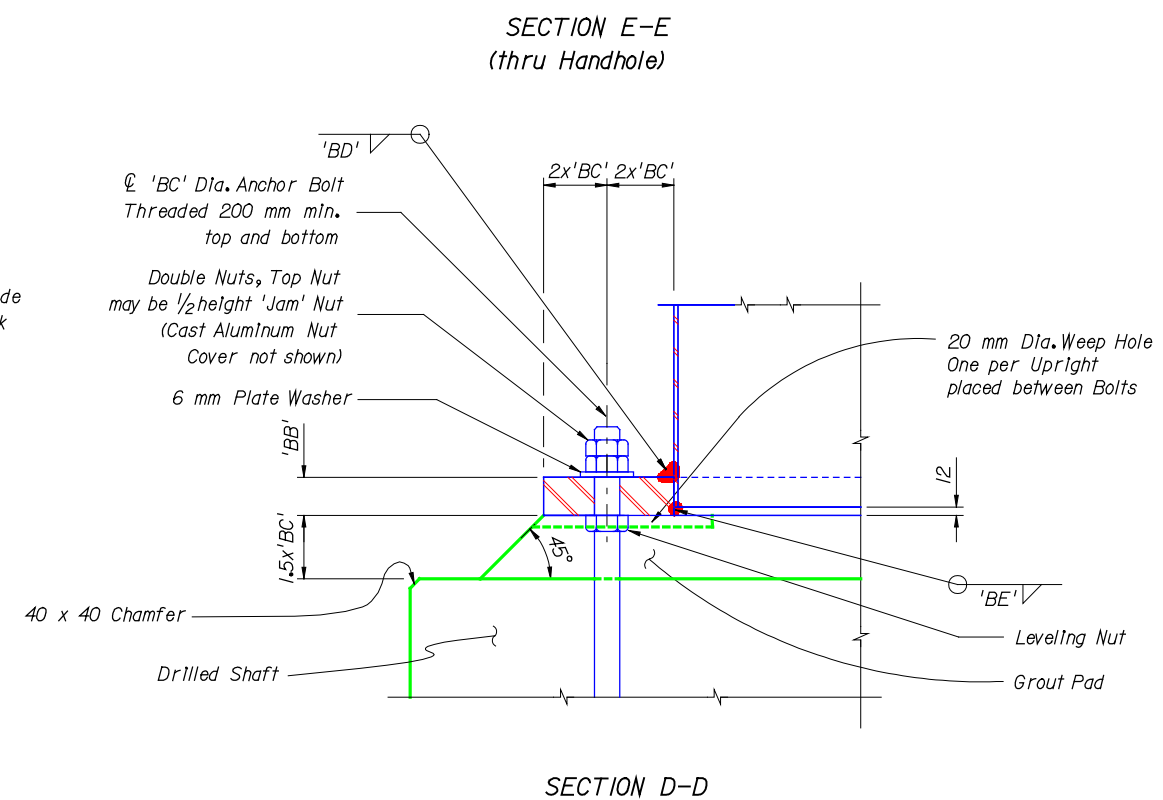
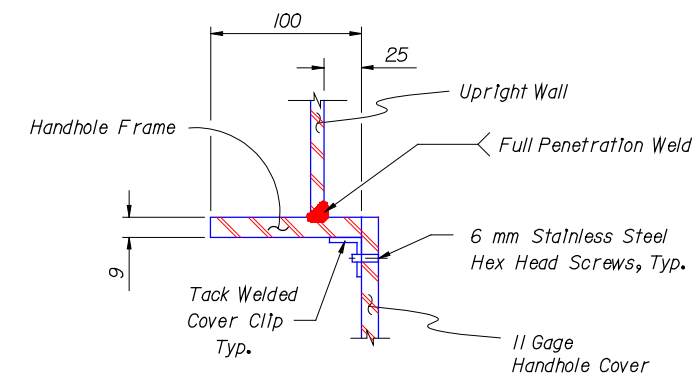
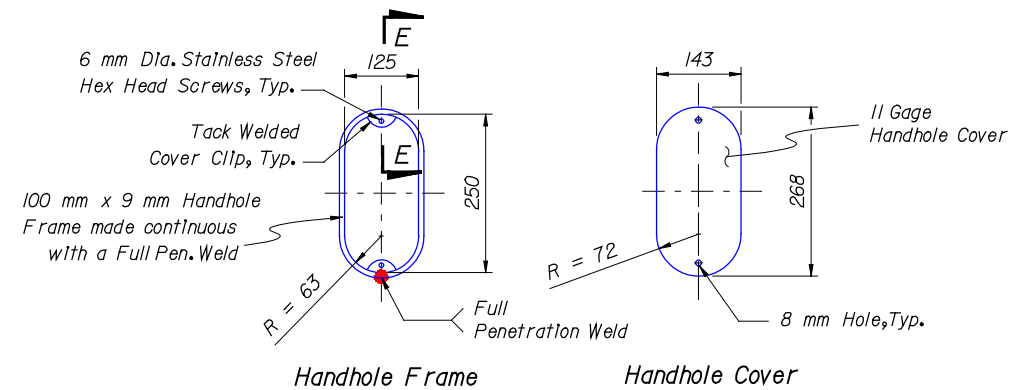
Note: 150 mm min. cover on Shaft Reinforcement



Note: Concrete and Reinforcement not shown.



Note: Reinforcement not shown



NOTE: Work this Drawing with Index Nos. 2021, 2023, 2024 (Optional), 2025 (Optional), and S-2026.

NOTE: See Index No. S-2026 for referenced dimensions, sizes, and quantities.

NOTE: All dimensions are in millimeters (mm), except as noted.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
			98		

DRAWN BY	NAMES	DATES
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MHA		10-94
DESIGNED BY	AVP	10-94
CHECKED BY	MHA	10-94
APPROVED BY	REN	

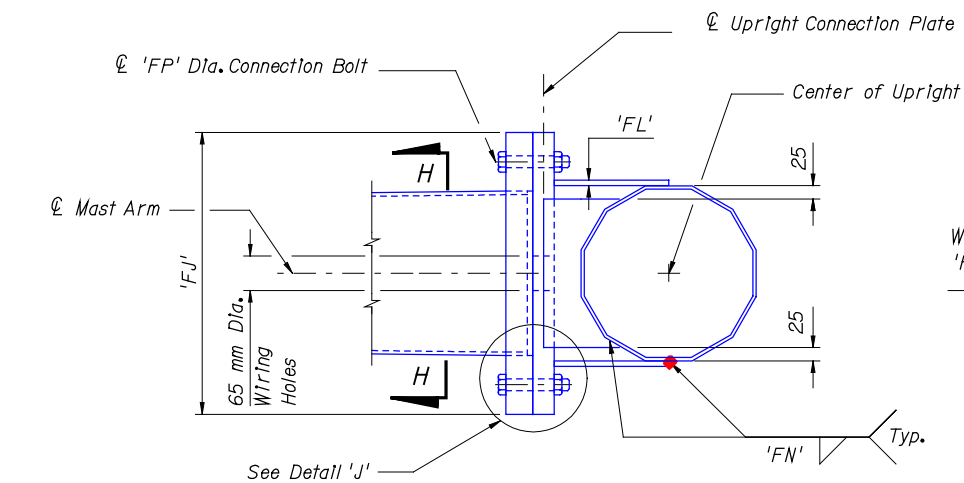
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STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

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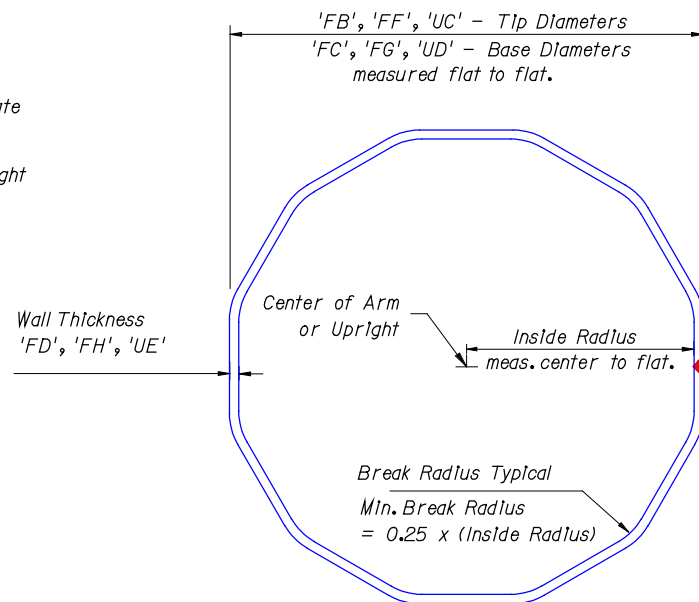
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STRUCTURES DESIGN OFFICE		
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: CANTILEVER SIGNAL STRUCTURE FOUNDATION AND BASE PLATE DETAILS	
PROJECT NAME:	

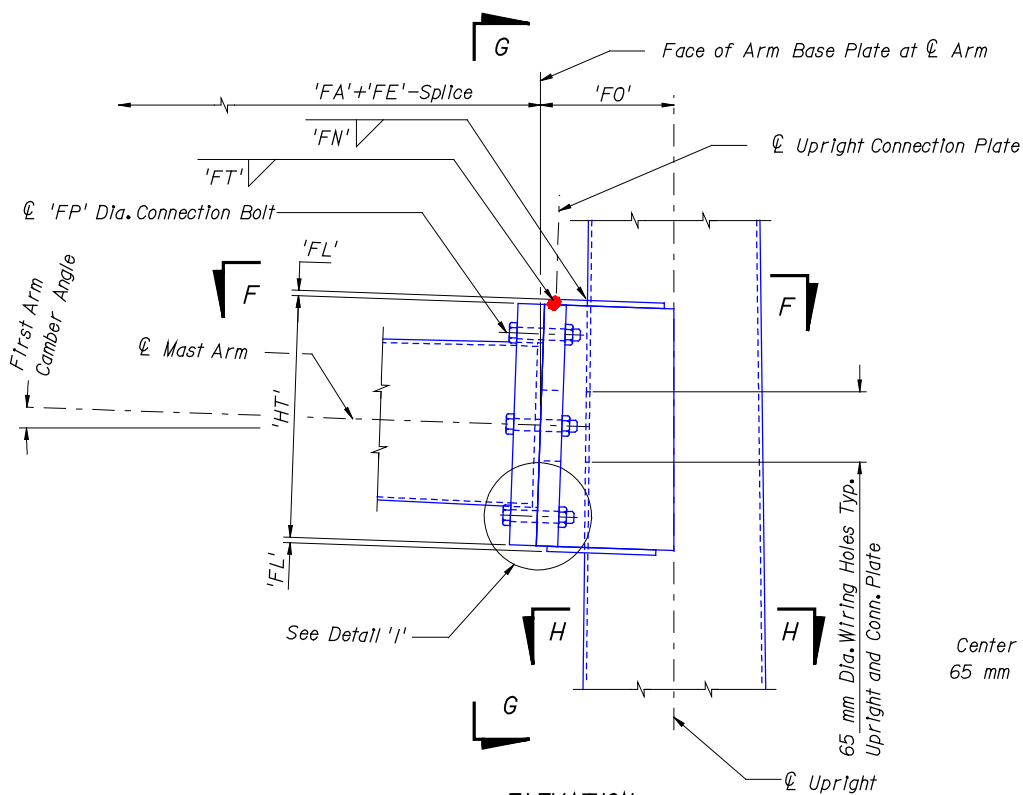
DRAWING NO. 1 of 1
INDEX NO. 2022



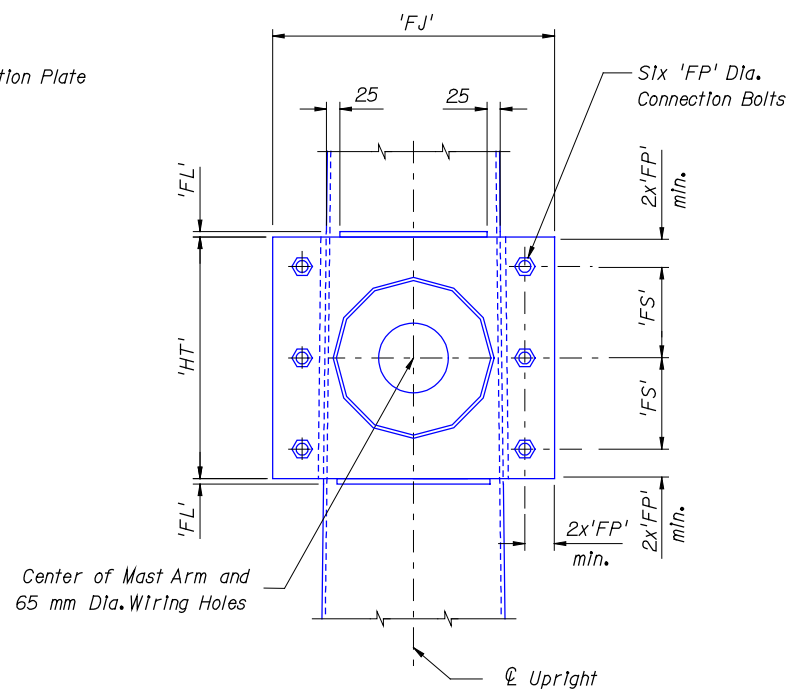
SECTION F-F



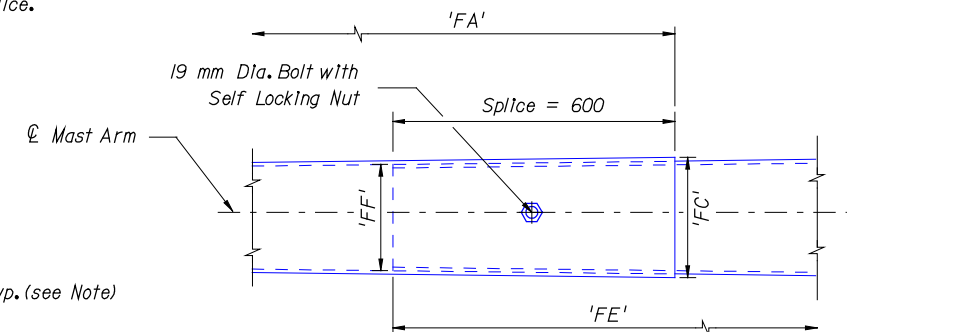
SECTION H-H



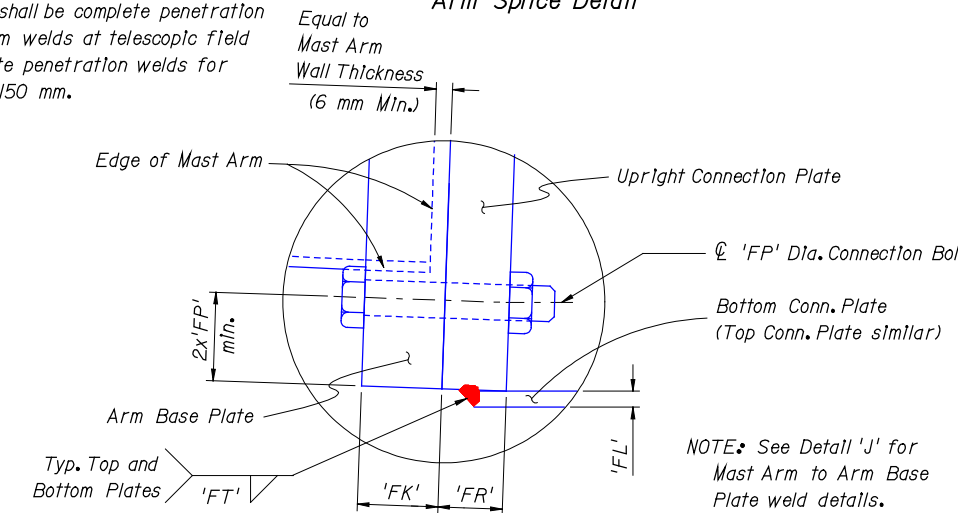
ELEVATION
(Single Arm Connection)



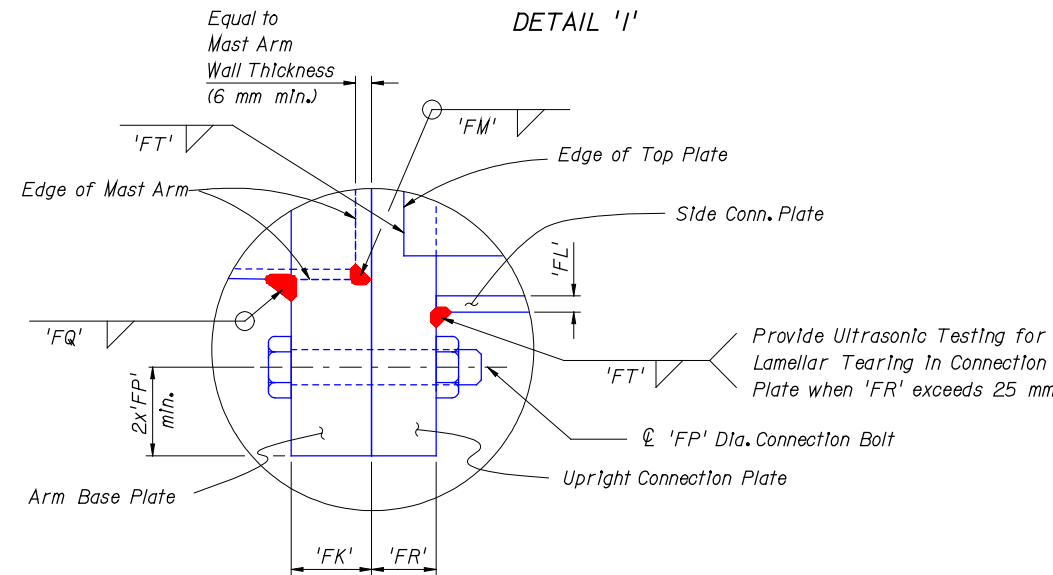
SECTION G-G



Arm Splice Detail



DETAIL 'I'



DETAIL 'J'

NOTE: Details shown on this sheet are for 12 sided sections. Sections with more than 12 sides and round sections are permitted, provided outside diameter and wall thickness are not reduced.

NOTE: Work this Drawing with Index Nos. 2021, 2022, 2024 (Optional), 2025 (Optional), and S-2026.

NOTE: See Index No. S-2026 for referenced dimensions, sizes, and quantities.

NOTE: All dimensions are in millimeters (mm), except as noted.

DATE: 11/11/2023 TIME: 10:00 AM

REVISIONS				REVISIONS			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY
			10-94	AVP			
			10-94	MHA			
			10-94	AVP			
			10-94	MHA			
				REN			

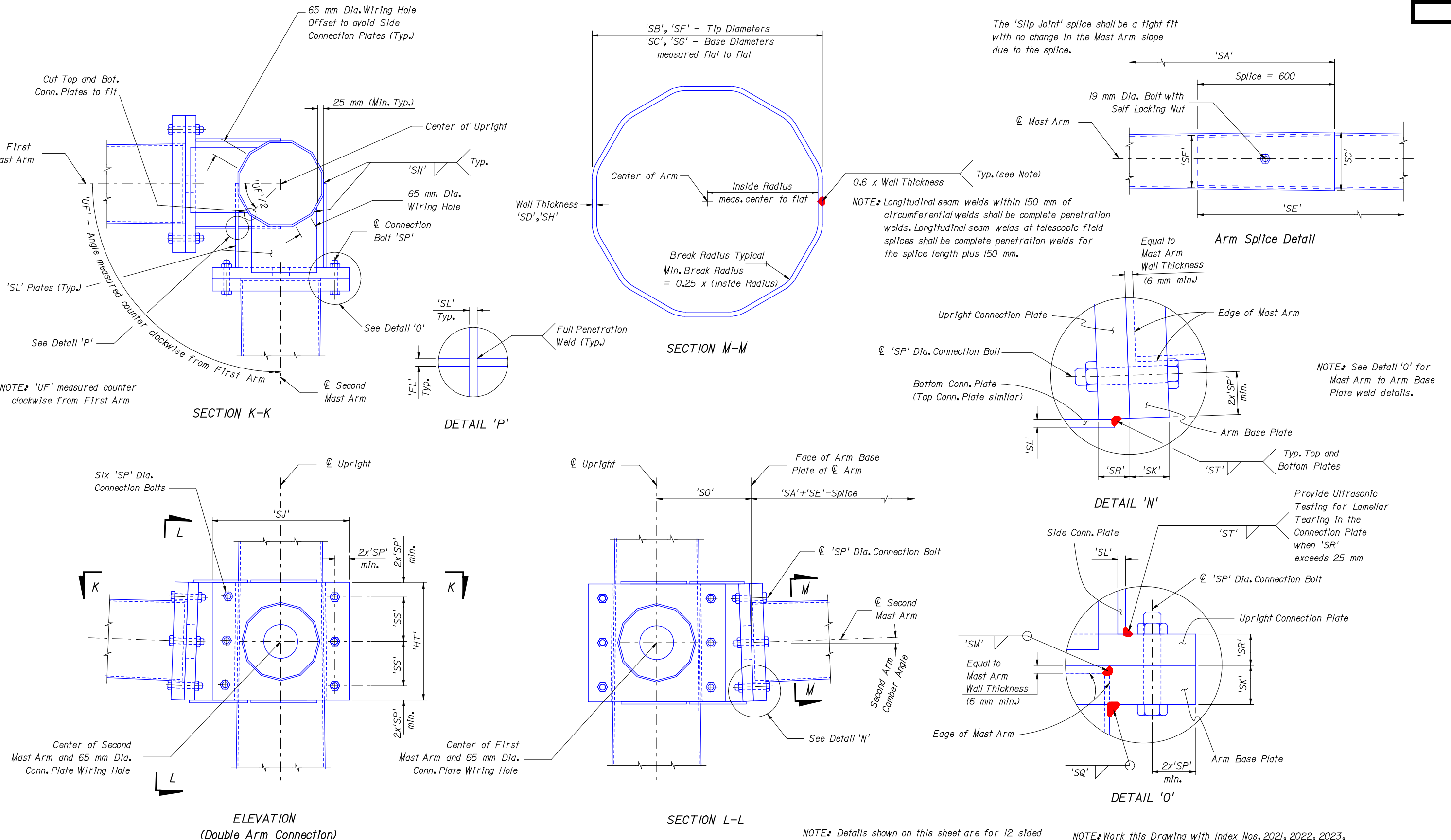
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CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

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FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE
ROAD NO. COUNTY PROJECT NO.

SHEET TITLE: **CANTILEVER SIGNAL STRUCTURE
SINGLE ARM CONNECTION DETAILS**
PROJECT NAME: INDEX NO. 2023

DRAWING NO. 1 of 1



NOTE: Details shown on this sheet are for 12 sided sections. Sections with more than 12 sides and round sections are permitted, provided outside diameter and wall thickness are not reduced.


NOTE: Work this Drawing with Index Nos. 2021, 2022, 2023, 2025 (Optional), and 2026.

NOTE: See Index No. S-2026 for referenced dimensions, sizes, and quantities.

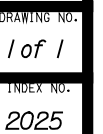
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						CHECKED BY	<i>MHA 10-94</i>
						DESIGNED BY	<i>AVP 10-94</i>
						CHECKED BY	<i>MHA 10-94</i>
						APPROVED BY	<i>RFN</i>

ENGINEER OF RECORD.
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
Tallahassee, Florida 32399-0450

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	FLORIDA DEPARTMENT OF TRANSPORTATION <hr/> STRUCTURES DESIGN OFFICE	
ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE:	CANTILEVER SIGNAL STRUCTURE DOUBLE ARM CONNECTION DETAILS	DRAWING NO.	1 of 1
PROJECT NAME:		INDEX NO.	2024



DATE: "H" TIME: s:\01structuresofhighways\structures\addl\standards\standards\02026s.dgn

TABLE OF SIGNAL STRUCTURE VARIABLES																									
NUMBER OF LOCATIONS	STRUCTURE NUMBER	FIRST ARM				FIRST ARM EXTENSION				SECOND ARM				SECOND ARM EXTENSION				UPRIGHT							
		FA(m)	FB(mm)	FC(mm)	FD(mm)	FE(m)	FF(mm)	FG(mm)	FH(mm)	SA(m)	SB(mm)	SC(mm)	SD(mm)	SE(m)	SF(mm)	SG(mm)	SH(mm)	UA(m)	UB(m)	UC(mm)	UD(mm)	UE(mm)	UF(deg)	UG(m)	

FOUNDATION NOTES:

1) Design based on Borings taken _____ sealed by _____

2) Assumptions and Values used in design:

- Cohesionless / Cohesive Soil (Fine Sand / Clay)
- Soil Layer Thickness = _____ m
- Soil Friction Angle = _____ Degrees
- Soil Weight = _____ kN/m³
- Design Water Table Is _____ meters below surface.

NOTE: Work this Drawing With Index Nos. 2021, 2022, 2023, 2024 (Optional), and 2025 (Optional).

NOTE: Design Wind Speed = _____ km/h

TABLE OF SIGNAL STRUCTURE VARIABLES (CONT.)																									
STRUCTURE NUMBER	FIRST ARM CONNECTION (mm) First Arm Camber Angle = 2 Degrees													SECOND ARM CONNECTION (mm) 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

TABLE OF SIGNAL STRUCTURE VARIABLES (CONT.)																					ESTIMATED QUANTITIES		
STRUCTURE NUMBER	UPRIGHT BASE CONNECTION (mm)							SHAFT AND REINF.				LUMINAIRE AND LUMINAIRE CONNECTION											
	# Bolts	BA	BB	BC	BD	BE	BF	DA(m)	DB(m)	RA	RB	LA(m)	LB(m)	LC(mm)	LD(mm)	LE	LF(m)	LG(mm)	LH(mm)	LJ(mm)	LK(mm)	SHAFT EXCAVATION (m)	DRILLED SHAFT (m)

REVISIONS				DRAWN BY			ENGINEER OF RECORD.	LOGO.	<div><div></div><div>FLORIDA DEPARTMENT OF TRANSPORTATION</div><div>STRUCTURES DESIGN OFFICE</div></div>	SHEET TITLE:		DRAWING NO.	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	CHECKED BY				TABLE OF SIGNAL STRUCTURE VARIABLES			
			98R			DESIGNED BY							
						CHECKED BY							
						APPROVED BY				PROJECT NAME:			
												INDEX NO.	
												S-2026	