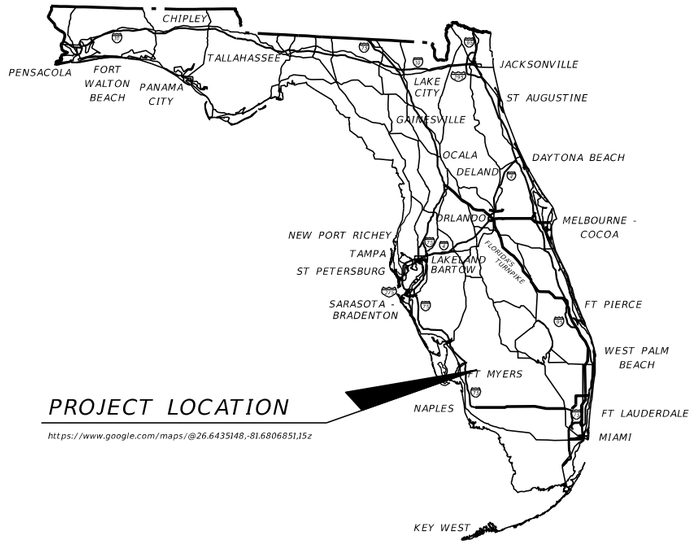
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

ABLE CANAL PATHWAY

FINANCIAL PROJECT ID 435351-2-58-01

ETDM No: 14223

STRUCTURES PLANS



INDEX OF STRUCTURE PLANS

STANDARD PLANS

STRUCTURES PLANS
ENGINEER OF RECORD:

LUCIO MARTINEZ, P.E.
P.E. No.: 82380
KISINGER CAMPO AND ASSOCIATES CORP.
13461 PARKER COMMONS BLVD., STE. 104
FORT MYERS, FLORIDA 33912
(239) 278-5999
VENDOR No. 59-1677145

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION

LEE COUNTY PROJECT MANAGER:

RYAN HYLEN

FISCAL YEAR	SHEET NO.
25	B-1

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LUCIO MARTINEZ
LICENSE
No. 82380
STATE OF FLORIDA
PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

Lucio Martinez
2024.11.06
15:33:31-05'00'

ON THE DATE ADJACENT TO THE SEAL

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Kisinger Campo & Associates Corp.
13461 Parker Commons Blvd.,
Ste. 104
Fort Myers, FL 33912
Lucio Martinez, PE No. 82380

IVAN F. SOKOLIC
LICENSE
No 64114
STATE OF FLORIDA
PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

Ivan Sokolic
Digitally signed by Ivan Sokolic
Date: 2024.11.08 13:11:05 -05'00'

ON THE DATE ADJACENT TO THE SEAL

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Ardaman And Associates, Inc.
9970 Bavarian Road
Fort Myers, FL 33913
Ivan F. Sokolic, PE No. 64114

COURTNEY J. RICHARDS
LICENSE
No 93234
STATE OF
PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

Courtney Richards
Courtney Richards 2024.11.08
10:04:52-05'00'

ON THE DATE ADJACENT TO THE SEAL

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Kisinger Campo & Associates Corp.
13461 Parker Commons Blvd.,
Ste. 104
Fort Myers, FL 33912
Courtney J. Richards, PE No. 93234

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

STRUCTURE PLANS

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THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

STRUCTURE PLANS

SHEET NO.	SHEET DESCRIPTION
B-2	SIGNATURE SHEET
B-7	REPORT OF CORE BORINGS

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

STRUCTURE PLANS

SHEET NO.	SHEET DESCRIPTION
B-2	SIGNATURE SHEET
B-6	BRIDGE HYDRAULIC RECOMMENDATIONS

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd., Ste. 104
Fort Myers, Florida 33912

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SIGNATURE SHEET

SHEET NO. B-2

SUMMARY OF STRUCTURE QUANTITIES - ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

SECTION	PAY ITEM NO.	PAY ITEM DESCRIPTION	LOCATION	UNIT	QUANTITY		TOTAL		DESIGN NOTES	CONSTRUCTION REMARKS
					P	F	P	F		
LUMP SUM ITEMS	108-1	MONITOR EXISTING STRUCTURES - INSPECTION AND SETTLEMENT MONITORING	BRIDGE	EA	1		1			
	108-2	MONITOR EXISTING STRUCTURES - VIBRATION MONITORING	BRIDGE	EA	1		1			
FOUNDATION	455-34-3	PRESTRESSED CONCRETE PILING, 18" SQ	END BENT 1	LF	119		753			
			INT. BENT 2		115					
			INT. BENT 3		173					
			INT. BENT 4		115					
			INT. BENT 5		172					
			END BENT 6		59					
	455-143-3	TEST PILES - PRESTRESSED CONCRETE, 18" SQ	INT BENT. 2	LF	75		224			
			INT BENT. 4		75					
			END BENT 6		74					
SUBSTRUCTURE	400-4-5	CLASS IV CONCRETE, SUBSTRUCTURE	END BENT 1	CY	6.9		31.4			
			INT. BENT 2		4.4					
			INT. BENT 3		4.4					
			INT. BENT 4		4.4					
			INT. BENT 5		4.4					
			END BENT 6		6.9					
	415-1-5	REINFORCING STEEL - BRIDGE SUBSTRUCTURE	END BENT 1	LB	849		3098			
			INT. BENT 2		350					
			INT. BENT 3		350					
			INT. BENT 4		350					
			INT. BENT 5		350					
			END BENT 6		849					
APPROACH SLABS	400-2-10	CLASS II CONCRETE, APPROACH SLABS	APPROACH SLAB 1	CY	5.4		10.8			
			APPROACH SLAB 2		5.4					
	415-1-9	REINFORCING STEEL - APPROACH SLABS	APPROACH SLAB 1	LB	989		1978			
			APPROACH SLAB 2		989					

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ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
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13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SUMMARY OF STRUCTURES QUANTITIES (1 OF 2)

SHEET NO. BQ-1

SUMMARY OF STRUCTURE QUANTITIES - ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

SECTION	PAY ITEM NO.	PAY ITEM DESCRIPTION	LOCATION	UNIT	QUANTITY P	QUANTITY F	TOTAL P	TOTAL F	DESIGN NOTES	CONSTRUCTION REMARKS
SUPERSTRUCTURE	400-2-47	CONCRETE CLASS II, CAST-IN-PLACE TOPPING WITH SHRINKAGE REDUCING ADMIXTURE	SPAN 1	CY	21.8		108.7			
			SPAN 2		21.7					
			SPAN 3		21.7					
			SPAN 4		21.7					
			SPAN 5		21.8					
	400-148	PLAIN NEOPRENE BEARING PADS	SPAN 1	CF	1.2		6.0			
			SPAN 2		1.2					
			SPAN 3		1.2					
			SPAN 4		1.2					
			SPAN 5		1.2					
	415-1-4	REINFORCING STEEL - BRIDGE SUPERSTRUCTURE	SPAN 1	LB	4418		22090			
			SPAN 2		4418					
			SPAN 3		4418					
			SPAN 4		4418					
			SPAN 5		4418					
	450-8-22	PRESTRESSED BEAM: FLORIDA SLAB BEAM, BEAM DEPTH 15" CARBON STEEL, WIDTH 52-54"	SPAN 1	LF	156		780			
			SPAN 2		156					
			SPAN 3		156					
			SPAN 4		156					
			SPAN 5		156					
	458-1-11	BRIDGE DECK EXPANSION JOINT, NEW CONSTRUCTION, F&I POURED JOINT WITH BACKER ROD	END BENT 1	LF	14		84			
			INT. BENT 2		14					
			INT. BENT 3		14					
			INT. BENT 4		14					
			INT. BENT 5		14					
			END BENT 6		14					
BARRIERS	515-2-211	PEDESTRIAN / BICYLCE RAILING, STEEL, 42" TYPE 1	APPROACH SLAB 1	LF	10		551			
			BRIDGE		531					
			APPROACH SLAB 2		10					
SLOPE PROTECTION	530-1-100	RIPRAP, SAND-CEMENT BAGS	END BENT 1	CY	3.5		7.0			
			END BENT 6		3.5					
	530-3-3	RIPRAP - RUBBLE, BANK AND SHORE	END BENT 1	TN	230.1		452.6			
			END BENT 6		222.5					
	530-74	BEDDING STONE	END BENT 1	TN	81.7		160.7			
			END BENT 6		79.0					
	LC01	FLOATING BOOM BARRIER	CANAL	LF	300.0		300			

SUMMARY OF WALLS

WALL NO.	PAY ITEM NO.	PAY ITEM DESCRIPTION	LOCATION STA. TO STA.	SIDE	UNIT	QUANTITY P	QUANTITY F	TOTAL P	TOTAL F	DESIGN NOTES	CONSTRUCTION REMARKS
GW-1	400-0-11	CONCRETE CLASS NS, GRAVITY WALL	445+68.00 TO 447+09.00	LT.	CY	26.9		26.9			

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

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LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SUMMARY OF STRUCTURES QUANTITIES (2 OF 2)

SHEET NO. BQ-2

DESIGN SPECIFICATIONS

1. FDOT STRUCTURES MANUAL DATED JANUARY 2024 AND SUBSEQUENT STRUCTURES DESIGN BULLETINS.
2. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LOAD AND RESISTANCE FACTOR DESIGN (LRFD) BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION.
3. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LOAD AND RESISTANCE FACTOR DESIGN (LRFD) GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, 2009 WITH 2015 INTERIMS.
4. FDOT DESIGN MANUAL DATED JANUARY 2024 AND SUBSEQUENT ROADWAY DESIGN BULLETINS.

GOVERNING STANDARDS AND CONSTRUCTION SPECIFICATIONS

FLORIDA DEPARTMENT OF TRANSPORTATION, FY 2024-25 STANDARD PLANS AND REVISED INDEX DRAWINGS AS APPENDED HEREIN, AND FY 2024-25 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AS AMENDED BY CONTRACT DOCUMENTS.

VERTICAL DATUM

ELEVATIONS ARE ACCORDING TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

ENVIRONMENT

ENVIRONMENTAL CLASSIFICATION	
SUPERSTRUCTURE	SUBSTRUCTURE (CONCRETE)
SLIGHTLY AGGRESSIVE	MODERATELY AGGRESSIVE (*)

* RESISTIVITY = 1,848 OHM-CM

DESIGN METHODOLOGY

1. LOAD AND RESISTANCE FACTOR DESIGN (LRFD) METHOD USING STRENGTH, SERVICE, AND FATIGUE LIMIT STATES.
2. REDUNDANCY FACTORS
   A. END BENT PILES η_R = 1.10
3. OPERATIONAL IMPORTANCE FACTOR
   A. ALL BRIDGES η_I = 1.00

DESIGN LOADINGS

1. LIVE LOADS:
   VEHICLE LOAD: H10 WITHOUT DYNAMIC LOAD ALLOWANCE
   PEDESTRIAN LOAD: 90 PSF
2. DEAD LOADS:
   PEDESTRIAN RAILING = 30 PLF
   REINFORCED CONCRETE = 150 PCF
   DESIGN DOES NOT INCLUDE AN ALLOWANCE OF 15 PSF FOR FUTURE WEARING SURFACE.
3. WIND LOADS:
   WIND LOADS IN ACCORDANCE WITH CHAPTER 2.4 OF THE FDOT STRUCTURES MANUAL, VOLUME 1 STRUCTURES DESIGN GUIDELINES
4. CONSTRUCTION LOADS:
   FINISH MACHINE LOAD: 7.0 KIPS
   FINISHING MACHINE WHEEL LOCATION BEYOND THE EDGE OF DECK OVERHANG: 6 INCHES
   CONSTRUCTION LIVE LOAD: 20 PSF EXTENDED OVER THE ENTIRE BRIDGE WIDTH AND 50-FEET IN LONGITUDINAL LENGTH CENTERED ON THE FINISHING MACHINE
   LIVE LOAD AT OR NEAR THE OUTSIDE EDGE OF DECK DURING DECK CASTING: 75 PLF APPLIED AS A MOVING LOAD OVER A LENGTH OF 20 FEET.
   CONSTRUCTION INACTIVE DESIGN WIND SPEED: 90 MPH
   VELOCITY PRESSURE EXPOSURE COEFFICIENT (Kz): 1.00
   CONSTRUCTION ACTIVE DESIGN WIND SPEED: 30 MPH

5. THERMAL DATA:

	MEAN	RISE FROM MEAN	FALL FROM MEAN	RANGE
CONCRETE	70 °F	35 °F	35 °F	70 °F

6. UTILITIES:
NO ALLOWANCE FOR UTILITY LOAD HAS BEEN INCLUDED IN THE DESIGN.

MATERIALS

1. REINFORCING STEEL: GRADE 60 CARBON STEEL PER SPECIFICATION SECTION 931.
2. CONCRETE:

CONCRETE CLASS	MINIMUM 28-DAY COMPRESSIVE STRENGTH (PSI)	LOCATION IN STRUCTURE
II (BRIDGE DECK)	4500	BRIDGE DECKS* AND APPROACH SLABS
IV	5500	C.I.P. SUBSTRUCTURE
V (SPECIAL)	6000	PRESTRESSED CONCRETE PILES
VI	8500	FLORIDA SLAB BEAMS

* C.I.P. TOPPING WITH SHRINKAGE REDUCING ADMIXTURE: THOROUGHLY SATURATE THE TOP SURFACE OF THE FSBs WITH WATER IN ACCORDANCE WITH SPECIFICATION 400 FOR 12 HOURS IMMEDIATELY PRIOR TO PLACING THE C-I-P TOPPING. REMOVE STANDING WATER PRIOR TO PLACING THE C-I-P TOPPING. CURE THE C-I-P TOPPING IN ACCORDANCE WITH THE SPECIFICATION 400 REQUIREMENTS FOR BRIDGE DECKS.

3. CONCRETE COVER:

CAST-IN-PLACE SUPERSTRUCTURE	2"
FLORIDA SLAB BEAM	**
C.I.P. SUBSTRUCTURE (CAST AGAINST EARTH)	4"
C.I.P. SUBSTRUCTURE (FORMED SURFACES)	3"
C.I.P. SUBSTRUCTURE (CHEEKWALLS)	2"

** COVER REQUIREMENTS SHALL BE IN ACCORDANCE WITH STANDARD PLANS INDEX 450-452.

CONCRETE COVER DIMENSIONS SHOWN IN THE PLANS DO NOT INCLUDE PLACEMENT AND FABRICATION TOLERANCES UNLESS SHOWN AS "MINIMUM COVER". SEE SPECIFICATIONS SECTION 415 FOR ALLOWABLE TOLERANCES. ALL DIMENSIONS PERTAINING TO THE LOCATION OF REINFORCING STEEL ARE TO CENTERLINE OF BAR EXCEPT WHERE CLEAR DIMENSIONS NOTED TO FACE OF CONCRETE.

CONCRETE SURFACE FINISH

A CLASS 2 FINISH COATING SHALL BE APPLIED TO THE PORTIONS OF THE STRUCTURES SHOWN ON THE SURFACE FINISH DETAILS.

PLAN DIMENSIONS

ALL DIMENSIONS IN THESE PLANS ARE MEASURED IN FEET AND INCHES, EITHER HORIZONTALLY OR VERTICALLY, UNLESS OTHERWISE NOTED.

UTILITIES

FOR DISPOSITION OF UTILITIES, SEE THE UTILITY ADJUSTMENT SHEETS IN THE ROADWAY PLANS.

CANAL MAINTENANCE

CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH CANAL MAINTENANCE AGENCY THROUGHOUT THE CONSTRUCTION PROCESS. LEHIGH ACRES MUNICIPAL SERVICES IMPROVEMENT DISTRICT CONTACT:

MIKE COOK MCOOK@LA-MSID.COM 239-368-0044 EXT.16

SCREEDING DECKS

SCREED THE RIDING SURFACE OF THE BRIDGE DECK AND APPROACH SLABS TO ACHIEVE THE FINISH GRADE ELEVATION SHOWN IN THE PLANS. ACCOUNT FOR THEORETICAL DEFLECTIONS DUE TO SELF WEIGHT, DECK CASTING SEQUENCE, DECK FORMING SYSTEMS, CONSTRUCTION LOADS, AND TEMPORARY SHORING, ETC. AS REQUIRED.

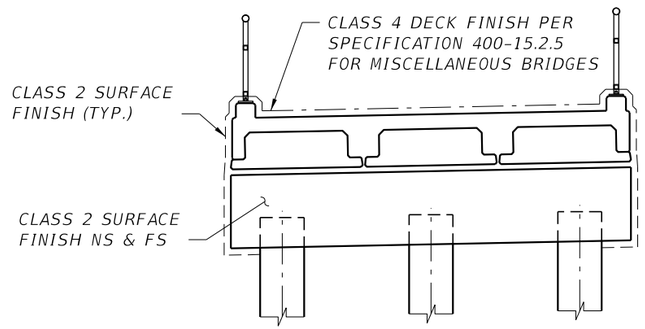
CONCRETE DETAILS

PROVIDE ¾" CHAMFERS ON ALL EXPOSED EDGES EXCEPT AS OTHERWISE NOTED. CONSTRUCTION JOINTS WILL BE PERMITTED ONLY AT LOCATIONS INDICATED ON THE PLANS. ADDITIONAL CONSTRUCTION JOINTS OR ALTERATIONS TO THOSE SHOWN SHALL REQUIRE APPROVAL OF THE ENGINEER.

PAY ITEM NOTES

1. PAYMENT FOR INCIDENTAL ITEMS NOT SPECIFICALLY COVERED IN THE INDIVIDUAL BID ITEMS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE BID ITEMS.
2. FIELD REVIEW THE PROJECT PRIOR TO PREPARING THE BID. LEE COUNTY DOES NOT ASSUME ANY LIABILITIES THAT MAY ARISE FROM FAILURE TO PROPERLY REVIEW THE PROJECT SITE PRIOR TO PREPARING THE BID.
3. COST OF FILL AND EXCAVATION FOR THE INSTALLATION OF SLOPE PROTECTION IS INCLUDED IN THE COST OF PAY ITEM 530-3-3.
4. INCLUDE THE COST OF REBAR DRIVEN THOUGH SAND-CEMENT RIPRAP IN THE CONTRACT UNIT PRICE FOR PAY ITEM NUMBER 530-1-100.
5. PAY ITEM LC01 INCLUDES FURNISHING AND INSTALLING THE FLOATING BOOM BARRIER. FLOATING BOOM BARRIER IS TO BE ORANGE WITH A HANGING 24 INCH DEBRIS SCREEN. CENTER BOOMS MUST BE LABELED "DANGER KEEP OUT". PROVIDE A PRODUCT EQUIVALENT TO THE EXISTING FLOATING BOOM BARRIERS UTILIZED BY THE LEHIGH ACRES MUNICIPAL SERVICES IMPROVEMENT DISTRICT. SUBMIT DETAILS OF PROPOSED PRODUCT FOR APPROVAL PRIOR TO ORDERING OF MATERIALS.

SURFACE FINISH DETAILS



FAA NOTICE OF PROPOSED CONSTRUCTION

PURSUANT TO CODE OF FEDERAL REGULATIONS (CFR), TITLE 14 PART 77.7 AND 77.9 FILE A NOTICE OF PROPOSED CONSTRUCTION WITH THE FEDERAL AVIATION ADMINISTRATION (FAA) AT LEAST 45 DAYS PRIOR TO CONSTRUCTION. SEE CFR TITLE 14 PART 77.7 AND 77.9 FOR FULL REQUIREMENTS.

ABBREVIATIONS

BFBW	BACK FACE BACKWALL
CLR.	CLEAR
EF	EACH FACE
ES	EACH SIDE
FF	FAR FACE
FFBW	FRONT FACE BACKWALL
FFRW	FRONT FACE RETAINING WALL
NF	NEAR FACE
UNO	UNLESS NOTED OTHERWISE

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

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Engineer of Record: Lucio Martinez
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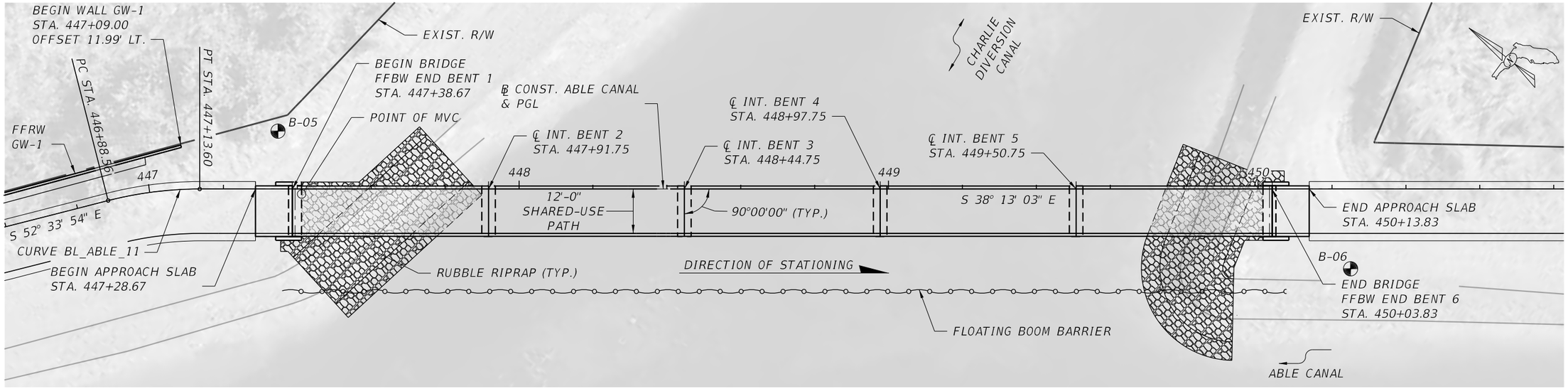
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

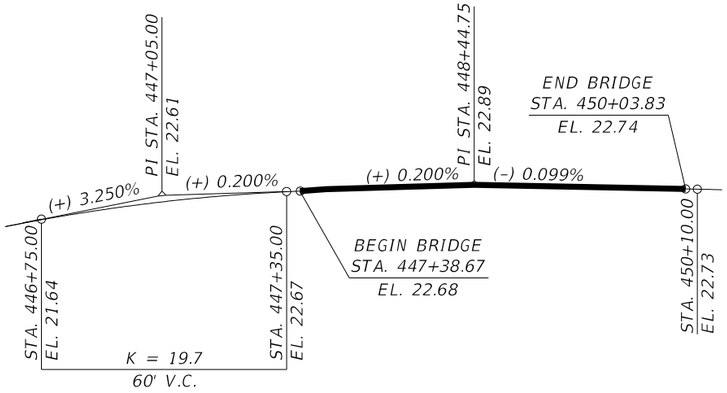
PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

GENERAL NOTES

SHEET NO. B-3



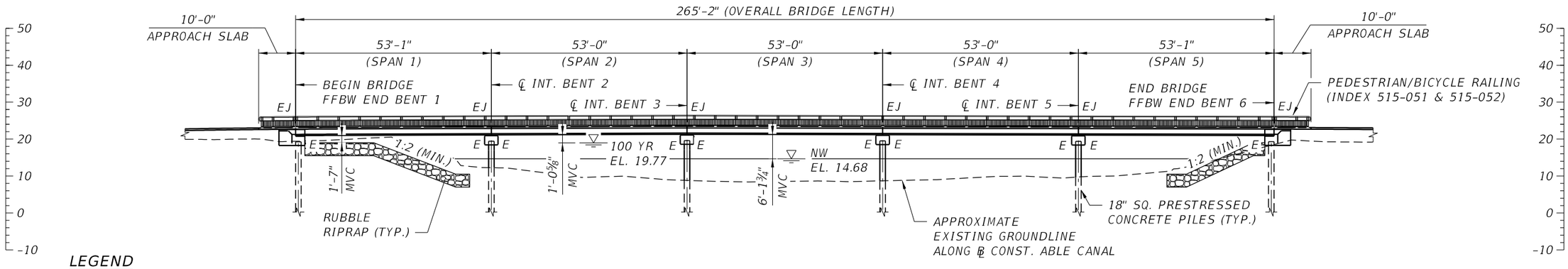
PLAN



VERTICAL CURVE DATA

HORIZONTAL CURVE DATA CURVE BL_ABLE_11

PI STA. = 447+01.14
Δ = 14° 20' 50" (RT)
D = 57° 17' 45"
T = 12.59
L = 25.04
R = 100..00
PC STA. = 446+88.56
PT STA. = 447+13.60



ELEVATION

LEGEND

APPROXIMATE LOCATION OF SOIL BORING

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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13461 Parker Commons Blvd, Suite 104
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PLAN AND ELEVATION

SHEET NO.
B-4

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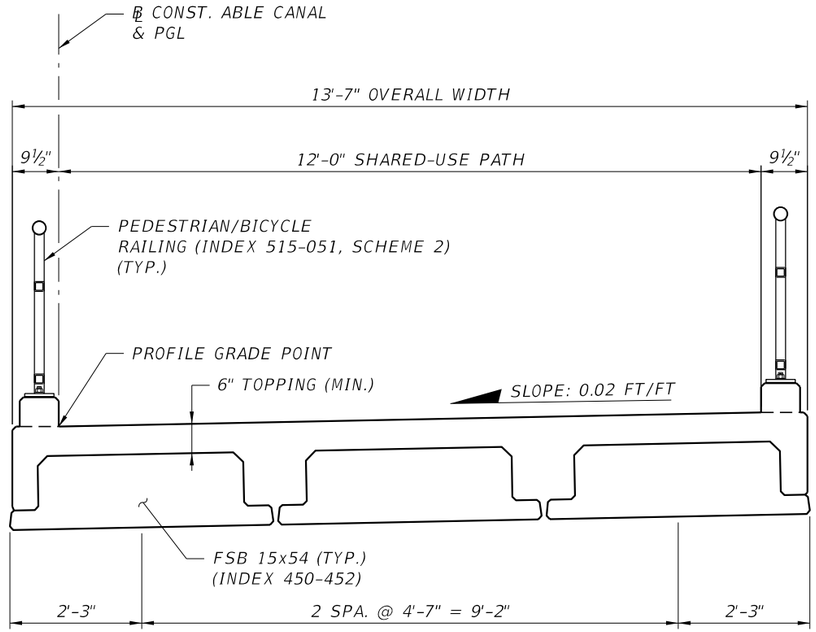

TYPICAL SECTION
(SPANS 1 THRU 5)

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
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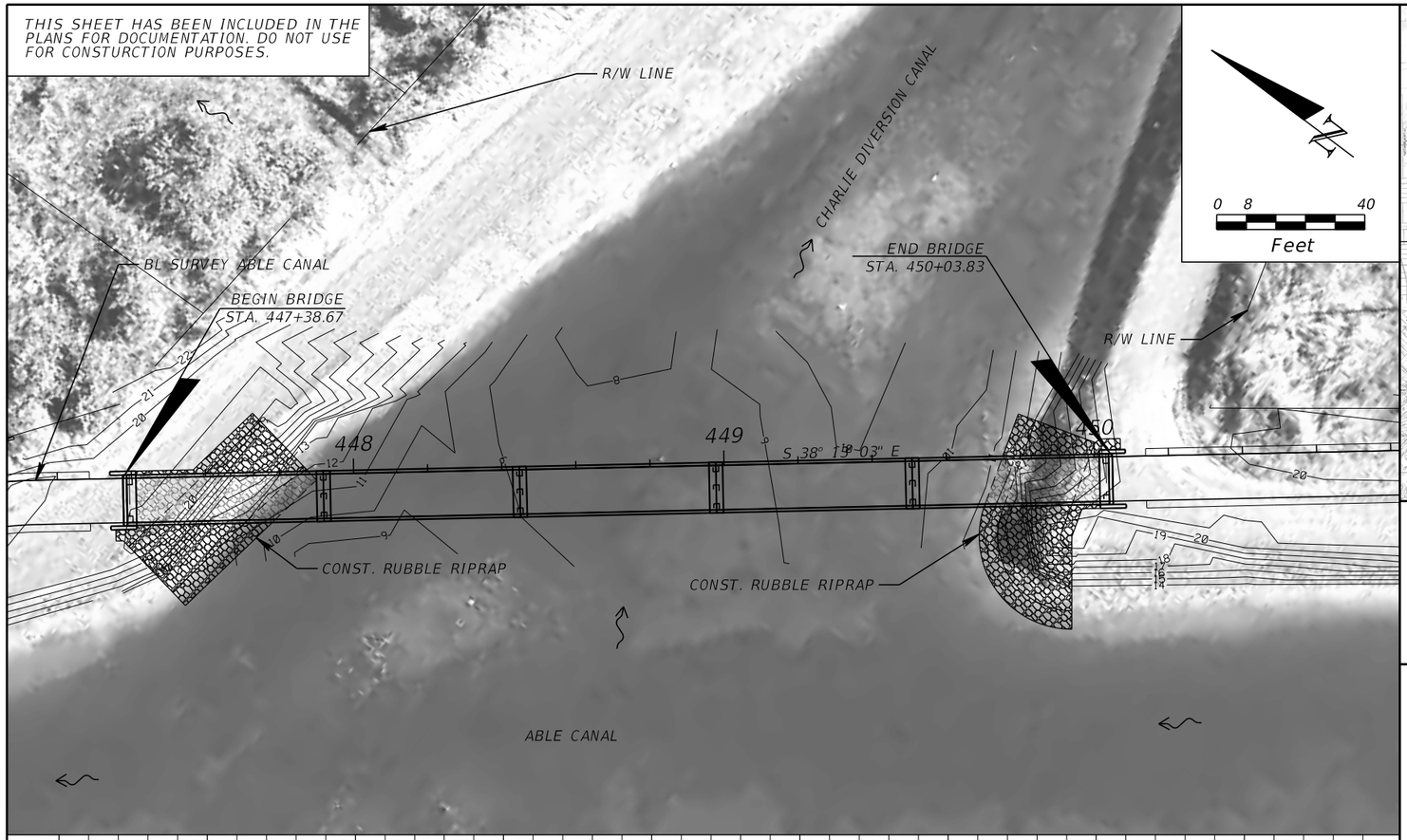
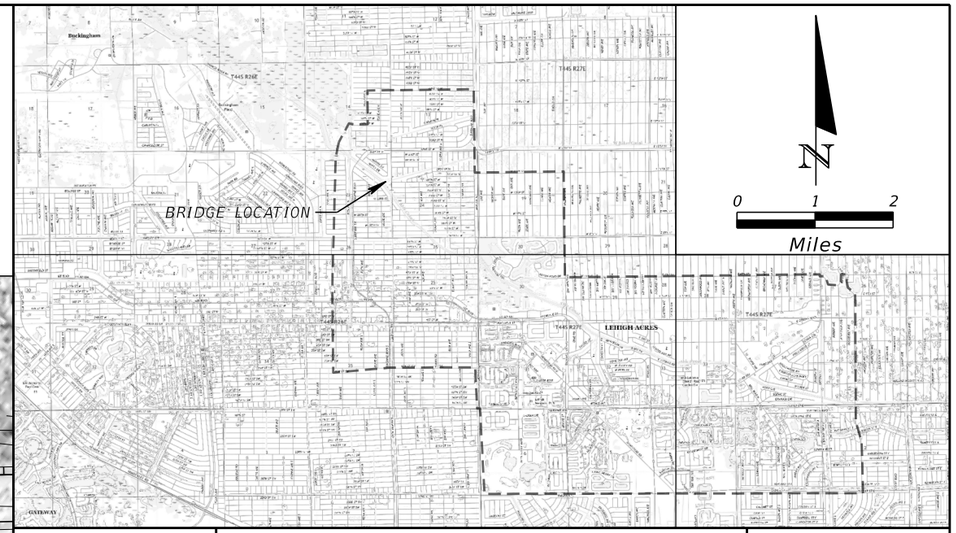
TYPICAL SECTION

SHEET NO.
B-5

THIS SHEET HAS BEEN INCLUDED IN THE PLANS FOR DOCUMENTATION. DO NOT USE FOR CONSTURCTION PURPOSES.





(REFERENCE)	EXISTING STRUCTURES (1)	(2)	(3)	(4)	PROPOSED STRUCTURE
FOUNDATION					–
OVERALL LENGTH					265' -2"
SPAN LENGTH					3 @ 53'-0", 2 @ 53' 1"
TYPE CONSTRUCTION					CONCRETE
AREA OF OPENING @ D.F.					1717 FT²
BRIDGE WIDTH					13'-7"
ELEV. LOW MEMBER					20.82'

HYDRAULIC DESIGN DATA

NOTE:
The hydraulic data is shown for informational purposes only to indicate the flood discharges and water surface elevations which may be anticipated in any given year. This data was generated using highly variable factors determined by a study of the watershed. Many judgements and assumptions are required to establish these factors. The resultant hydraulic data is sensitive to changes, particularly antecedent conditions, urbanization, channelization and land use. Users of this data are cautioned against the assumption of precision which cannot be obtained.

TERMS:
Design Flood: Utilized to assure a desired level of hydraulic performance.
Base Flood: Has a 1% chance of being exceeded in any given year (100 year frequency)
Overtopping Flood: Causes flow over the highway, over a watershed divide, or thru emergency relief structures.
Greatest Flood: The most severe that can be predicted where overtopping is not practicable.

WATER SURFACE ELEVATIONS: N.H.W. (Non-Tidal) 14.68 M.H.W. (Tidal) _____
CONTROL (Non-Tidal) _____ M.L.W. (Tidal) _____

FLOOD DATA:	MAX. EVENT OF RECORD	DESIGN FLOOD	BASE FLOOD	☐ OVERTOPPING or ☒ GREATEST FLOOD
STAGE ELEV. NAVD (ft)	IRMA 19.05	N/A	19.77	N/A
DISCHARGE (cfs)	UNKNOWN	N/A	2200	N/A
AVERAGE VELOCITY (f/s)	UNKNOWN	N/A	1.09	N/A
EXCEEDANCE PROB. (%)	UNKNOWN	10.0	1.0	0.2
FREQUENCY (yr.)	UNKNOWN	10 YR	100 YR	500 YR

SCOUR PREDICTIONS FOR PROPOSED STRUCTURE DESCRIBED ABOVE:

PIER INFORMATION NUMBERS	SIZE AND TYPE	LONG TERM SCOUR ELEV.	TOTAL SCOUR ELEVATION WORST CASE < 100 yr. FREQ. (yr.) 100	WORST CASE < 500 yr. FREQ. (yr.) 500
1-5	1.5'x1.5' CONCRETE	N/A	2.30	N/A

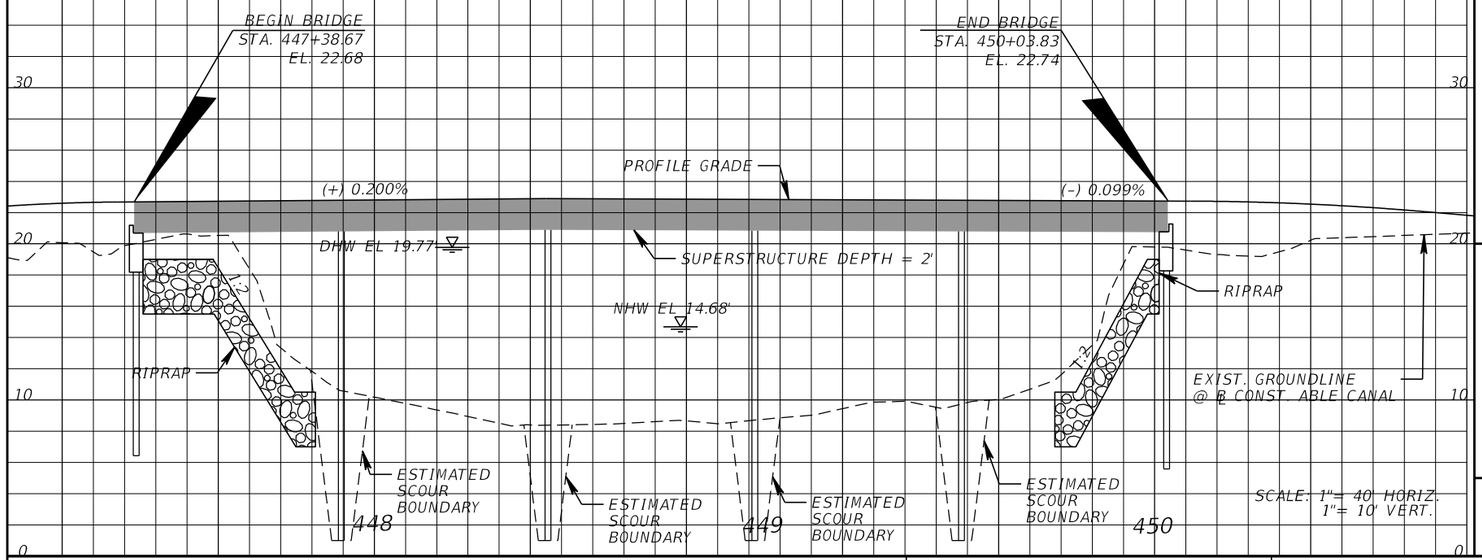
HYDRAULIC RECOMMENDATIONS

1. BEGIN BRIDGE STATION 447+38.67 END BRIDGE STATION 450+03.83 SKEW ANGLE 25 deg.
2. CLEARANCE PROVIDED: NAV: HORIZ. N/A VERT. N/A ABOVE EL. N/A DRIFT: HORIZ. N/A VERT. 1.1 ABOVE EL. 19.77
3. MINIMUM CLEARANCE: NAV: HORIZ. N/A VERT. N/A ABOVE EL. N/A DRIFT: HORIZ. N/A VERT. 1.0 ABOVE EL. 19.77
4. ABUTMENTS:

	BEGIN BRIDGE	END BRIDGE
RUBBLE GRADE:	BANK AND SHORE	BANK AND SHORE
SLOPE:	1:2	1:2
BURIED OR NON-BURIED HORIZ. TOE:	BURIED	BURIED
TOE HORIZ. DISTANCE:	5'	5'
LIMIT OF PROTECTION:	22' LT. & 33' RT.	12' LT. & 48' RT.

5. DECK DRAINAGE: RUNOFF FROM THE BRIDGE WILL DRAIN DIRECTLY TO ABLE CANAL AND CHARLIE DIVERSION CANAL.

REMARKS: STAGE DATA WAS PROVIDED BY AIM ENGINEERING (FROM LAMSID MODEL + RECOVERDED STAGES DURING HURRICANE IRMA IN 2017)



REVISIONS DATE	DESCRIPTION	DATE	DESCRIPTION

KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Courtney J. Richards
P.E. No.: 93234

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

BRIDGE HYDRAULIC RECOMMENDATIONS

SHEET NO. B-6

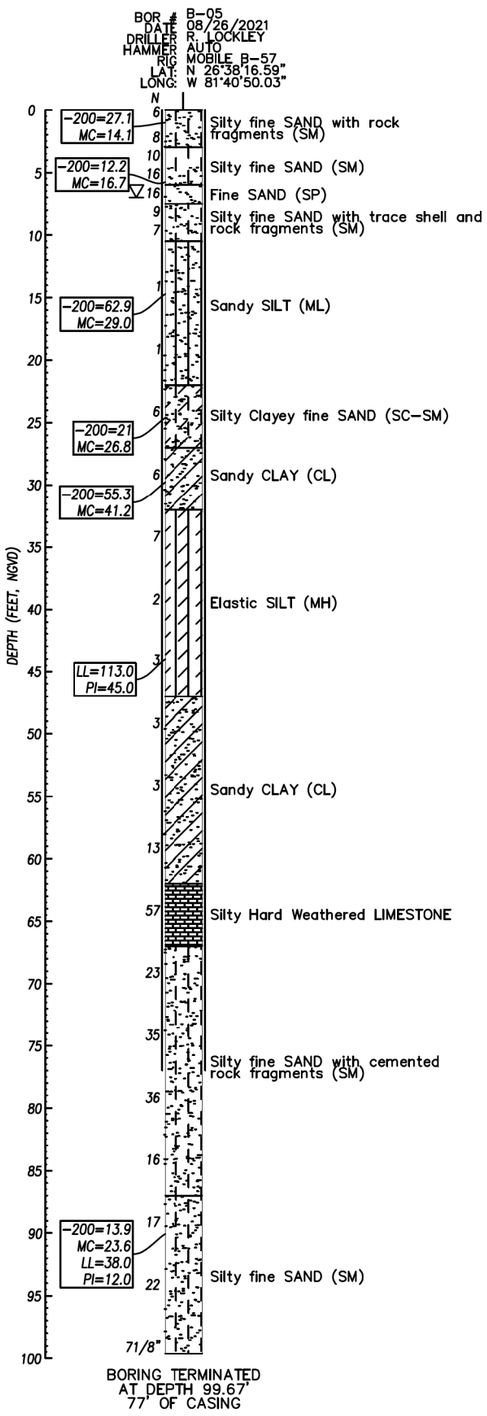
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

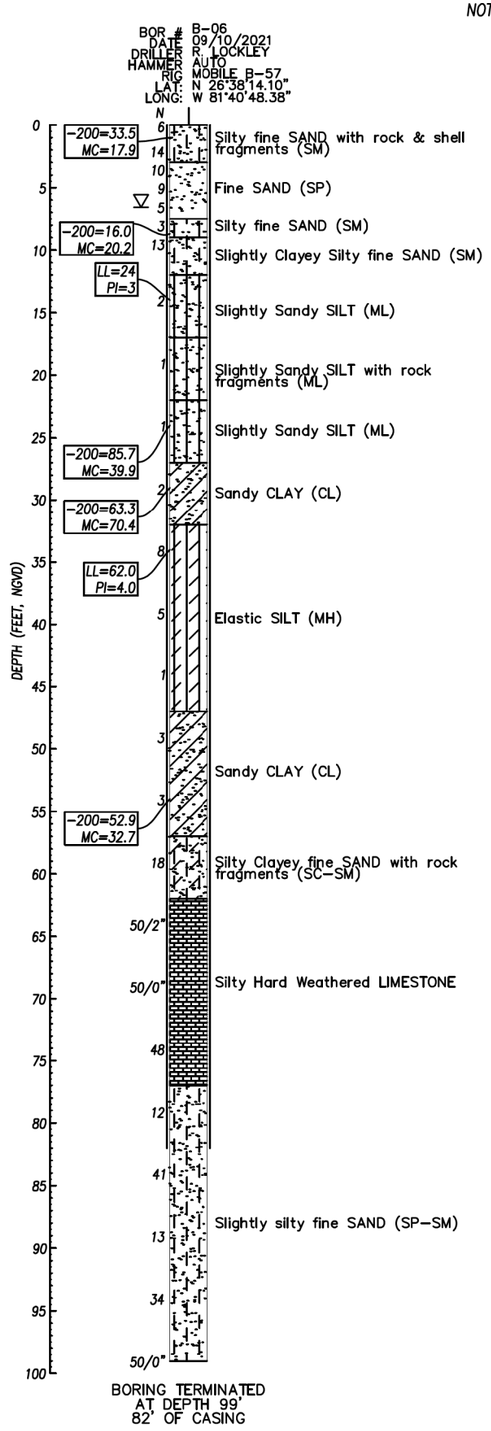
APPROXIMATE SCALE

0' 125 250

LEGEND:

- SAND – Sand with < 12% fines
- Silty SAND – Sand with 12% to 50% Silt
- Sandy SILT – Sand/Silt mixture with > 50% Silt
- Sandy CLAY – Clay with > 30% Sand
- Lean CLAY – Fat Clay
- Silty Clayey SAND – Sand with 12% to 50% Clay and Silt
- Clayey SILT – Elastic Silt
- HARD Weathered Limestone





NOTES:

1. UPON COMPLETION OF EACH SPT BORING, THE BOREHOLE WAS GROUTED WITH CEMENT–BENTONITE SLURRY.
2. ALL SPT BORINGS WERE PERFORMED USING AN AUTOMATIC HAMMER TO THE BORING TERMINATION DEPTH
3. GEOGRAPHICAL GPS COORDINATE LOCATIONS WERE DETERMINED USING A 4 SATELLITE MINIMUM AUTONOMOUS SOLUTION FROM A WAAS HAND HELD GPS UNIT.
4. THE BORING LOGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE TIME OF DRILLING.
5. NO WARRANTY AS TO THE SUBSURFACE CONDITION, STRATA DEPTH OF SOIL CONSISTENCY BETWEEN OR OUTSIDE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING.
6. WHILE THE BORINGS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THEIR RESPECTIVE LOCATIONS AND FOR THEIR RESPECTIVE VERTICAL REACHES, LOCAL VARIATIONS CHARACTERISTIC OF THE SUBSURFACE MATERIALS OF THE REGION ARE ANTICIPATED AND MAY BE ENCOUNTERED.
7. THE BORING LOGS AND RELATED INFORMATION ARE BASED ON THE DRILLER'S LOGS AND VISUAL EXAMINATION OF SELECTED SAMPLES IN THE LABORATORY. THE DELINEATION BETWEEN SOIL TYPES SHOWN ON THE LOGS IS APPROXIMATE AND THE DESCRIPTION REPRESENTS OUR INTERPRETATION OF SUBSURFACE CONDITIONS AT THE DESIGNATED BORING LOCATIONS ON THE PARTICULAR DATE DRILLED.
8. GROUNDWATER ELEVATIONS SHOWN ON THE BORING LOGS REPRESENT GROUNDWATER SURFACES ENCOUNTERED ON THE DATES SHOWN. FLUCTUATIONS IN WATER TABLE LEVELS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR

▽ – Water Table existing at time of boring
⌖ – SPT Boring Location
N – Standard Penetration Resistance in Blows per Foot
-200 – Percent Passing the # 200 Standard Sieve
MC – Percent Moisture Content
LL – Liquid Limit
PI – Plasticity Index
SP – Unified Soil Classification System (ASTM D2487)
50/2 – 50 Blows for 2–inches penetration into soil
‖ ‖ – Temporary Steel Casing

ENVIRONMENTAL CLASSIFICATION

Superstructure – Slightly Aggressive
Substructure – Moderately Aggressive (Steel)
Moderately Aggressive (Concrete)

CORROSION SERIES TEST RESULTS

Resistivity Ohms – cm	Chlorides ppm	Sulfate ppm	pH	
11,050	15	BDL	8.5	(Soil)
1,848	55	38	7.7	(Water)

GRANULAR MATERIALS

Relative Density	Safety Hammer SPT N–Value Blows/Foot	Automatic Hammer SPT N–Value Blows/Foot
Very Loose	Less than 4	Less than 3
Loose	4 – 10	3 – 8
Medium Dense	10 – 30	8 – 24
Dense	30 – 50	24 – 40
Very Dense	Greater than 50	Greater than 40

SILTS AND CLAYS

Consistency	Safety Hammer SPT N–Value Blows/Foot	Automatic Hammer SPT N–Value Blows/Foot
Very Soft	Less than 2	Less than 1
Soft	2 – 4	1 – 3
Firm	4 – 8	3 – 6
Stiff	8 – 15	6 – 12
Very Stiff	15 – 30	12 – 24
Hard	Greater than 30	Greater than 24

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

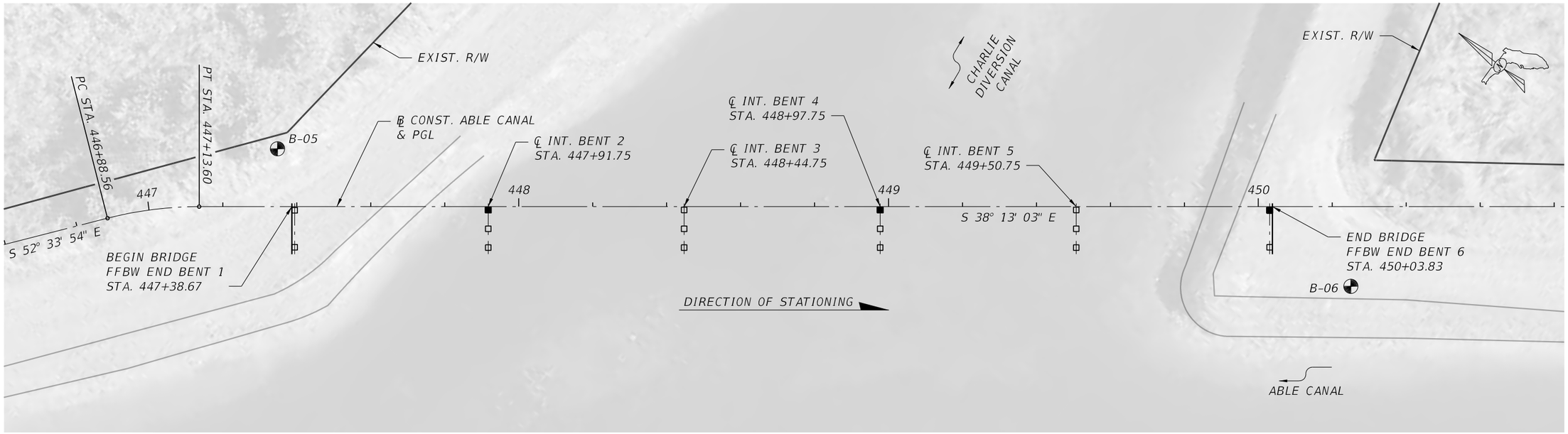
ENGINEER OF RECORD:
IVAN SOKOLIC, P.E. No. 64114
ARDAMAN AND ASSOCIATES, INC.
9970 BAVARIA ROAD
FORT MYERS, FLORIDA 33913

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

REPORT OF CORE BORINGS

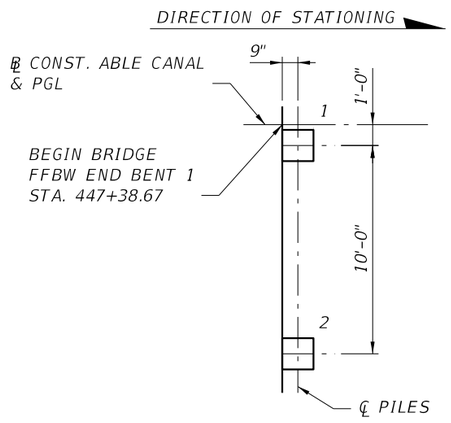
SHEET NO. B-7



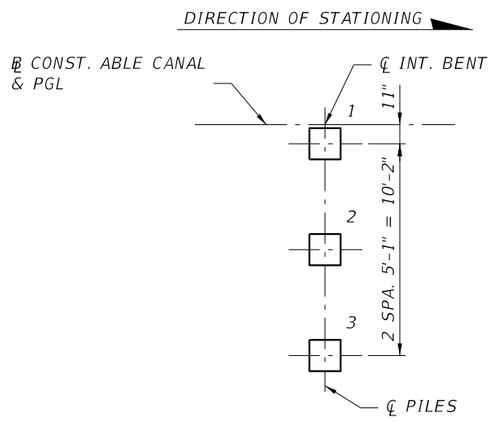
PLAN

LEGEND

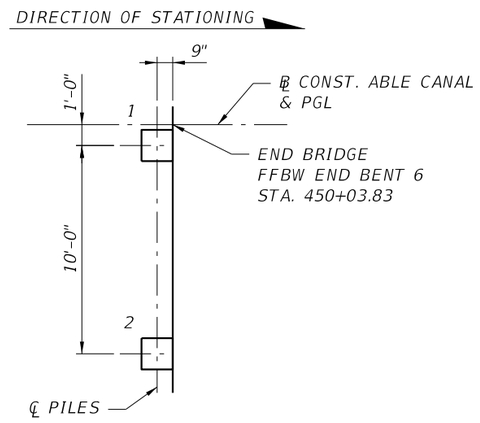
- □ PROPOSED 18" SQUARE PRESTRESSED CONCRETE PILE
- ■ PROPOSED 18" SQUARE PRESTRESSED CONCRETE TEST PILE
- ◔ APPROXIMATE BORING LOCATION



END BENT 1



INTERMEDIATE BENT 2 THRU 5



END BENT 6

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

FOUNDATION LAYOUT

SHEET NO. B-8

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PILE DATA TABLE

Table Date 01/01/16

INSTALLATION CRITERIA								DESIGN CRITERIA								PILE CUT-OFF ELEVATIONS		
PIER or BENT NUMBER	PILE SIZE (in.)	NOMINAL BEARING RESISTANCE (tons)	NOMINAL UPLIFT RESISTANCE (tons)	MINIMUM TIP ELEVATION (ft.)	TEST PILE LENGTH (ft.)	REQUIRED JET ELEVATION (ft.)	REQUIRED PREFORM ELEVATION (ft.)	FACTORED DESIGN LOAD (tons)	FACTORED DESIGN UPLIFT LOAD (tons)	DOWN DRAG (tons)	TOTAL SCOUR RESISTANCE (tons)	NET SCOUR RESISTANCE (tons)	100-YEAR SCOUR ELEVATION (ft.)	Ø COMPRESSION	Ø UPLIFT	PILE 1	PILE 2	PILE 3
END BENT 1	18	97	N/A	-32	N/A	N/A	N/A	63	N/A	N/A	N/A	N/A	N/A	0.65	0.55	19.3	19.5	N/A
INT. BENT 2	18	108	N/A	-32	75	N/A	N/A	70	N/A	N/A	N/A	N/A	2.3	0.65	0.55	19.4	19.5	19.6
INT. BENT 3	18	108	N/A	-32	N/A	N/A	N/A	70	N/A	N/A	N/A	N/A	2.3	0.65	0.55	19.5	19.6	19.7
INT. BENT 4	18	108	N/A	-32	75	N/A	N/A	70	N/A	N/A	N/A	N/A	2.3	0.65	0.55	19.4	19.5	19.6
INT. BENT 5	18	108	N/A	-32	N/A	N/A	N/A	70	N/A	N/A	N/A	N/A	2.3	0.65	0.55	19.4	19.5	19.6
END BENT 6	18	97	N/A	-32	74	N/A	N/A	63	N/A	N/A	N/A	N/A	N/A	0.65	0.55	19.3	19.5	N/A

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

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

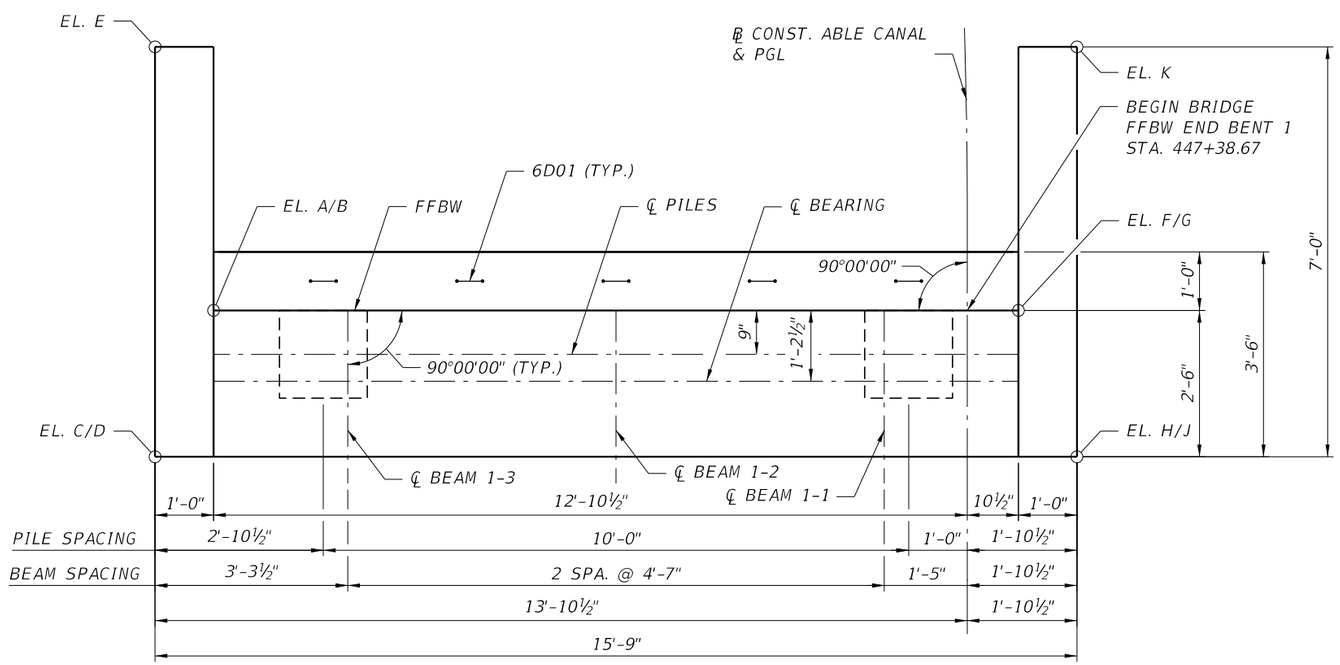
TOTAL SCOUR RESISTANCE – An estimate of the ultimate static side friction resistance provided by the scourable soil.

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

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

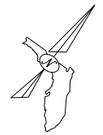
PILE INSTALLATION NOTES:

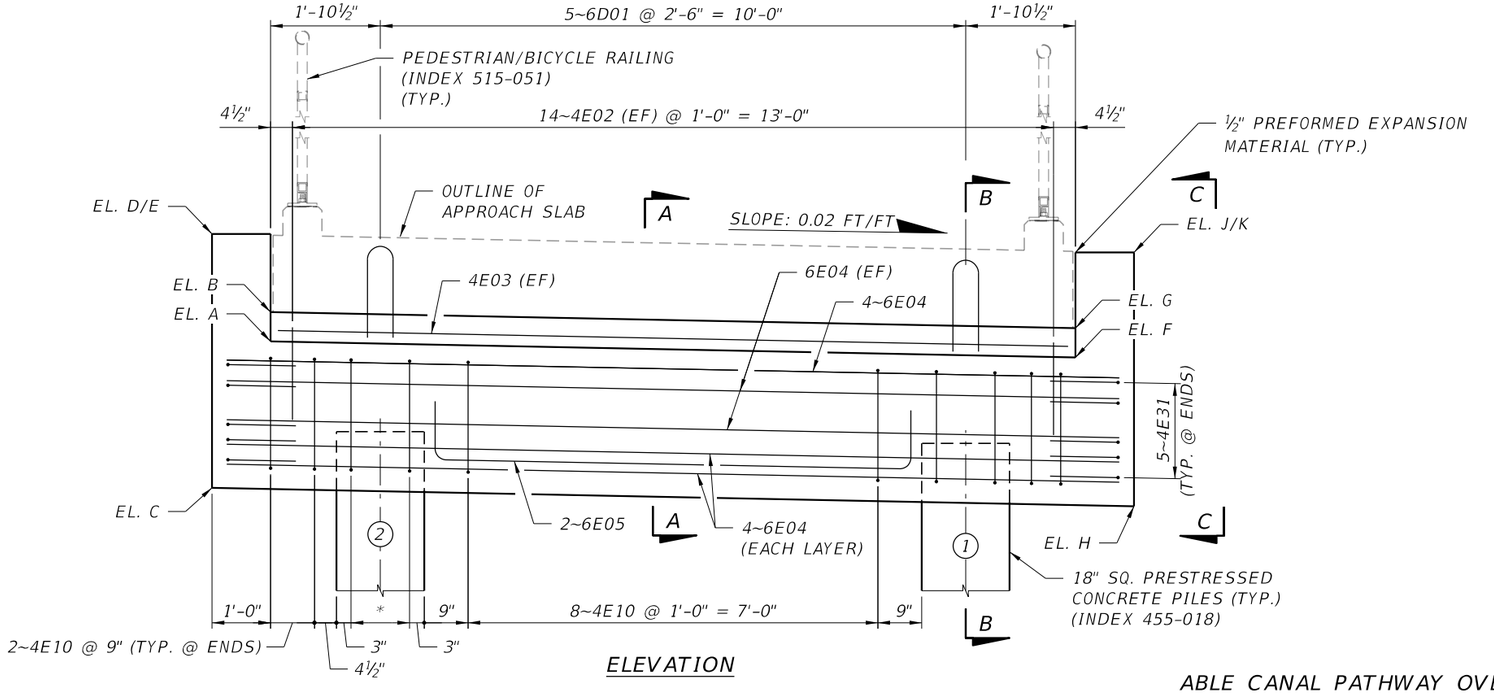
1. Contractor to verify location of all utilities prior to any pile installation activities.
2. Minimum Tip Elevation is required for lateral stability.
3. When a required jetting elevation is shown, the jet shall be lowered to the elevation and continue to operate at this elevation until the pile driving is completed. If jetting or preforming elevations differ from those shown on the table, the Engineer shall be responsible for determination of the required driving resistance.
4. No jetting will be allowed without the approval of the Engineer.
5. The Contractor should not anticipate being allowed to jet piles below the 100-year scour elevation or required jet elevation, whichever is deeper.
6. At each Bent, pile driving is to commence at the center of the Bent and proceed outward.
7. Take continuous dynamic load measurements during driving of all test piles in accordance with Section 455 of the FDOT Standard Specifications.
8. Provide a CTQP qualified inspector to record all pile driving activities.
9. Due to the potential of negative skin friction (down drag) loads due to anticipated settlement of approach embankment, portions of the end bent piles that are above existing ground line shall be wrapped with polyethylene sheeting per Section 459 of the FDOT Standard Specifications.



PLAN

DIRECTION OF STATIONING





ELEVATION

* 2~4E11 @ 1'-0" CENTERED ABOVE PILES

TABLE OF ELEV. END BENT 1	
POINT	ELEV.
A	21.014
B	21.514
C	18.534
D	22.944
E	22.930
F	20.739
G	21.239
H	18.219
J	22.669
K	22.655

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

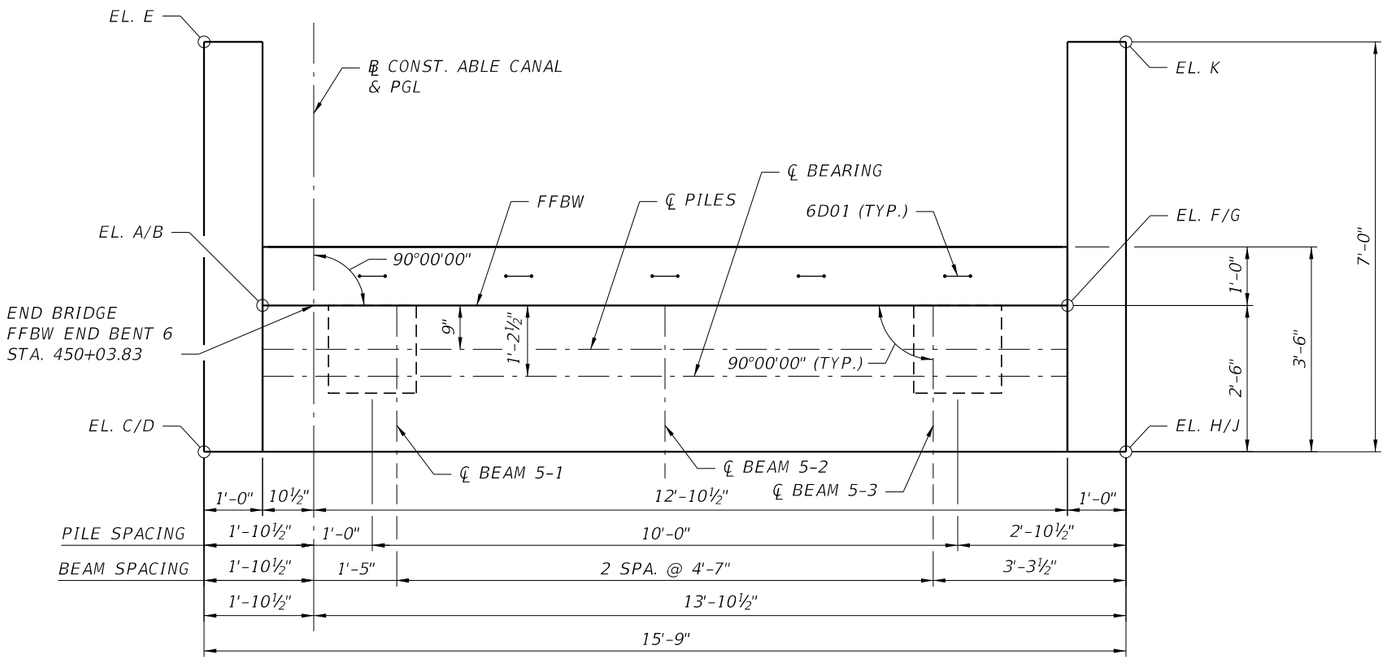
KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

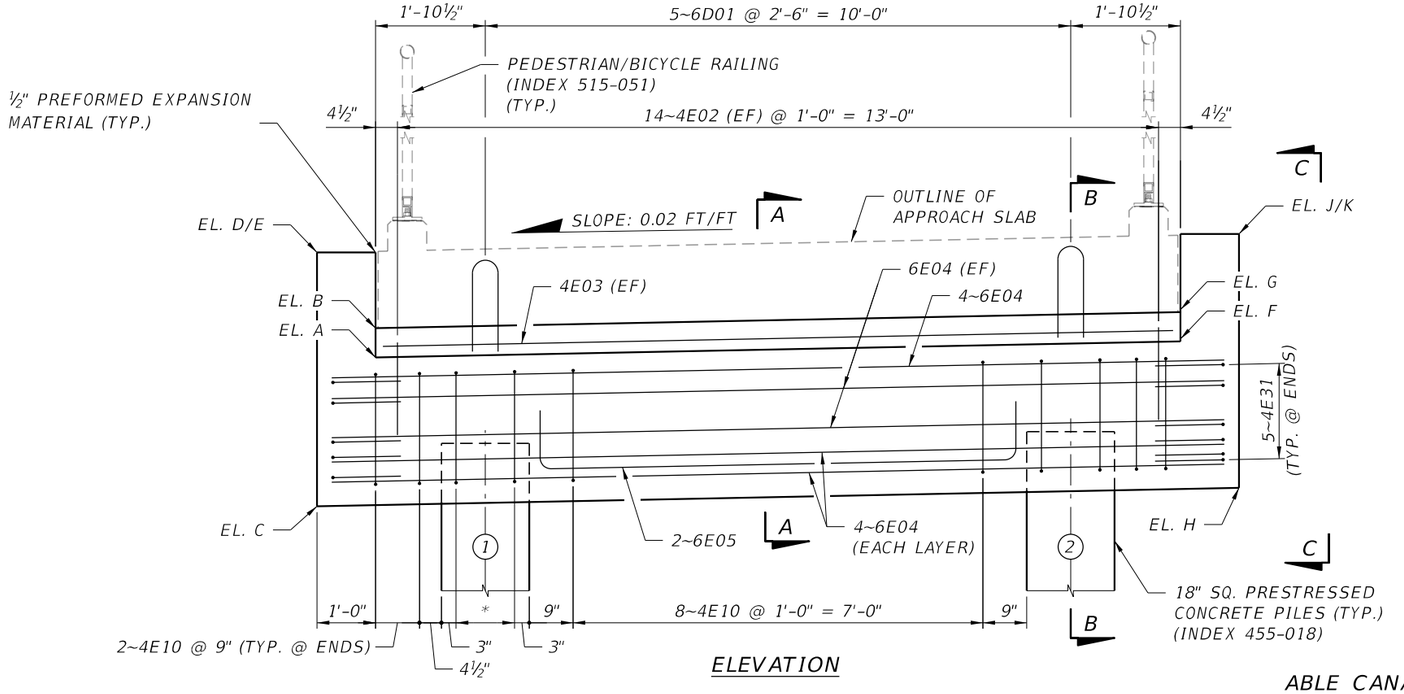
PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

END BENT 1

SHEET NO. B-10



PLAN



ELEVATION

* 2~4E11 @ 1'-0" CENTERED ABOVE PILES

DIRECTION OF STATIONING

TABLE OF ELEV. END BENT 6	
POINT	ELEV.
A	20.794
B	21.294
C	18.274
D	22.721
E	22.714
F	21.069
G	21.569
H	18.589
J	22.996
K	22.989

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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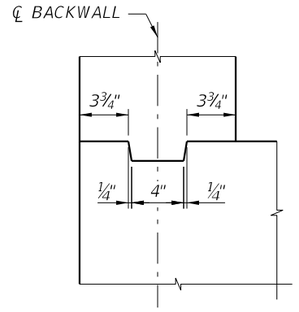
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

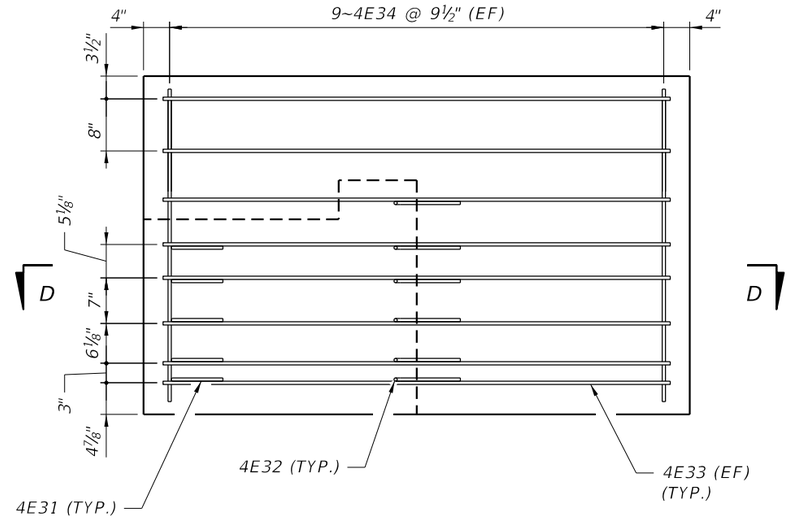
PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

END BENT 6

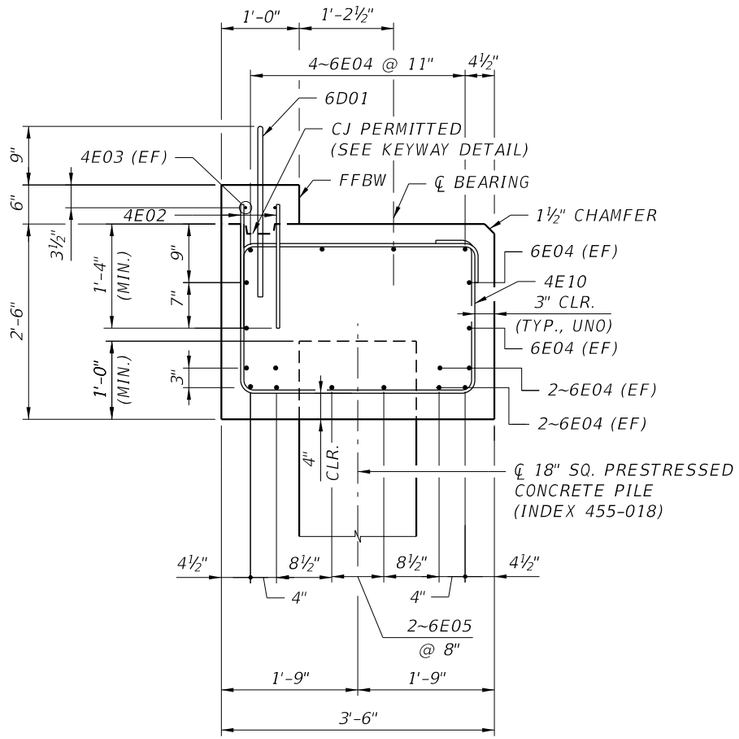
SHEET NO. B-11



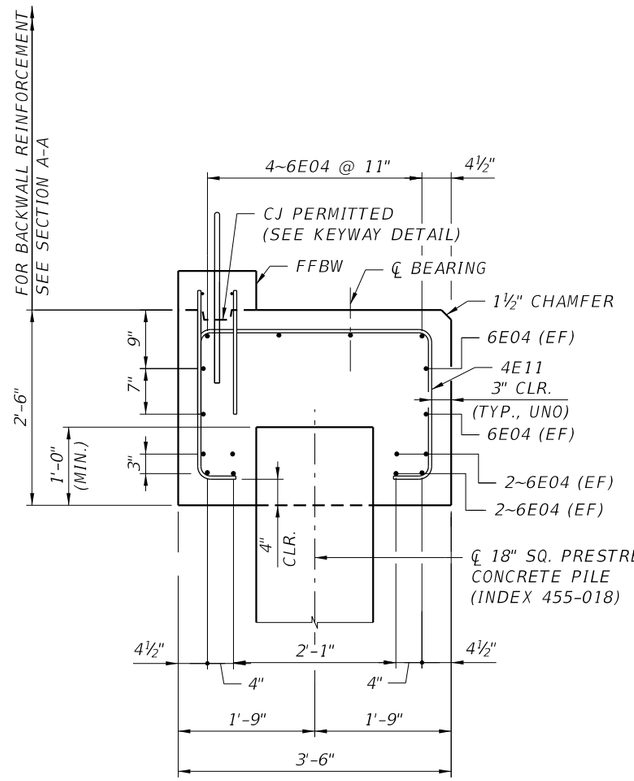
KEYWAY DETAIL



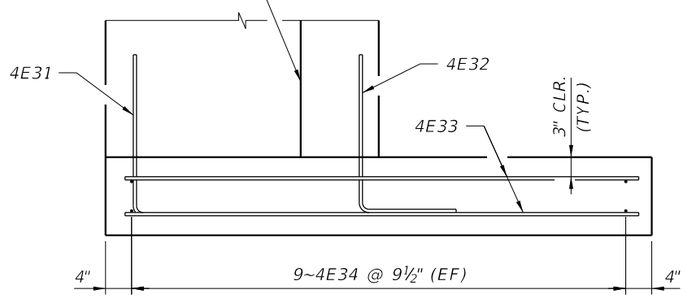
VIEW C-C



SECTION A-A



SECTION B-B



SECTION D-D

NOTES:

1. MATCH 4E31 BARS TO 6E04 BARS.
2. MATCH 4E32 BARS TO 6E04 OR 4E03 BARS.

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

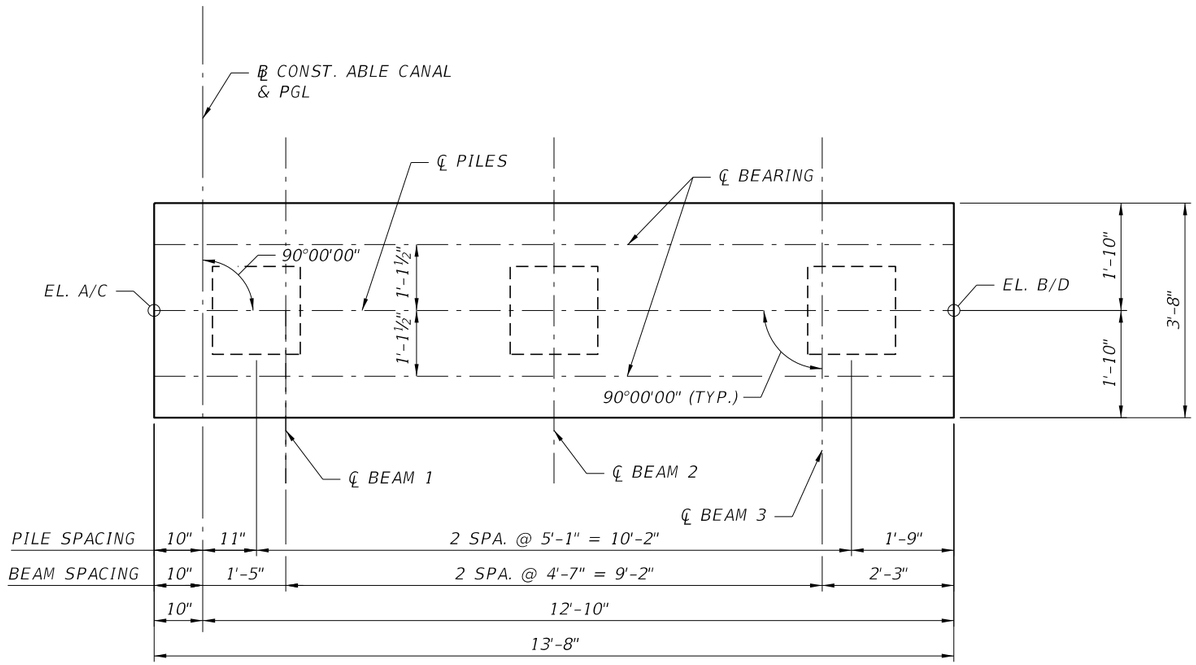
KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

END BENT DETAILS

SHEET NO. B-12

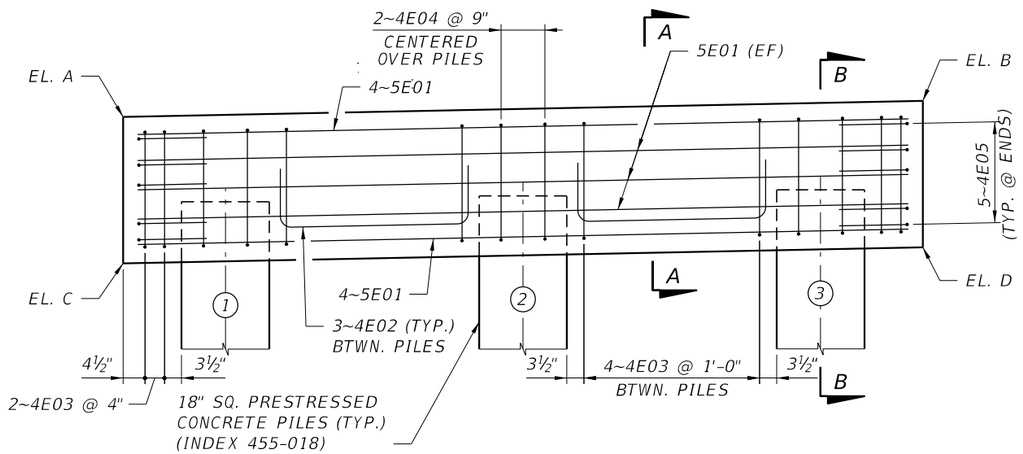


PLAN

DIRECTION OF STATIONING

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

TABLE OF ELEVATIONS					
INT. BENT	STATION	A	B	C	D
2	447+91.75	20.846	21.120	18.346	18.620
3	448+44.75	20.952	21.226	18.452	18.726
4	448+97.75	20.900	21.173	18.400	18.673
5	449+50.75	20.847	21.120	18.347	18.620



ELEVATION

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

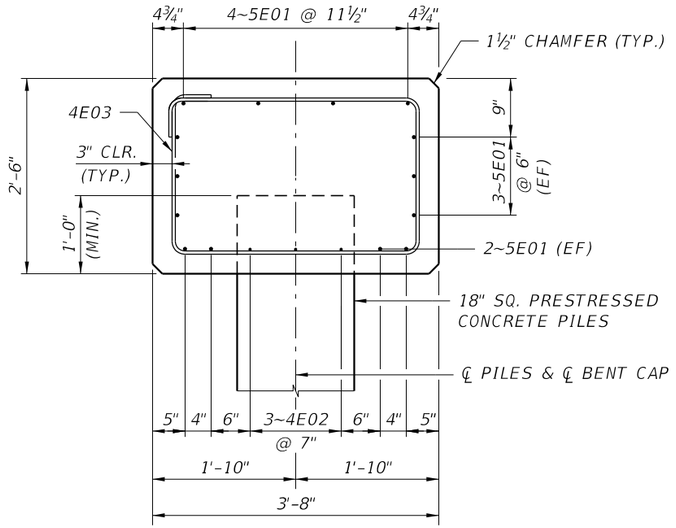
KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

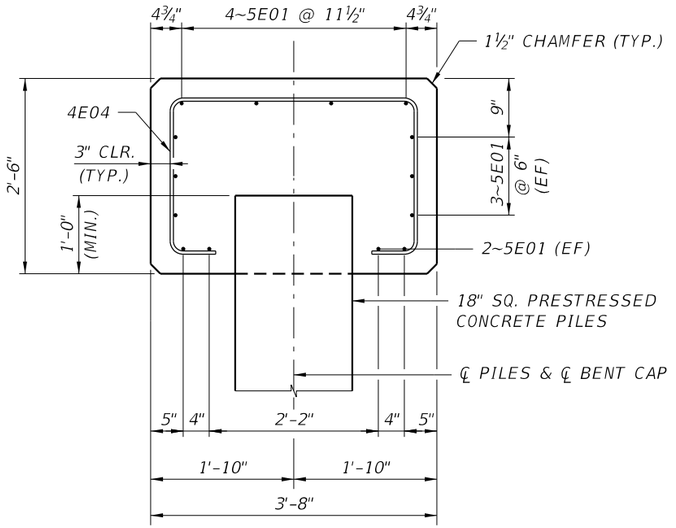
PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

INTERMEDIATE BENTS

SHEET NO.
B-13



SECTION A-A



SECTION B-B

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

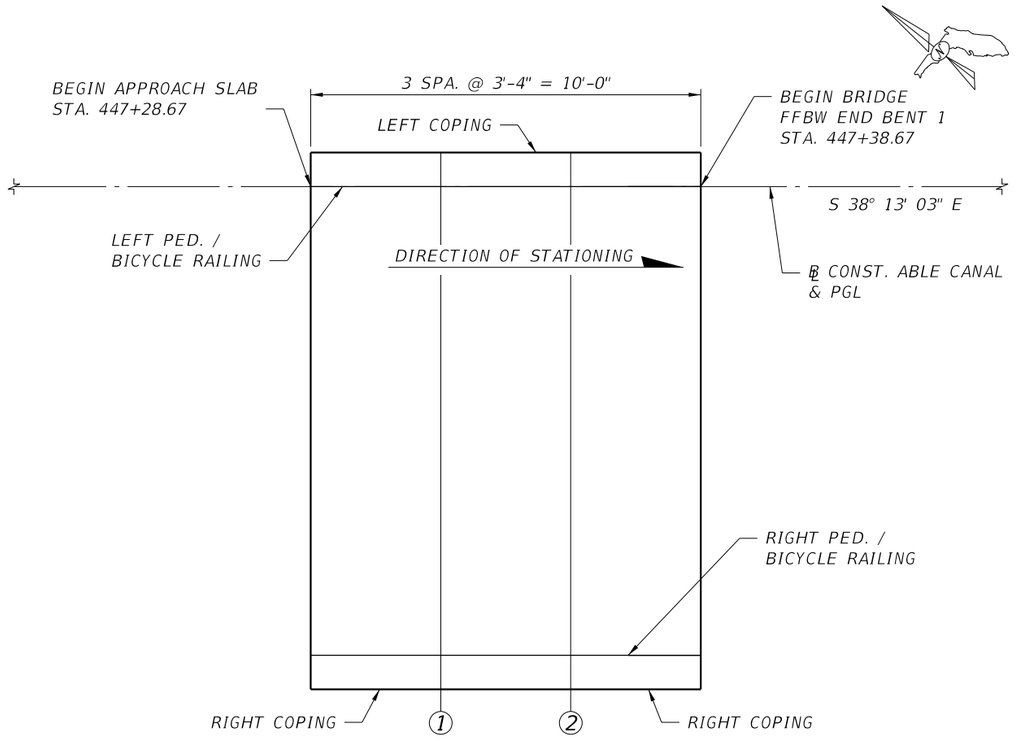
KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

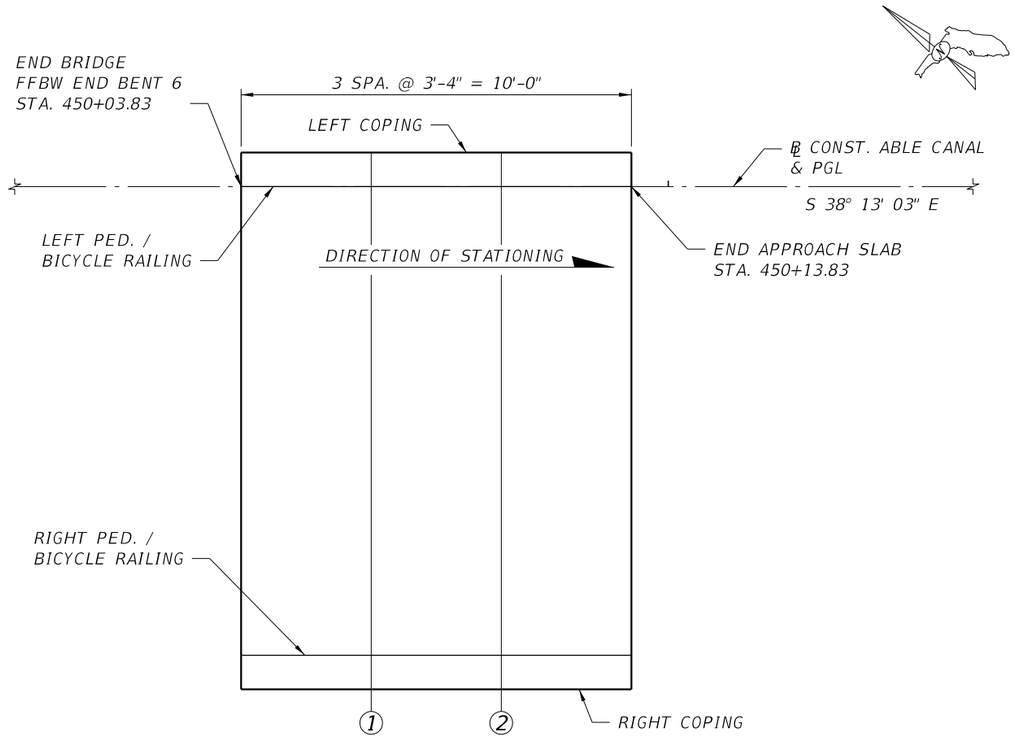
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

INTERMEDIATE BENT DETAILS

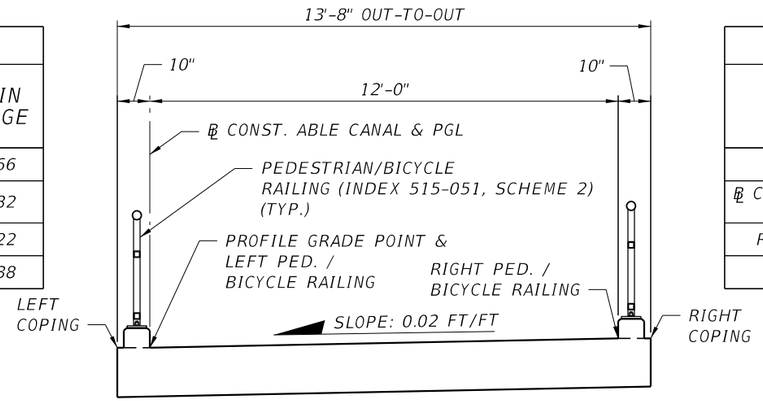
SHEET NO.
B-14





APPROACH SLAB 1

FINISH GRADE ELEVATIONS				
LOCATION/POINTS	BEGIN A.S. 1	APPROACH SLAB 1		BEGIN BRIDGE
		1	2	
LEFT COPING	22.636	22.650	22.659	22.666
℄ CONST. ABLE CANAL & PGL / LEFT PED. / BICYCLE RAILING	22.652	22.666	22.675	22.682
RIGHT PED. / BICYCLE RAILING	22.892	22.906	22.915	22.922
RIGHT COPING	22.907	22.922	22.931	22.938



TYPICAL SECTION THRU APPROACH SLAB

APPROACH SLAB 2

FINISH GRADE ELEVATIONS				
LOCATION/POINTS	END BRIDGE	APPROACH SLAB 2		END A.S. 2
		1	2	
LEFT COPING	22.720	22.717	22.713	22.706
℄ CONST. ABLE CANAL & PGL / LEFT PED. / BICYCLE RAILING	22.736	22.733	22.729	22.722
RIGHT PED. / BICYCLE RAILING	22.976	22.973	22.969	22.962
RIGHT COPING	22.992	22.988	22.985	22.978

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

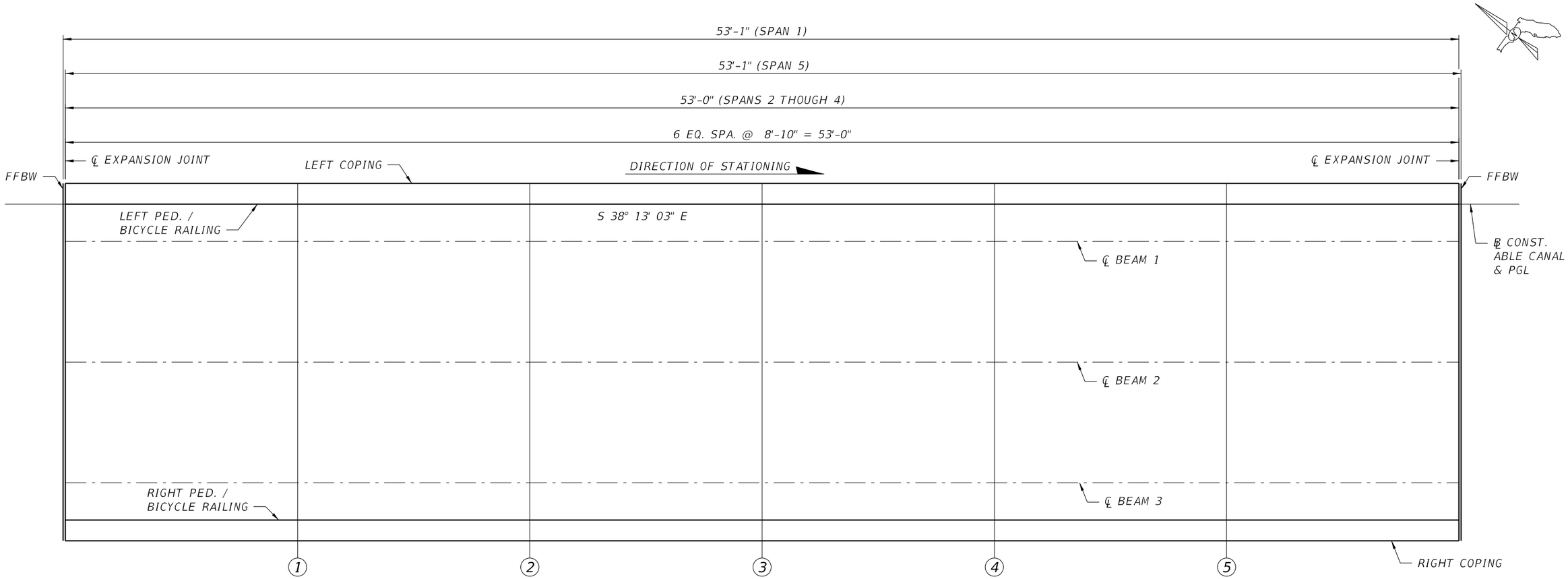
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

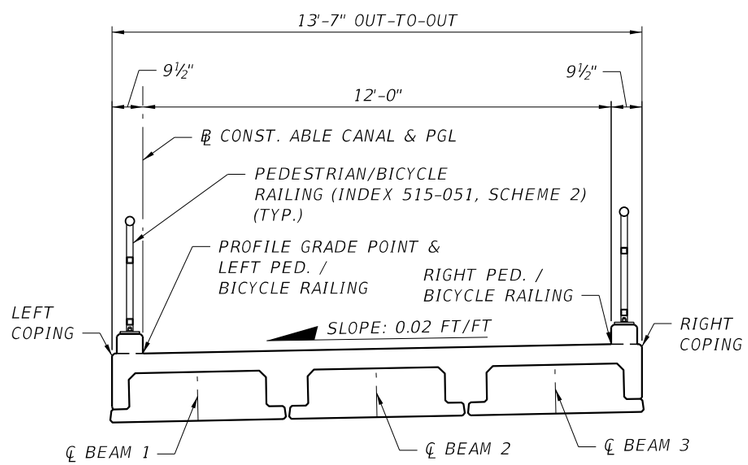
LEE COUNTY DEPARTMENT OF TRANSPORTATION	
PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

FINISH GRADE ELEVATIONS
(1 OF 3)

SHEET NO.
B-15



SPANS 1 THRU 5 PLAN



TYPICAL SECTION THRU SUPERSTRUCTURE

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

FINISH GRADE ELEVATIONS
(2 OF 3)

SHEET NO.
B-16

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FINISH GRADE ELEVATIONS

LOCATION/POINTS	BEGIN BRIDGE	SPAN 1					℄ INT. BENT 2
		1	2	3	4	5	
LEFT COPING	22.666	22.684	22.701	22.719	22.737	22.754	22.772
℄ CONST. ABLE CANAL & PGL / LEFT PED. / BICYCLE RAILING	22.682	22.700	22.717	22.735	22.753	22.770	22.788
℄ BEAM 1	22.710	22.728	22.746	22.763	22.781	22.799	22.816
℄ BEAM 2	22.802	22.820	22.837	22.855	22.873	22.890	22.908
℄ BEAM 3	22.893	22.911	22.929	22.947	22.964	22.982	23.000
RIGHT PED. / BICYCLE RAILING	22.922	22.940	22.957	22.975	22.993	23.010	23.028
RIGHT COPING	22.938	22.955	22.973	22.991	23.008	23.026	23.044

FINISH GRADE ELEVATIONS

LOCATION/POINTS	℄ INT. BENT 2	SPAN 2					℄ INT. BENT 3
		1	2	3	4	5	
LEFT COPING	22.772	22.790	22.807	22.825	22.843	22.860	22.878
℄ CONST. ABLE CANAL & PGL / LEFT PED. / BICYCLE RAILING	22.788	22.806	22.823	22.841	22.859	22.876	22.894
℄ BEAM 1	22.816	22.834	22.852	22.869	22.887	22.905	22.922
℄ BEAM 2	22.908	22.926	22.943	22.961	22.979	22.996	23.014
℄ BEAM 3	23.000	23.017	23.035	23.053	23.070	23.088	23.106
RIGHT PED. / BICYCLE RAILING	23.028	23.046	23.063	23.081	23.099	23.116	23.134
RIGHT COPING	23.044	23.061	23.079	23.097	23.114	23.132	23.150

FINISH GRADE ELEVATIONS

LOCATION/POINTS	℄ INT. BENT 3	SPAN 3					℄ INT. BENT 4
		1	2	3	4	5	
LEFT COPING	22.878	22.869	22.861	22.852	22.843	22.834	22.825
℄ CONST. ABLE CANAL & PGL / LEFT PED. / BICYCLE RAILING	22.894	22.885	22.876	22.868	22.859	22.850	22.841
℄ BEAM 1	22.922	22.913	22.905	22.896	22.887	22.878	22.870
℄ BEAM 2	23.014	23.005	22.996	22.988	22.979	22.970	22.961
℄ BEAM 3	23.106	23.097	23.088	23.079	23.070	23.062	23.053
RIGHT PED. / BICYCLE RAILING	23.134	23.125	23.116	23.108	23.099	23.090	23.081
RIGHT COPING	23.150	23.141	23.132	23.123	23.115	23.106	23.097

FINISH GRADE ELEVATIONS

LOCATION/POINTS	℄ INT. BENT 4	SPAN 4					℄ INT. BENT 5
		1	2	3	4	5	
LEFT COPING	22.825	22.817	22.808	22.799	22.790	22.782	22.773
℄ CONST. ABLE CANAL & PGL / LEFT PED. / BICYCLE RAILING	22.841	22.832	22.824	22.815	22.806	22.797	22.789
℄ BEAM 1	22.870	22.861	22.852	22.843	22.835	22.826	22.817
℄ BEAM 2	22.961	22.952	22.944	22.935	22.926	22.917	22.909
℄ BEAM 3	23.053	23.044	23.035	23.027	23.018	23.009	23.000
RIGHT PED. / BICYCLE RAILING	23.081	23.072	23.064	23.055	23.046	23.037	23.029
RIGHT COPING	23.097	23.088	23.080	23.071	23.062	23.053	23.044

FINISH GRADE ELEVATIONS

LOCATION/POINTS	℄ INT. BENT 5	SPAN 5					END BRIDGE
		1	2	3	4	5	
LEFT COPING	22.773	22.764	22.755	22.746	22.738	22.729	22.720
℄ CONST. ABLE CANAL & PGL / LEFT PED. / BICYCLE RAILING	22.789	22.780	22.771	22.762	22.754	22.745	22.736
℄ BEAM 1	22.817	22.808	22.799	22.791	22.782	22.773	22.764
℄ BEAM 2	22.909	22.900	22.891	22.882	22.874	22.865	22.856
℄ BEAM 3	23.000	22.992	22.983	22.974	22.965	22.956	22.948
RIGHT PED. / BICYCLE RAILING	23.029	23.020	23.011	23.002	22.994	22.985	22.976
RIGHT COPING	23.044	23.036	23.027	23.018	23.009	23.001	22.992

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
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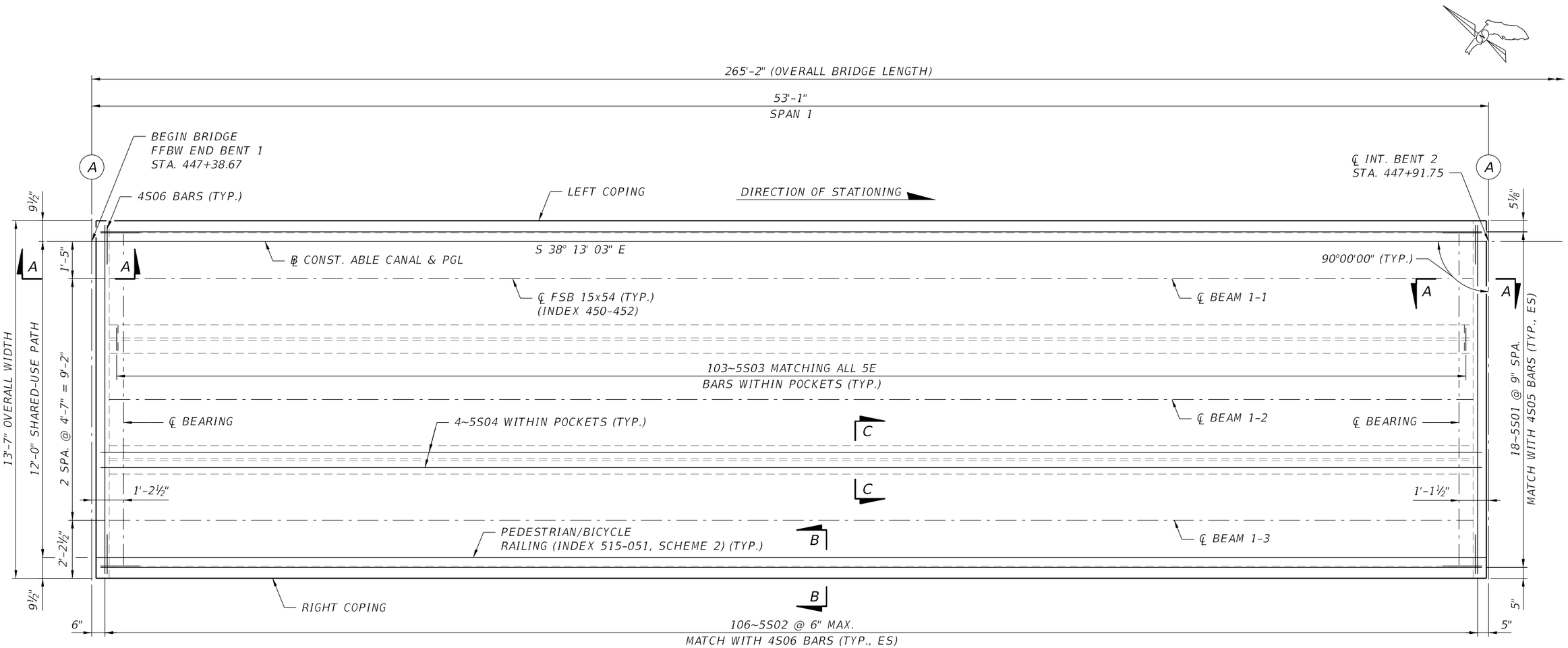
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

FINISH GRADE ELEVATIONS
(3 OF 3)

SHEET NO.
B-17



PLAN
SPAN 1

LEGEND:

(A) EXPANSION JOINT, SEE SUPERSTRUCTURE DETAILS

NOTES:

1. PEDESTRIAN RAILING REINFORCEMENT BARS 4P AND 4S ARE NOT SHOWN FOR CLARITY.
2. SHIFT 5S01 AND 5S02 BARS TO CLEAR 5S03 AND FSB 4K BARS AS REQUIRED.
3. SEE SUPERSTRUCTURE DETAILS FOR SECTION VIEWS.

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
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LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SUPERSTRUCTURE PLAN (1 OF 3)

SHEET NO. B-18

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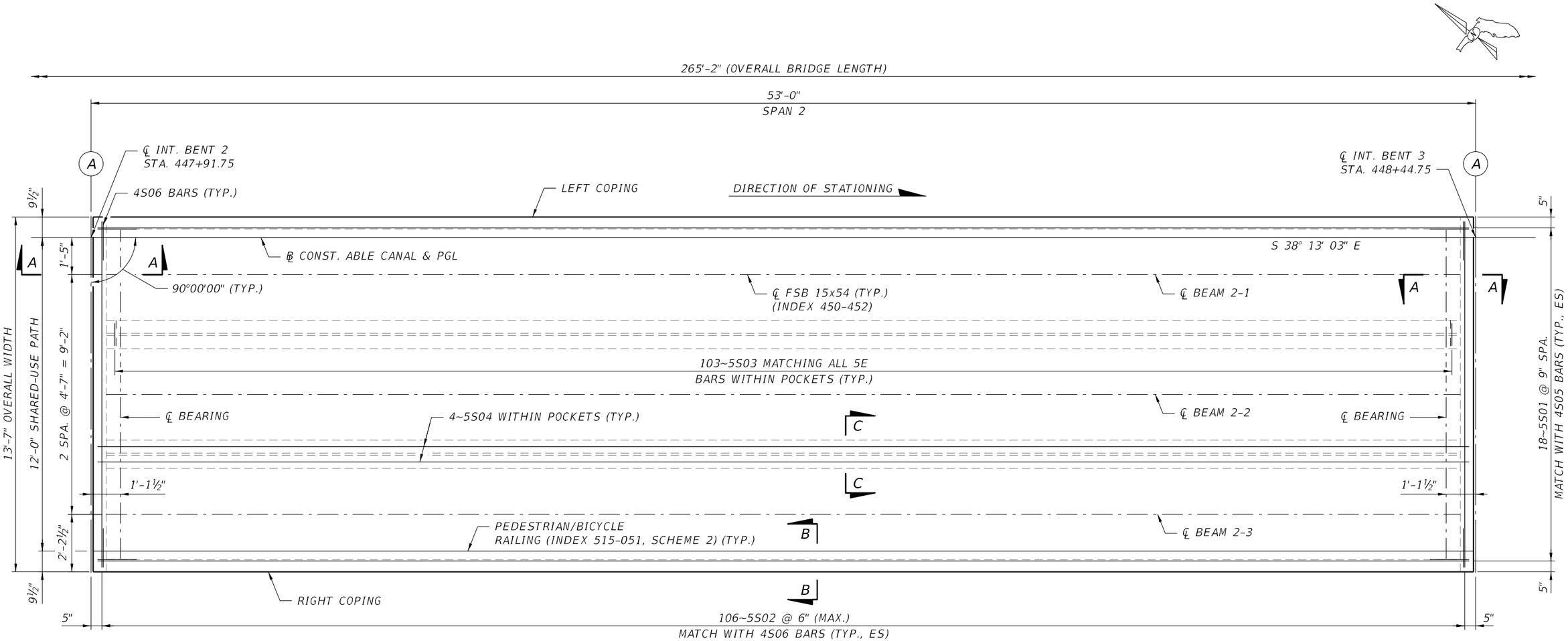

PLAN

SPAN 2 SHOWN, SPANS 3 & 4 SIMILAR

LEGEND:

(A) EXPANSION JOINT, SEE SUPERSTRUCTURE DETAILS

NOTES:

1. PEDESTRIAN RAILING REINFORCEMENT BARS 4P AND 4S ARE NOT SHOWN FOR CLARITY.
2. SHIFT 5S01 AND 5S02 BARS TO CLEAR 5S03 AND FSB 4K BARS AS REQUIRED.
3. SEE SUPERSTRUCTURE DETAILS FOR SECTION VIEWS.

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
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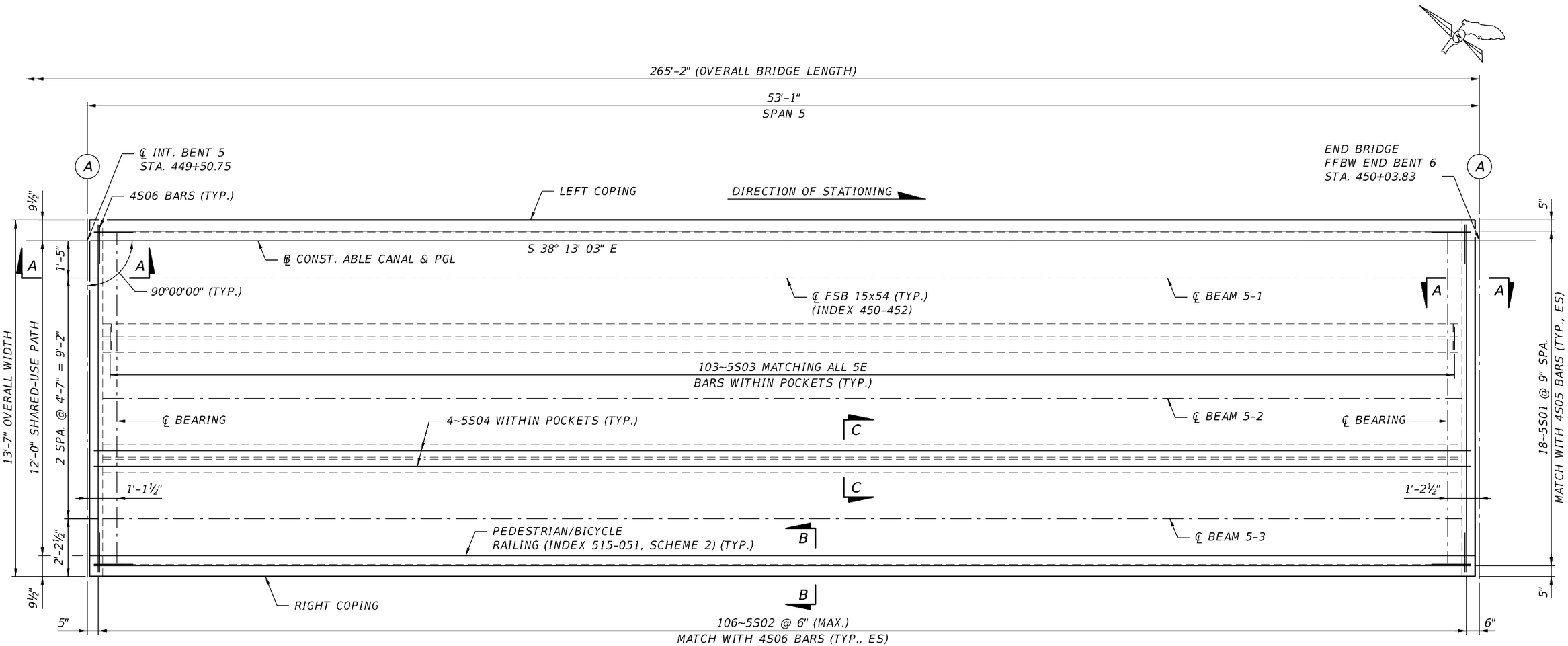
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SUPERSTRUCTURE PLAN (2 OF 3)

SHEET NO. B-19



PLAN
SPAN 5

LEGEND:

(A) EXPANSION JOINT, SEE SUPERSTRUCTURE DETAILS

NOTES:

1. PEDESTRIAN RAILING REINFORCEMENT BARS 4P AND 4S ARE NOT SHOWN FOR CLARITY.
2. SHIFT 5S01 AND 5S02 BARS TO CLEAR 5S03 AND FSB 4K BARS AS REQUIRED.
3. SEE SUPERSTRUCTURE DETAILS FOR SECTION VIEWS.

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
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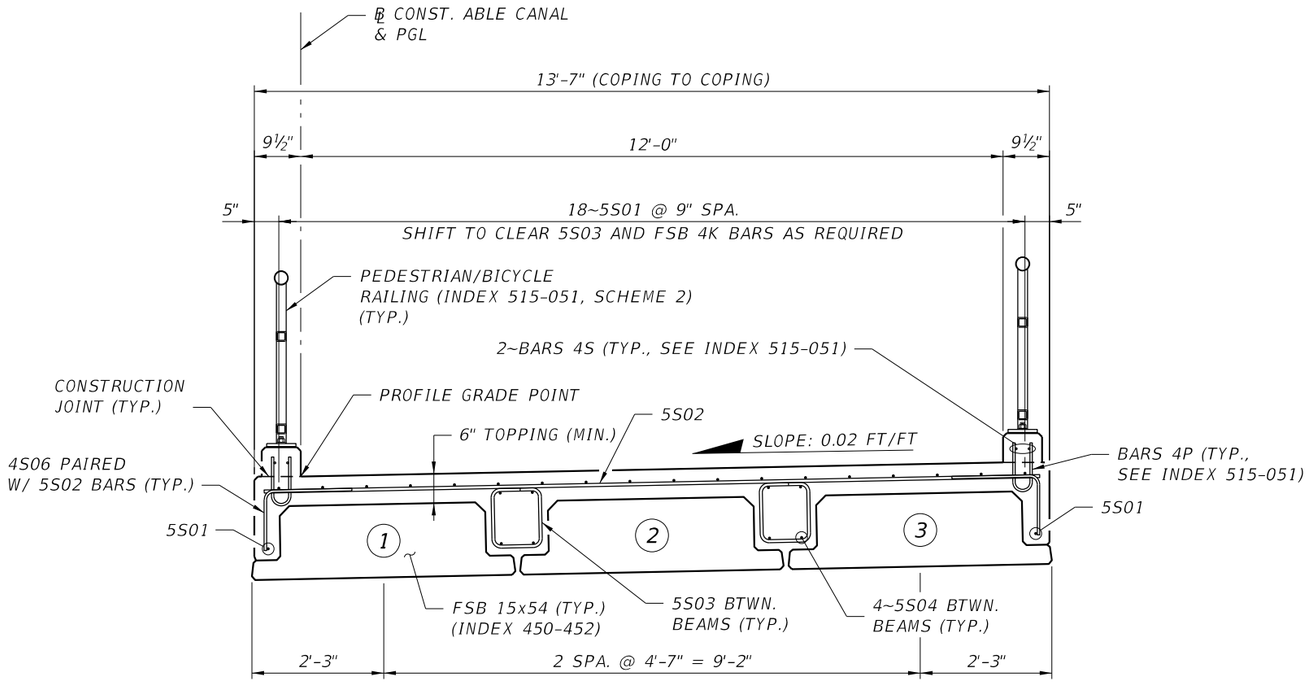
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SUPERSTRUCTURE PLAN (3 OF 3)

SHEET NO. B-20



SUPERSTRUCTURE SECTION
(SPANS 1 THRU 5)

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
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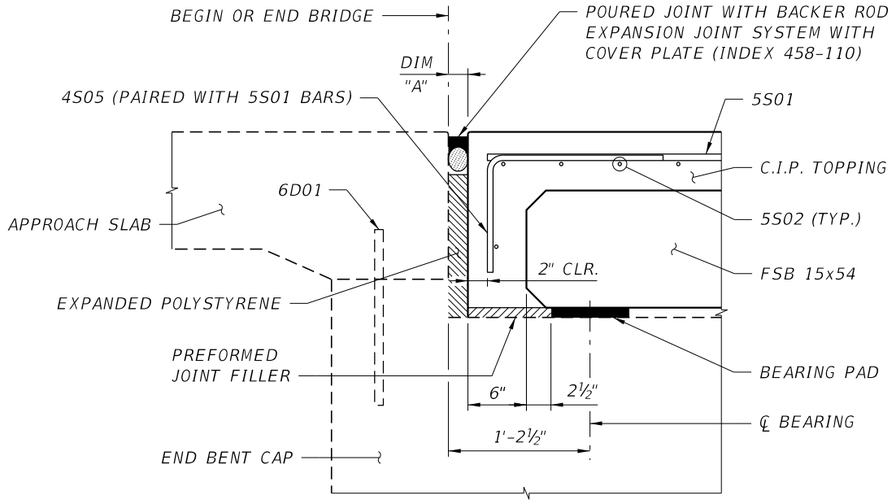
DEPARTMENT OF TRANSPORTATION

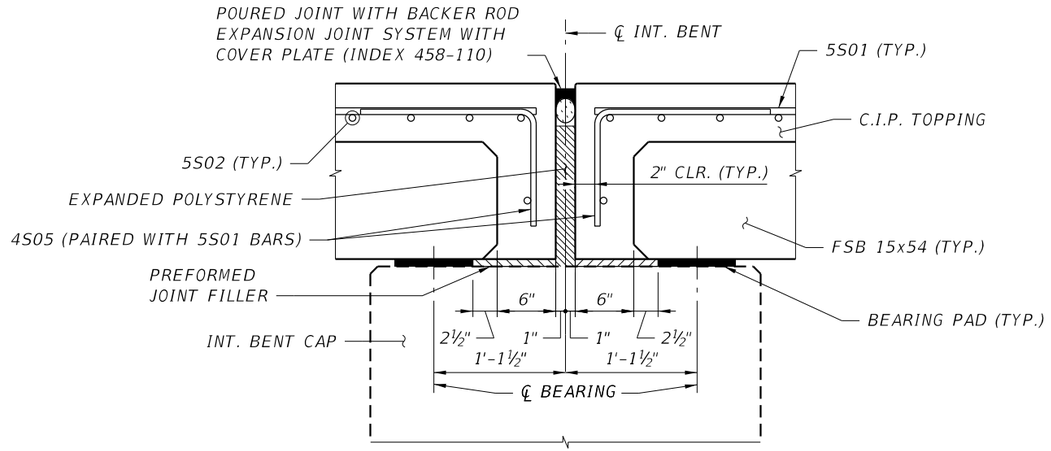
PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SUPERSTRUCTURE SECTION

SHEET NO.
B-21



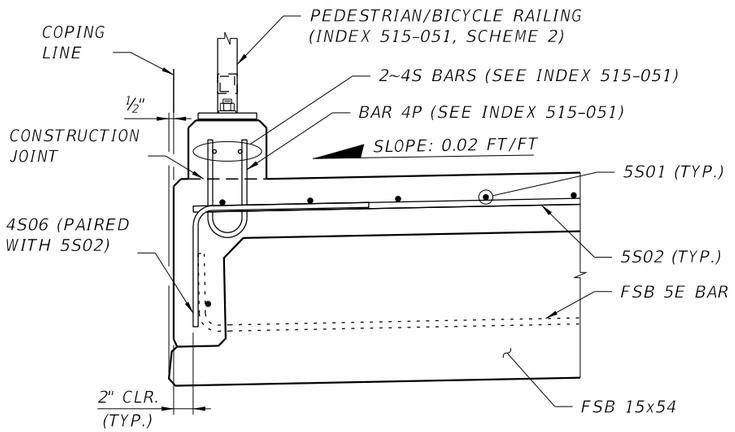
BEGIN/END BRIDGE ALONG ℄ BEAM



INTERMEDIATE BENTS ALONG ℄ BEAM

SECTION A-A

(REINFORCING WITHIN FSB NOT SHOWN FOR CLARITY)

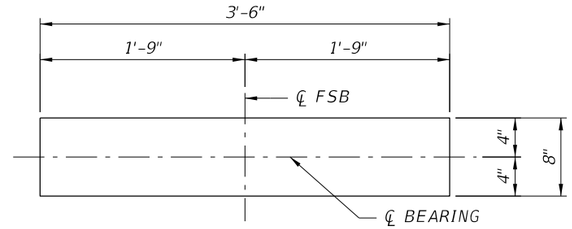


SECTION B-B

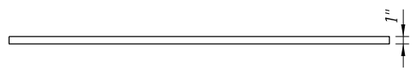
(REINFORCING WITHIN FSB NOT SHOWN FOR CLARITY, UNO)

POURED EXPANSION JOINT DATA TABLE INDEX 458-110			Table Date 1-01-09
LOCATION	DIM. "A" @ 70°F	TOTAL DESIGN MOVEMENT	DIM. "A" ADJUSTMENT PER 10°F
END BENT 1	2"	⅛"	0"
INT. BENTS 2-5	2"	3/16"	0"
END BENT 6	2"	⅛"	0"

NOTE:
Dim. "A" adjustment per 10°F shown is measured perpendicular to ℄ Expansion Joint. Work this table with Standard Plans Index 458-110.



PLAN



ELEVATION

BEARING PAD DETAIL

NOTES:

1. SEE SUPERSTRUCTURE PLAN SHEETS FOR LOCATIONS OF SECTIONS A-A AND B-B.
2. PROVIDE PLAIN NEOPRENE BEARING PADS WITH A SHEAR MODULUS G= 110 PSI AND IN ACCORDANCE WITH SPECIFICATION 932.

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

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ABLE CANAL PATHWAY	435351-2-58-01

SUPERSTRUCTURE DETAILS (1 OF 2)

SHEET NO. B-22

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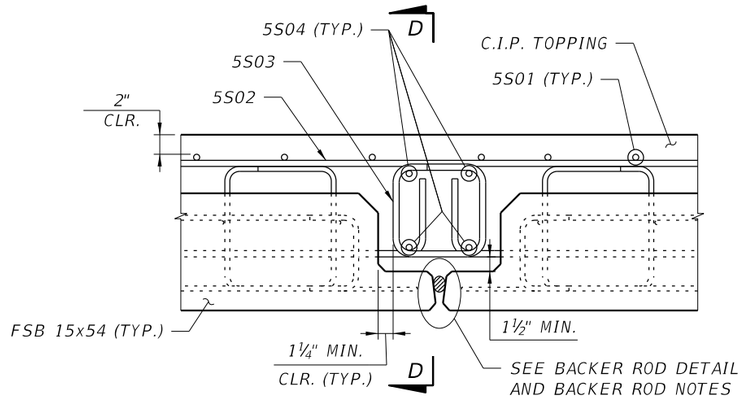
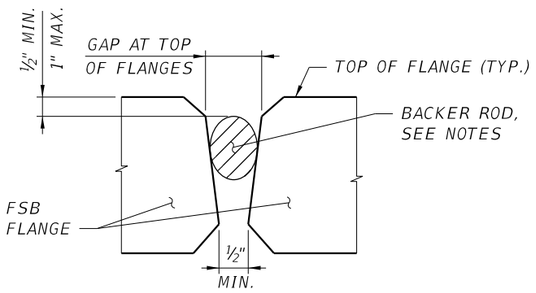


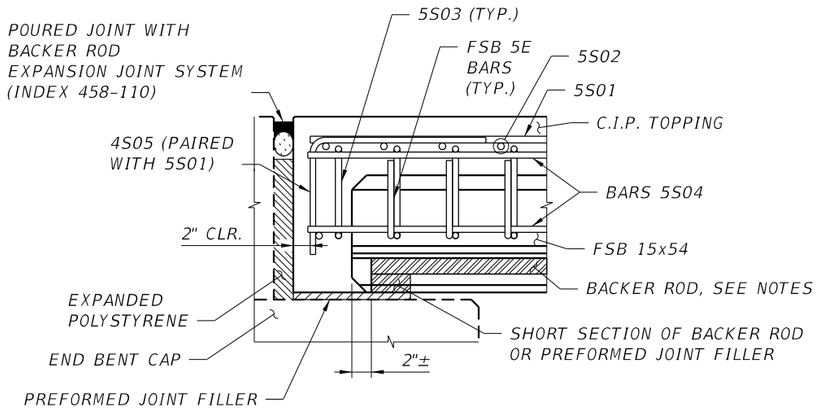
SECTION C-C



BACKER ROD DETAIL

BACKER ROD NOTES:

1. USE A BACKER ROD TO FORM THE BOTTOM OF THE CAST IN PLACE TOPPING AT THE GAP BETWEEN ADJACENT FSBs. USE A BACKER ROD MEETING THE REQUIREMENTS OF ASTM C1330 OR ASTM D5249, TYPES 1 OR 3, WITH A MINIMUM UNCOMPRESSED DIAMETER 50% LARGER THAN THE FIELD VERIFIED MAXIMUM WIDTH OF THE GAP BETWEEN ADJACENT FSBs. MEASURE GAP AT THE TOP OF THE FLANGES AS SHOWN IN THE BACKER ROD DETAIL.
2. INSTALL THE BACKER ROD FROM THE TOP DOWN TO THE POSITION SHOWN IN THE BACKER ROD DETAIL.
3. SECURE THE BACKER ROD TO PREVENT DISPLACEMENT DURING TOPPING CONCRETE PLACEMENT AND TO BE MORTAR TIGHT USING A COMPATIBLE CONSTRUCTION ADHESIVE.
4. THE BACKER ROD MAY REMAIN IN PLACE AFTER TOPPING CONCRETE PLACEMENT.

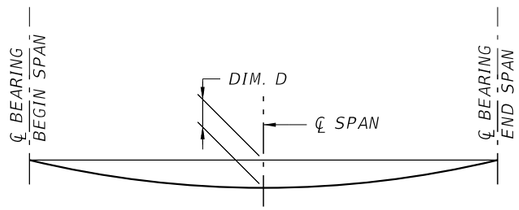


SECTION D-D

(SECTION AT BEGIN/END BRIDGE SHOWN, SECTION AT INT. BENTS SIMILAR)

CAMBER NOTE:

THE VALUES GIVEN IN THE TABLE ARE BASED ON THEORETICAL BEAM CAMBERS. THE CONTRACTOR SHALL MONITOR BEAM CAMBERS FOR THE PURPOSE OF PREDICTING CAMBER VALUES AT THE TIME OF THE TOPPING CASTING. IF THE PREDICTED CAMBERS BASED ON FIELD MEASUREMENTS DIFFER MORE THAN ± ½" FROM THE THEORETICAL "NET BEAM CAMBER @ 120 DAYS" SHOWN IN THE TABLE, PROPOSE MODIFIED DIMENSIONS AS REQUIRED AND SUBMIT TO THE ENGINEER FOR APPROVAL A MINIMUM OF 21 DAYS PRIOR TO CASTING TOPPING CONCRETE.



DEAD LOAD DEFLECTION DIAGRAM

CAMBER AND DEFLECTION DATA TABLE FOR FLORIDA SLAB BEAMS — Table Date 11-01-20

LOCATION		NET BEAM CAMBER (PRESTRESS - DEAD LOAD OF BEAM) @ 120 DAYS (in.)	DIM. D DEAD LOAD DEFLECTION DUE TO TOPPING CASTING @ 120 DAYS (in.)
SPAN NO.	BEAM NO.		
1-5	1 AND 3	2 3/16"	1 1/16"
1-5	2	2 3/16"	1 1/8"

NOTE:

SEE SUPERSTRUCTURE PLAN SHEETS FOR LOCATION OF SECTION C-C.

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
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LEE COUNTY
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PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SUPERSTRUCTURE DETAILS
(2 OF 2)

SHEET NO.
B-23

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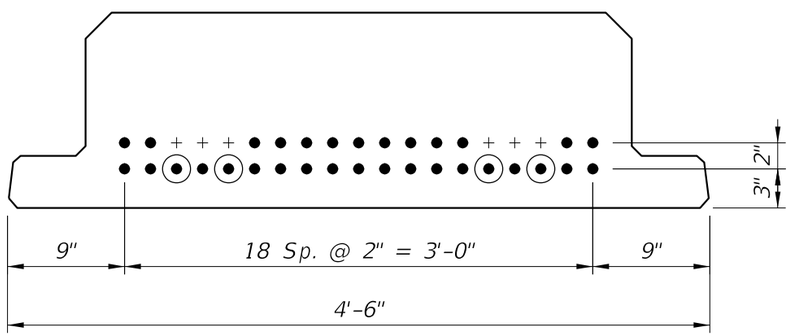
FLORIDA SLAB BEAM - TABLE OF VARIABLES

Table Date 11-01-20

LOCATION		BEAM TYPE	CONCRETE PROPERTIES			STND. PTRN.	PLAN VIEW CASE		ANGLE Ø		BEAM DIMENSIONS*			REINFORCING STEEL																
SPAN NO.	BEAM NO.		CLASS	STRENGTHS (psi)										3C		4D1	4D2	4D3		5E1		5E2		6Y1	6Y2	4K	NO. OF BAR SPACES		BAR SPACING*	
				28 Day	Release	TYPE	END 1	END 2	END 1	END 2	DIM W	DIM L	DIM R	NO.	DIM C	DIM D	DIM D	NO.	DIM D	NO.	DIM E	NO.	DIM E	DIM Y	DIM Y	NO.	S1	S2	V1	V2
1 – 5	1 & 3	FSB 15x54	V1	8500	6000	1	1	1	90	90	4'-6"	52'-5⅞"	⅝"	53	4'-1½"	2'-3"	2'-3"	48	2'-3"	–	–	103	4'-2½"	3'-1½"	3'-1½"	132	5	10	12"	24"
1 – 5	2	FSB 15x54	V1	8500	6000	1	1	1	90	90	4'-6"	52'-5⅞"	⅝"	53	4'-1½"	2'-3"	2'-3"	48	2'-3"	103	4'-4"	–	–	3'-1½"	3'-1½"	132	5	10	12"	24"

NOTE: WORK THIS SHEET WITH STANDARD PLANS INDEX 450-450 THROUGH 450-453.



TYPE (1) 32 STRANDS

STRAND DEBONDING LEGEND

- • – FULLY BONDED STRANDS.
- ⦿ – STRANDS DEBONDED 5'-0" FROM END OF BEAM.

NOTE: ON BEAMS WITH SKEWED ENDS THE DEBONDED LENGTH SHALL BE MEASURED ALONG THE DEBONDED STRAND.

DIMENSION NOTES

* ALL LONGITUDINAL BEAM DIMENSIONS SHOWN ON THIS SHEET WITH A SINGLE ASTERISK (*) ARE MEASURED ALONG THE TOP OF BEAM AT THE CENTERLINE. DIMENSION "R" IS CALCULATED AT MID-HEIGHT OF THE BEAM.

STRAND DESCRIPTION: USE 0.6" DIAMETER, GRADE 270, LOW RELAXATION CARBON STEEL STRANDS STRESSED AT 43.94 KIPS EACH. AREA PER STRAND EQUALS 0.217 SQ. IN.

STRAND PATTERNS

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
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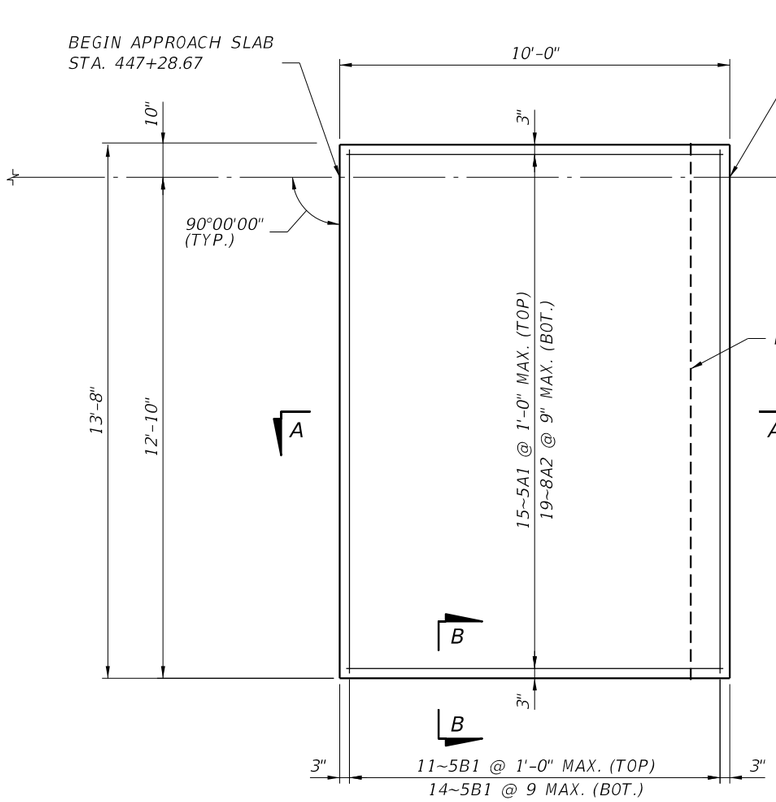
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

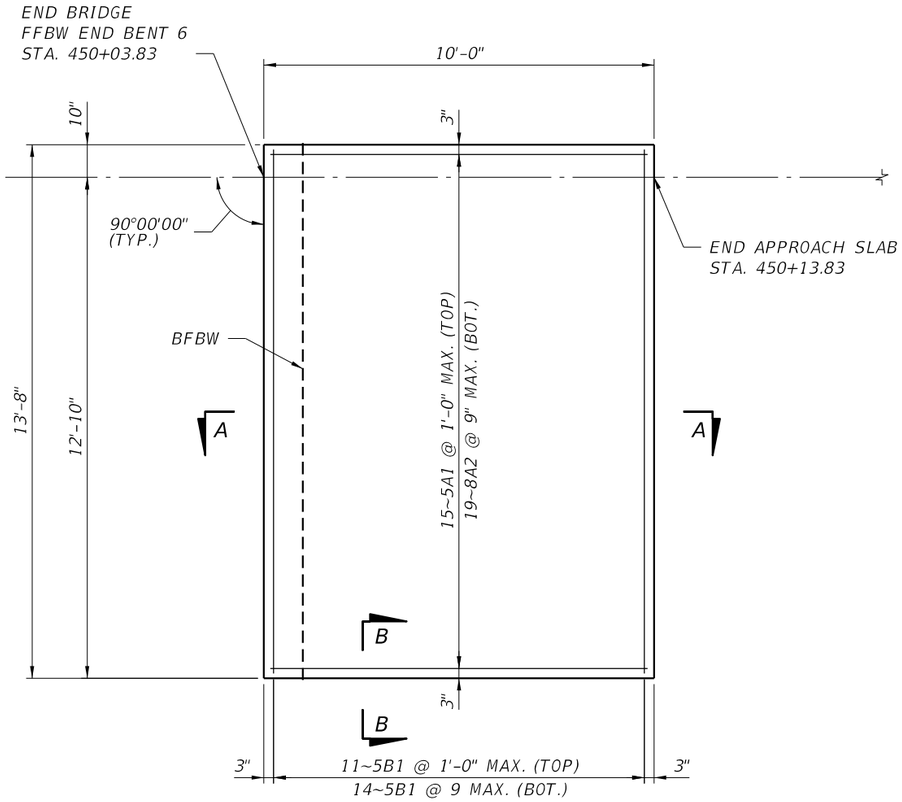
PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

TABLE OF BEAM VARIABLES

SHEET NO. B-24



APPROACH SLAB 1



APPROACH SLAB 2

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

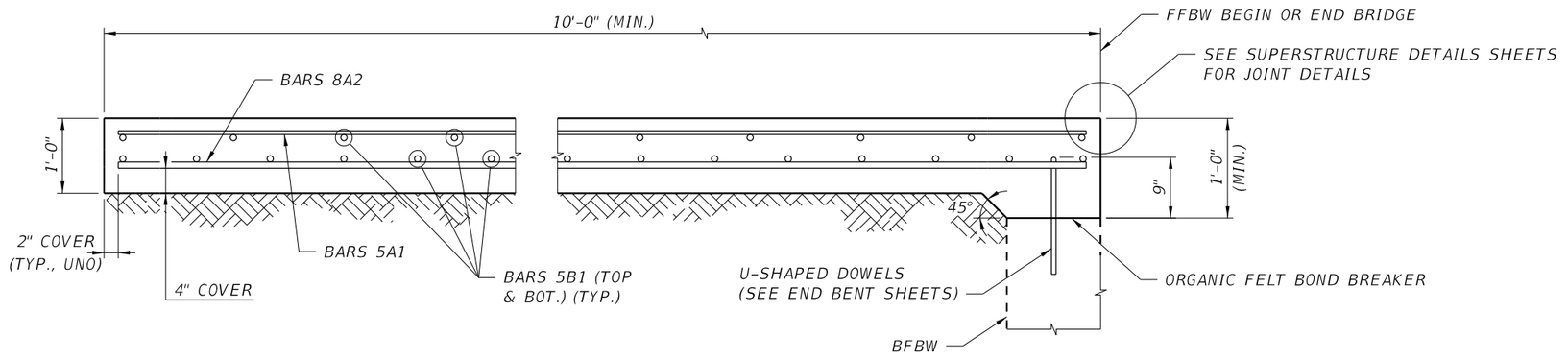
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

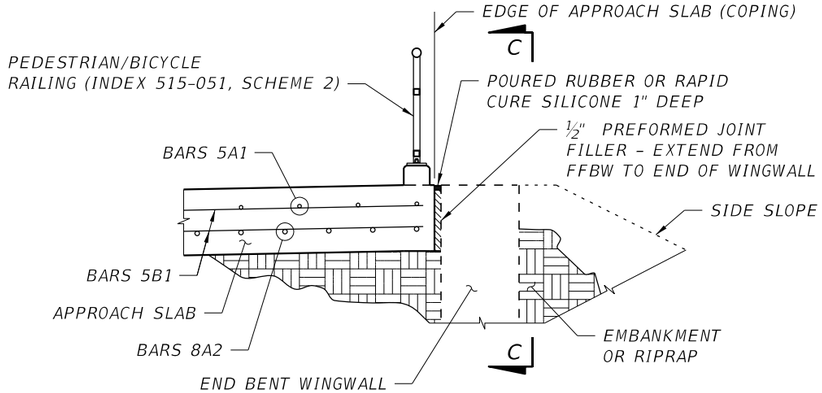
APPROACH SLABS (1 OF 2)

SHEET NO. B-25

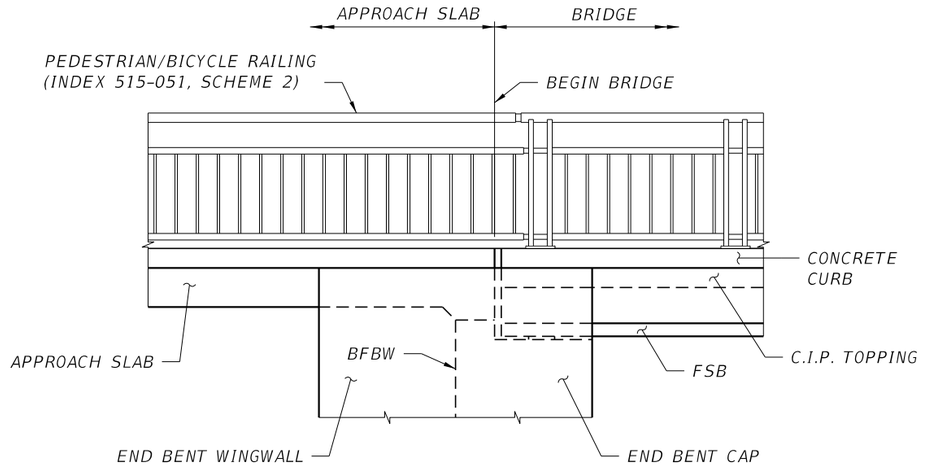
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



SECTION A-A



SECTION B-B



VIEW C-C

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

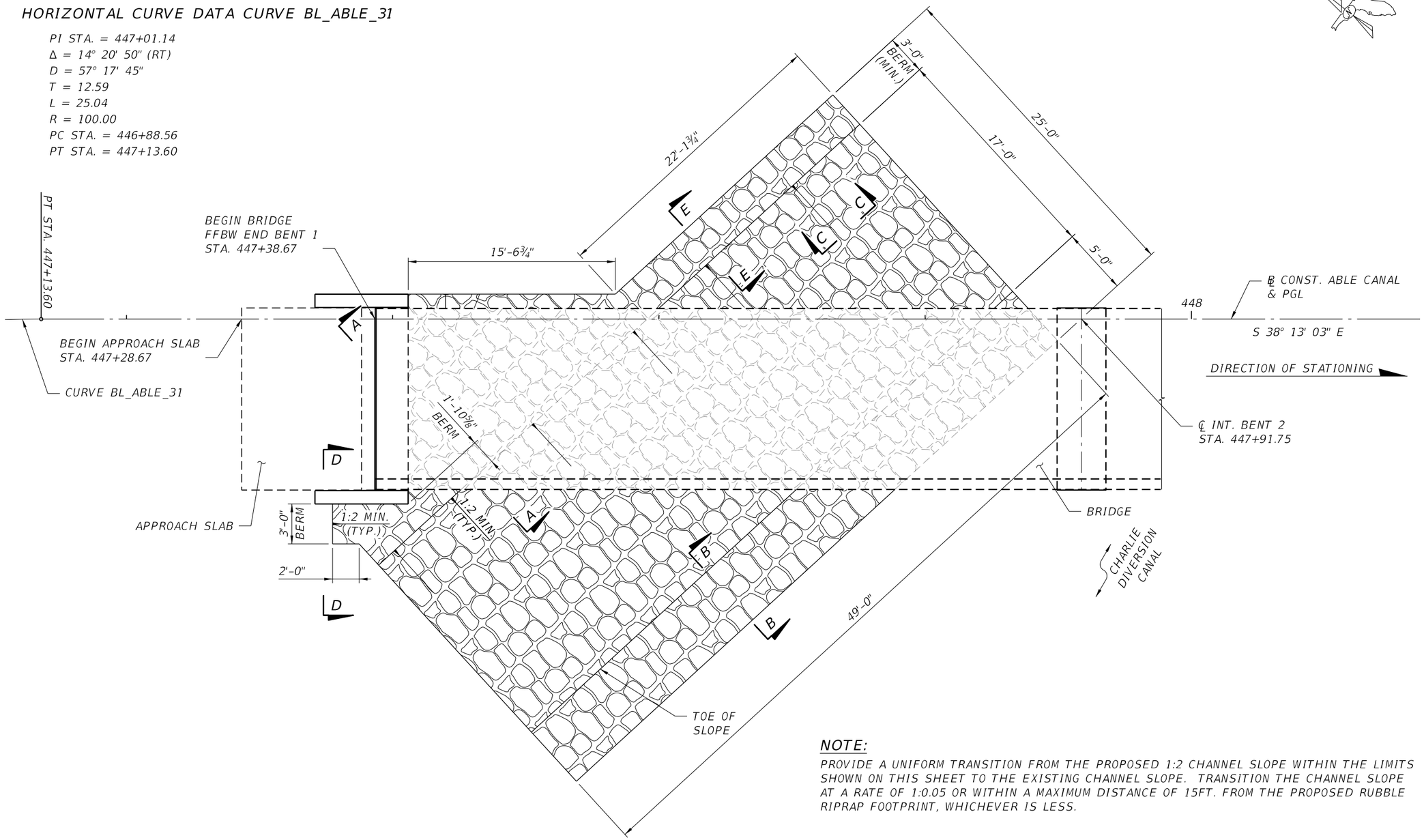
APPROACH SLABS (2 OF 2)

SHEET NO.
B-26

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

HORIZONTAL CURVE DATA CURVE BL_ABLE_31

PI STA. = 447+01.14
Δ = 14° 20' 50" (RT)
D = 57° 17' 45"
T = 12.59
L = 25.04
R = 100.00
PC STA. = 446+88.56
PT STA. = 447+13.60



NOTE:

PROVIDE A UNIFORM TRANSITION FROM THE PROPOSED 1:2 CHANNEL SLOPE WITHIN THE LIMITS SHOWN ON THIS SHEET TO THE EXISTING CHANNEL SLOPE. TRANSITION THE CHANNEL SLOPE AT A RATE OF 1:0.05 OR WITHIN A MAXIMUM DISTANCE OF 15FT. FROM THE PROPOSED RUBBLE RIPRAP FOOTPRINT, WHICHEVER IS LESS.

PLAN
BEGIN BRIDGE

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

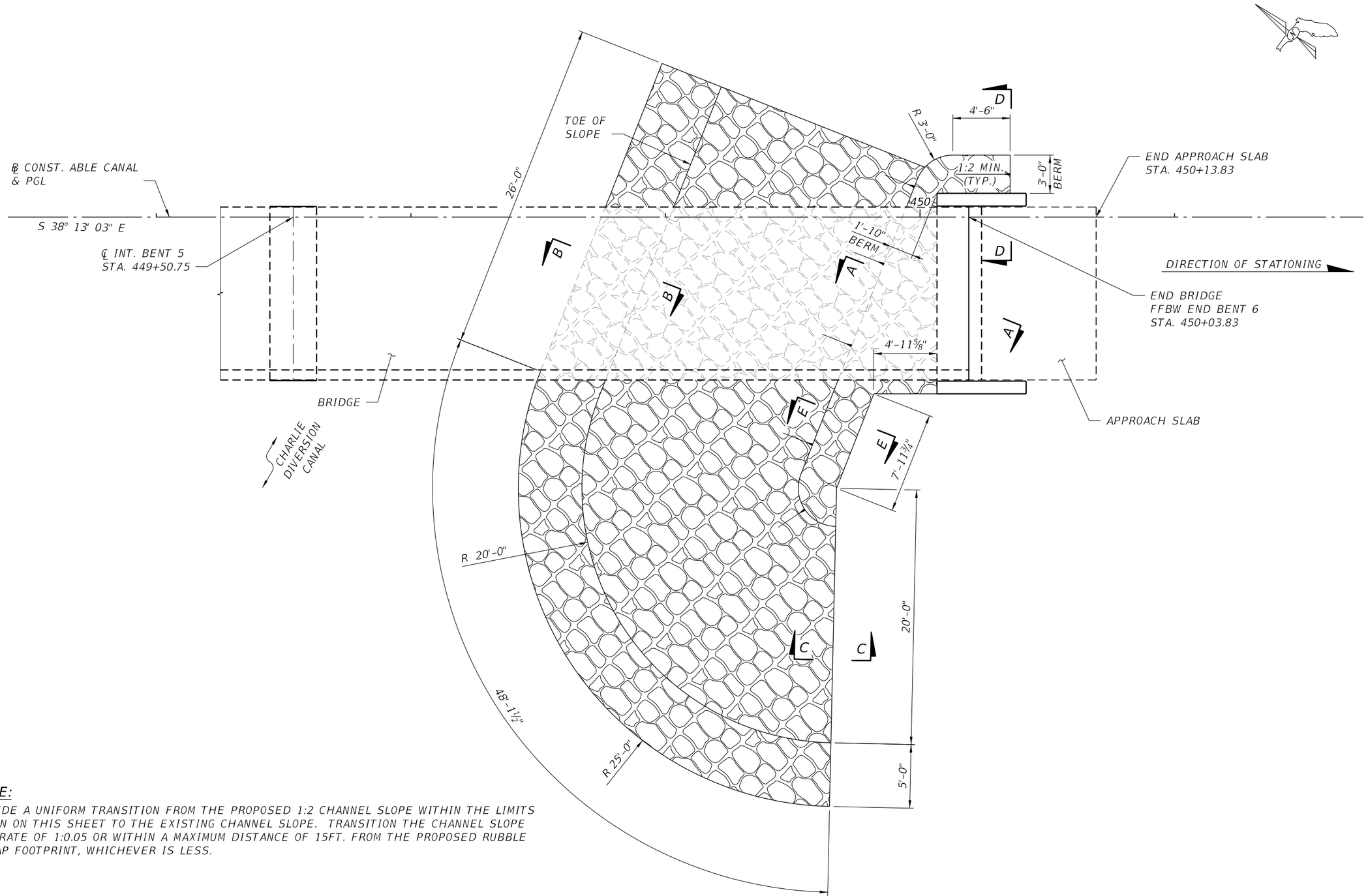
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SLOPE PROTECTION DETAILS (1 OF 3)

SHEET NO. B-27

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



NOTE:

PROVIDE A UNIFORM TRANSITION FROM THE PROPOSED 1:2 CHANNEL SLOPE WITHIN THE LIMITS SHOWN ON THIS SHEET TO THE EXISTING CHANNEL SLOPE. TRANSITION THE CHANNEL SLOPE AT A RATE OF 1:0.05 OR WITHIN A MAXIMUM DISTANCE OF 15FT. FROM THE PROPOSED RUBBLE RIPRAP FOOTPRINT, WHICHEVER IS LESS.

PLAN

END BRIDGE

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KCA KISINGER CAMPO & ASSOCIATES
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Fort Myers, Florida 33912
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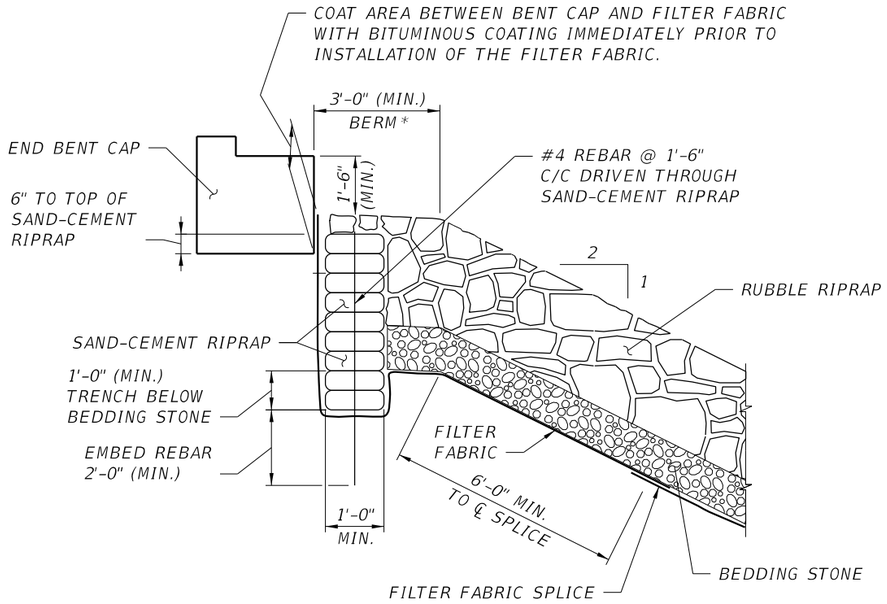
LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

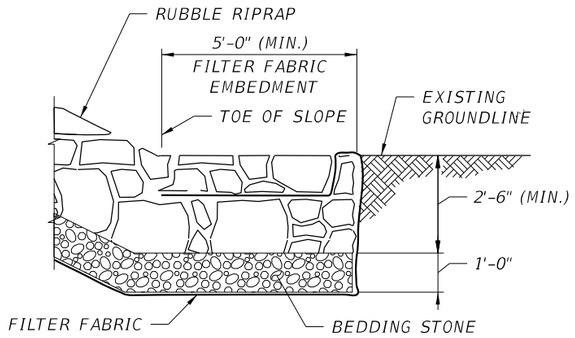
SLOPE PROTECTION DETAILS (2 OF 3)

SHEET NO. B-28

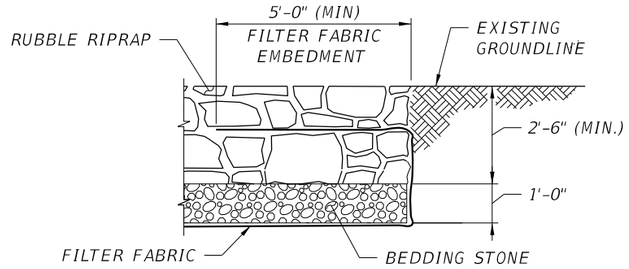


SECTION A-A

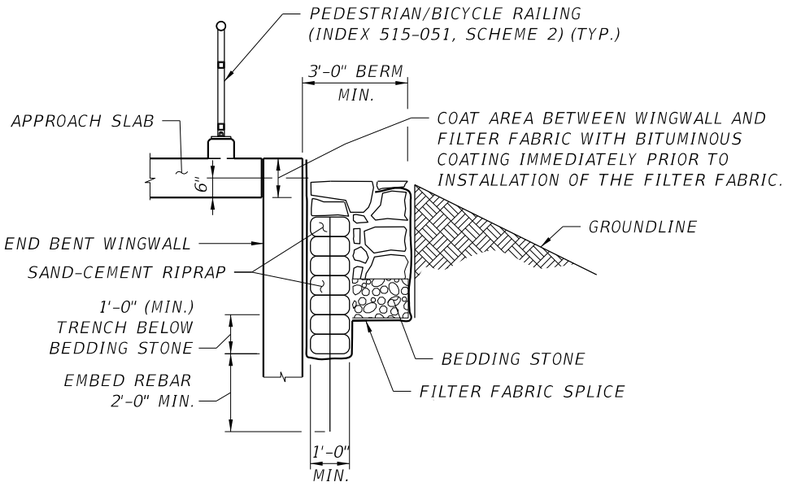
* 3'-0" MINIMUM BERM EXCEPT AS SHOWN ON SLOPE PROTECTION DETAILS (1 OF 3) AND SLOPE PROTECTION DETAILS (2 OF 3).



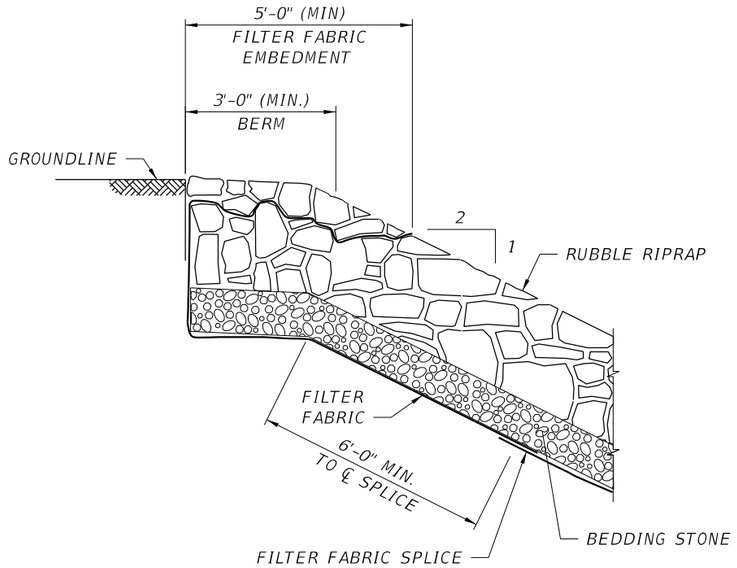
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

SLOPE PROTECTION DETAILS (3 OF 3)

SHEET NO. B-29

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

MARK		LENGTH	NO	TYP	STY		B	C	D	E	F	H	J	K	N	Ø
SIZE	DES	FT IN	BARS	BAR	A	G	FT IN FR	FT IN FR	FT IN FR	FT IN FR	FT IN FR	FT IN FR	FT IN FR	FT IN FR	NO	ANG
LOCATION END BENT 1 AND 6											NO. REQUIRED = 2					
6	D01	3- 3	5	23			1- 4	0- 2 1/4	1- 4							
4	E02	1- 7	28	1			1- 7									
4	E03	15- 3	2	1			15- 3									
6	E04	15- 3	16	1			15- 3									
6	E05	10- 0	2	18	3	3	8- 0									
4	E10	10- 7	12	4	4	4	1-11	3- 0								
4	E11	7-10	4	5			1-11	3- 0	0- 6	0- 6						
4	E31	2-11	10	17	3		2- 3									
4	E32	2-11	12	17	3		2- 3									
4	E33	6- 6	32	1			6- 6									
4	E34	3- 9	36	1			3- 9									
LOCATION INT. BENTS 2 THROUGH 5											NO. REQUIRED = 4					
5	E01	13- 2	14	1			13- 2									
4	E02	4- 5	6	18	3	3	3- 1									
4	E03	11- 1	12	4	4	4	2- 0	3- 2								
4	E04	8- 4	4	5			2- 0	3- 2	0- 7	0- 7						
4	E05	4- 4	10	18	3	3	3- 0									
LOCATION APPROACH SLABS 1 & 2											NO. REQUIRED = 2					
5	A1	9- 8	15	1			9- 8									
8	A2	9- 8	19	1			9- 8									
5	B1	13- 4	25	1			13- 8									
LOCATION SPANS 1 THROUGH 5											NO. REQUIRED = 5					
5	S01	52- 6	20	1			52- 6									
5	S02	13- 3	108	1			13- 3									
5	S03	4- 7	206	4	4	4	1- 0	0- 9 1/2								
5	S04	52- 6	8	1			52- 6									
4	S05	2- 9	36	10			1- 6	1- 3								
4	S06	2- 5	212	10			1- 6	0-11								
END OF LIST																

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

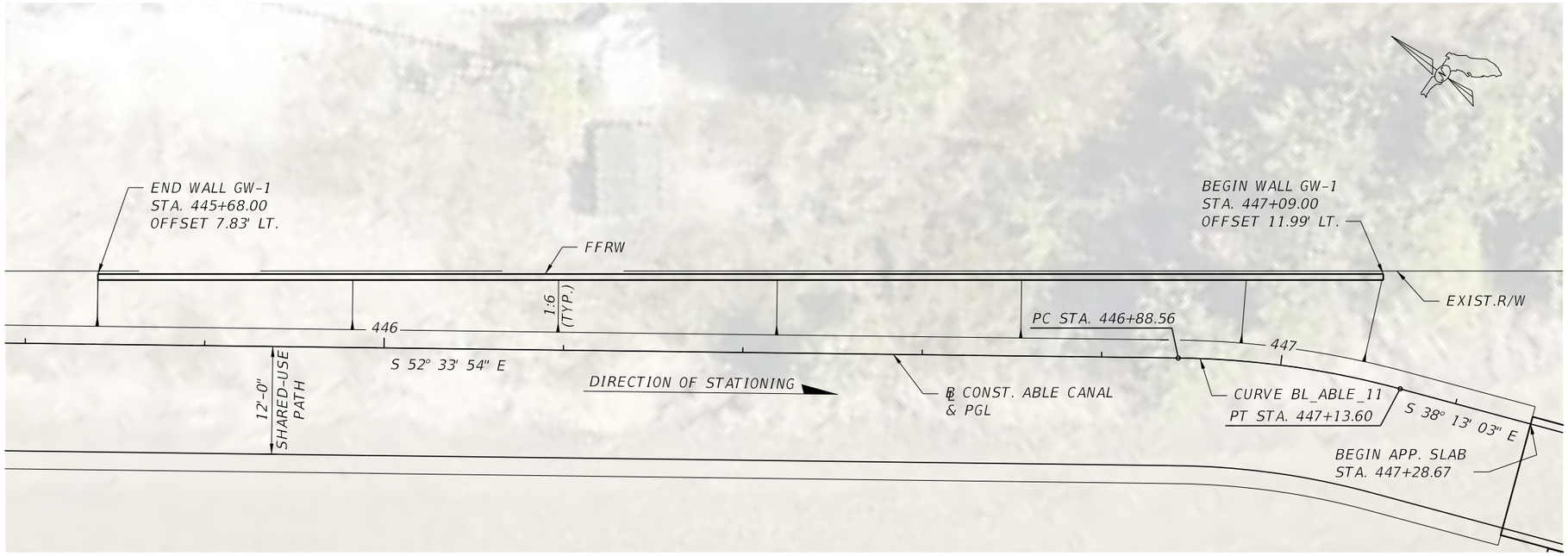
KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

REINFORCING BAR LIST

SHEET NO. B-30



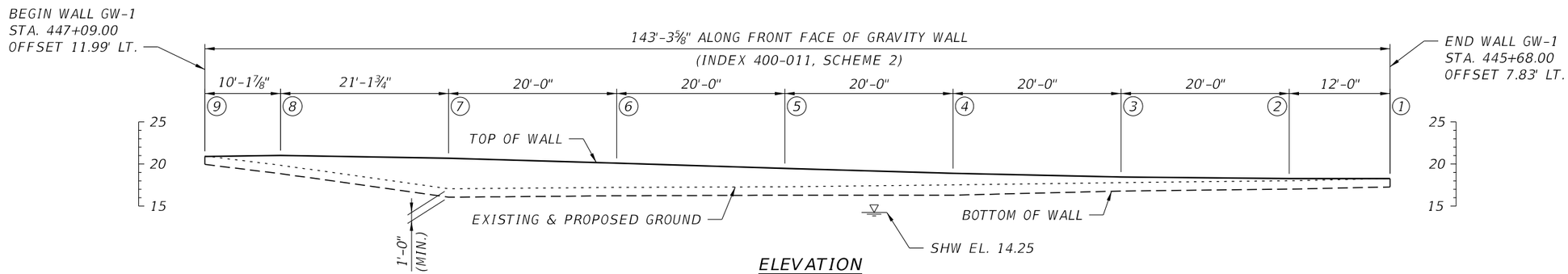
PLAN

WALL ELEVATIONS

POINT	STATION	OFFSET	EXISTING GROUNDLINE ELEVATION	TOP OF WALL ELEVATION	BOTTOM OF WALL ELEVATION
		(FT.)	(FT.)	(FT.)	(FT.)
1	445+68.00	7.83	18.276	18.268	17.276
2	445+80.00	7.98	18.013	18.273	17.013
3	446+00.00	8.24	17.787	18.467	16.787
4	446+20.00	8.49	17.518	18.891	16.518
5	446+40.00	8.75	17.295	19.488	16.295
6	446+60.00	9.00	17.223	20.096	16.223
7	446+80.00	9.26	17.056	20.697	16.056
8	447+00.00	10.25	19.854	21.029	18.854
9	447+09.00	11.99	20.958	20.897	19.958

HORIZONTAL CURVE DATA CURVE BL_ABLE_11

PI STA. = 447+01.14
Δ = 14° 20' 50" (RT)
D = 57° 17' 45"
T = 12.59
L = 25.04
R = 100.00
PC STA. = 446+88.56
PT STA. = 447+13.60



ELEVATION

DEVELOPED VIEW, FACING FFRW

ABLE CANAL PATHWAY OVER CHARLIE DIVERSION CANAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KCA KISINGER CAMPO & ASSOCIATES
13461 Parker Commons Blvd, Suite 104
Fort Myers, Florida 33912
Engineer of Record: Lucio Martinez
P.E. No.: 82380

LEE COUNTY
DEPARTMENT OF TRANSPORTATION

PROJECT	FINANCIAL PROJECT ID
ABLE CANAL PATHWAY	435351-2-58-01

GRAVITY WALL

SHEET NO. B-31

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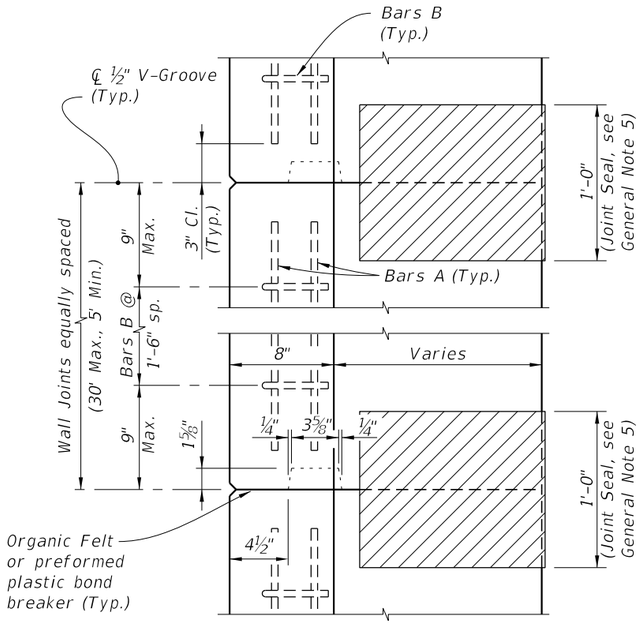
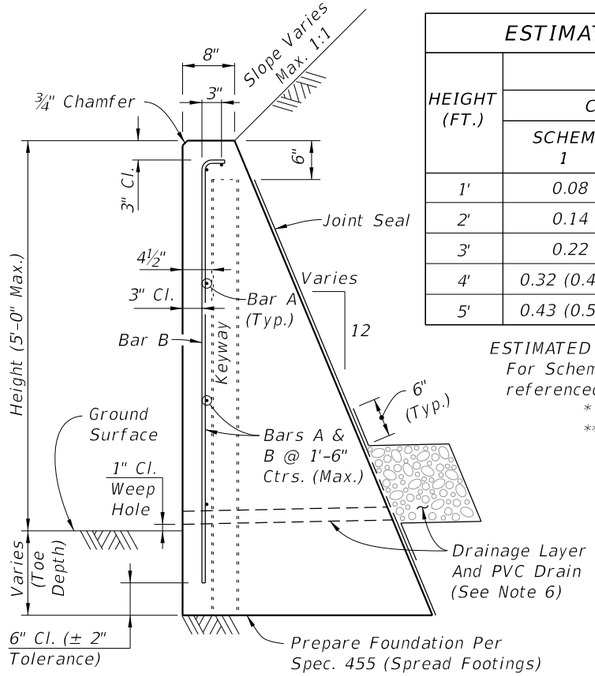


KEYWAY & WALL JOINT DETAIL
(TOP VIEW)



TYPICAL SECTION
C-I-P CONCRETE GRAVITY WALL

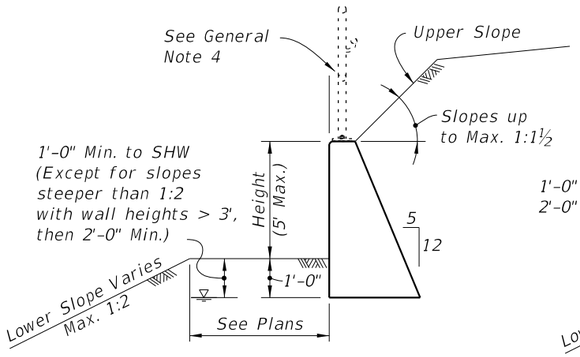
ESTIMATED QUANTITIES FOR C-I-P WALL

HEIGHT (FT.)	PER LINEAR FOOT OF WALL				WEEP HOLES & DRAIN REQD.
	CLASS NS CONCRETE (CY)			REINF. STEEL (LB.)	
	SCHEME 1	SCHEME 2	SCHEME 3**		
1'	0.08	0.11 (0.20*)	0.03	3 (4*)	No
2'	0.14	0.20 (0.32*)	0.09	4 (5*)	No
3'	0.22	0.32 (0.47*)	0.29	5 (6*)	Yes
4'	0.32 (0.43*)	0.47 (0.65*)	0.43	6 (7*)	Yes
5'	0.43 (0.55*)	0.65 (0.85*)	0.60	7 (8*)	Yes

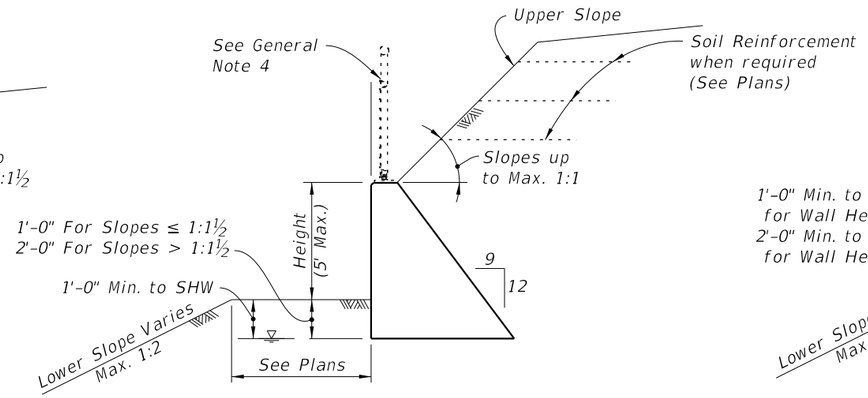
ESTIMATED QUANTITIES NOTES:
For Scheme 3 Junction Slab and Traffic Railing see the referenced Index for estimated quantities.
* Quantity for 2'-0" Toe Depth.
** Quantity for Scheme 3 assumes 1'-3" thick coping above Gravity Wall.

GENERAL NOTES

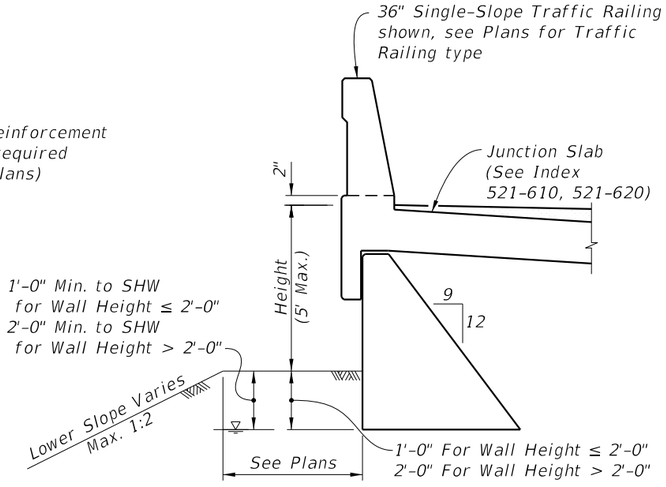
1. C-I-P Gravity Walls constructed as extensions of reinforced concrete retaining walls, except for walls of proprietary designs, provide the same face texture and finish as the reinforced concrete retaining wall.
2. Use Class NS Concrete for Gravity Wall per Specification 347. Concrete for Scheme 3 Junction Slab and Traffic Railing shall be Class II per Specification 346, unless otherwise specified in the plans.
3. Reinforcing steel meets the requirements of Specification 931 (Grade 40 or 60). Smooth or Deformed Welded Wire Reinforcement (WWR) may be substituted on an equal area basis. Do not increase bar/wire spacing for Grade 60 reinforcing steel or WWR.
4. When required, for adjunct guiderail, see Index 515-070 or 515-080 as appropriate. For adjunct Type B fence see Index 550-002.
5. Joint Seal: Provide and install organic bond breaker or Type D-5 geotextile in accordance with Specifications 400 and 514 respectively. Mop all contact surfaces of concrete and Organic Felt or geotextile with cut-back asphalt. Stop Organic Felt or geotextile 6" below top of wall.
6. Provide a continuous 1'x1' clean gravel or crushed rock drain for wall heights 3 ft. and higher. Wrap drainage layer as shown, with Type D-3 geotextile in accordance with Specification 514. Provide 8"x8" galvanized mesh with ¼" openings, at the inside end of the PVC Drain Pipe. Provide 2" Ø PVC Drain Pipe (Sch. 40) at 10 ft. max. spacing (when Drainage Layer is required). Locate outermost edge of Drain Pipe a minimum of 2'-0" from wall joints.
7. Cost of reinforcing steel, face texture, finish, joint seal, drain pipes, drainage layer, galvanized mesh and geotextile to be included in the Contract Unit Price for Concrete Class NS, Gravity Wall. Cost of concrete for Junction Slab in Scheme 3, to be included in Contract Unit Price for Concrete Traffic Railing Barrier With Junction Slab. Adjunct railings or fences to be paid for separately.



SCHEME 1
(No Traffic Loading Effects & Upper Slopes ≤ 1:1½)



SCHEME 2
(With Traffic Loading or Upper Slopes > 1:1½)

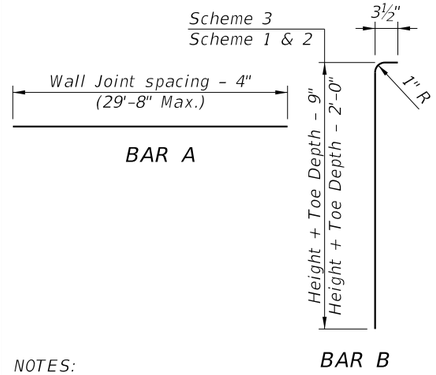


SCHEME 3
(With Traffic Railing)

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH
A	4	As Reqd.
B	4	As Reqd.

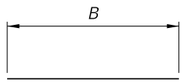
BAR BENDING DIAGRAM



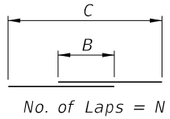
NOTES:
1. All bar dimensions are out to out.
2. Lap splices for Bars A must be a minimum of 1'-10".

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/23			FY 2024-25 STANDARD PLANS	GRAVITY WALL	400-011	1 of 1

10/3/2023 11:36:30 AM

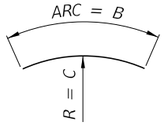


TYPE 1



No. of Laps = N

TYPE 2



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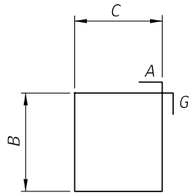

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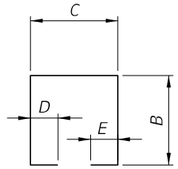

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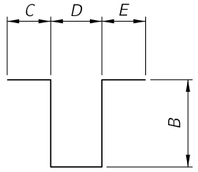

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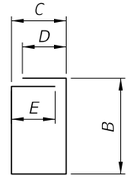
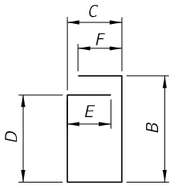


TYPE 7



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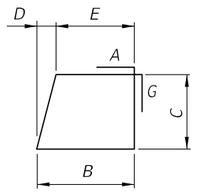
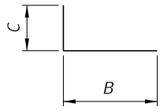
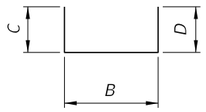


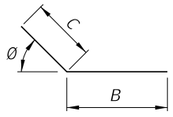
TYPE 9



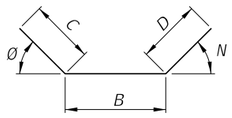
TYPE 10



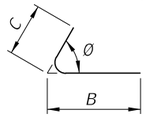
TYPE 1 1



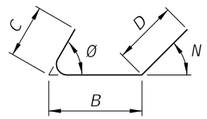
TYPE 12



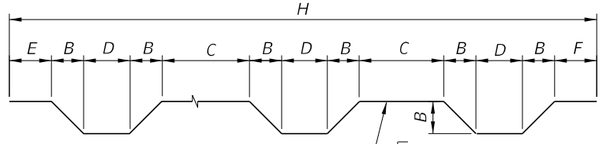
TYPE 13



TYPE 14

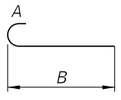


TYPE 15

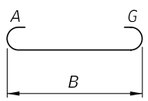


TYPE 16

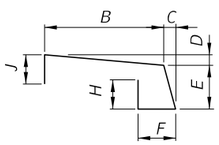
Number of Beams or Walls = N
Number of D's = N-1
Number of B's = 2N-2
Number of C's = N-2
45° Typical



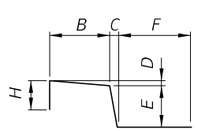
TYPE 17



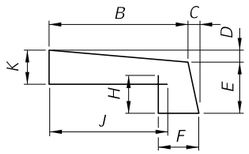
TYPE 18



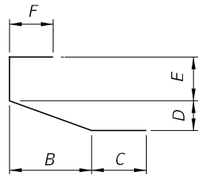
TYPE 19



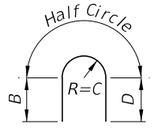
TYPE 20



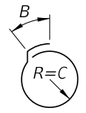
TYPE 21



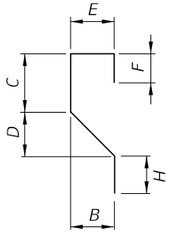
TYPE 22



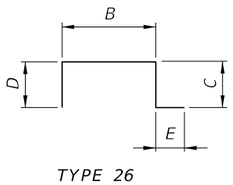
TYPE 23



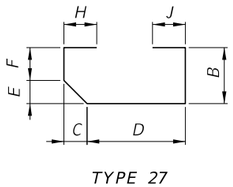
TYPE 24



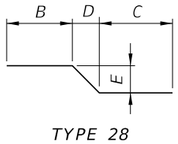
TYPE 25



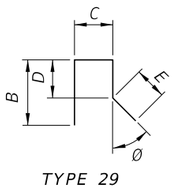
TYPE 26



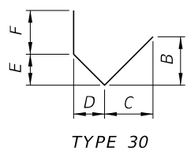
TYPE 27



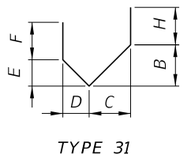
TYPE 28



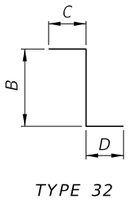
TYPE 29



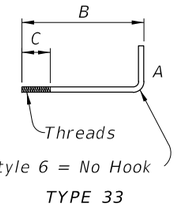
TYPE 30



TYPE 31

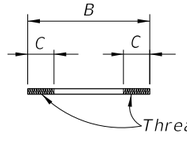


TYPE 32

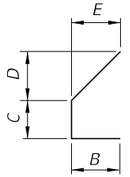


Style 6 = No Hook

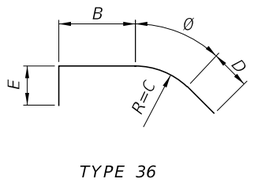
TYPE 33



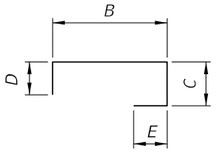
TYPE 34



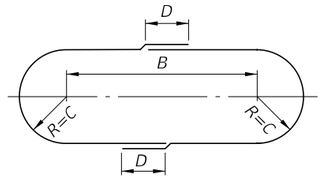
TYPE 35



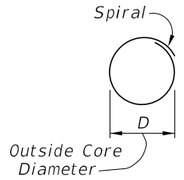
TYPE 36



TYPE 37



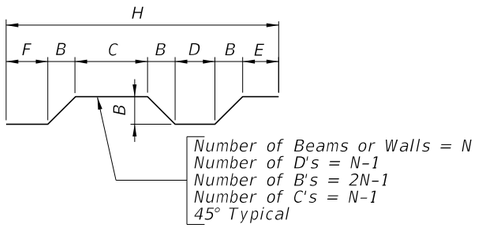
TYPE 38



TYPE 39

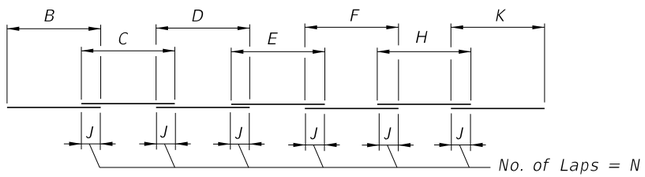
C = Pitch
B = Overall Height
N = Total number of closed turns at Top and Bottom of columns

Splices may be accomplished by lapping 1.5 turns. Cost of Channel Spacers and Splices shall be included in the Contract Unit Price for Reinf. Steel (Substructure)

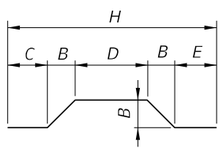


Number of Beams or Walls = N
Number of D's = N-1
Number of B's = 2N-1
Number of C's = N-1
45° Typical

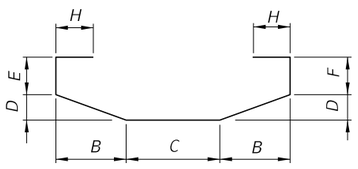
TYPE 40



TYPE 41

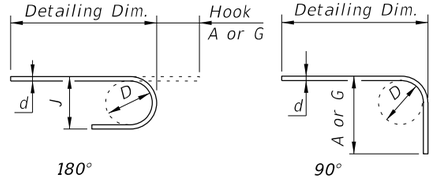


TYPE 42



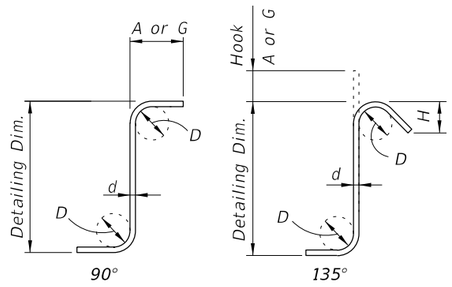
TYPE 43

HOOK DETAILS



180° 90°

BAR SIZE	D	180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G
#3	2¼"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3¾"	7"	5"	10"
#6	4½"	8"	6"	1'-0"
#7	5¼"	10"	7"	1'-2"
#8	6"	11"	8"	1'-4"
#9	9½"	1'-3"	11¾"	1'-7"
#10	10¾"	1'-5"	1'-1¼"	1'-10"
#11	12"	1'-7"	1'-2¾"	2'-0"
#14	18¼"	2'-3"	1'-9¾"	2'-7"
#18	24"	3'-0"	2'-4½"	3'-5"
STYLE		1		3



90° 135°

STIRRUPS (TIES SIMILAR)

STIRRUP & TIE HOOK DIMENSIONS

BAR SIZE	D	90° HOOKS A or G	135° HOOKS A or G	135° HOOKS H *
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	4½"	1'-0"	8"	4½"
#7	5¼"	1'-2"	9"	5¼"
#8	6"	1'-4"	10½"	6"
STYLE		4	5	

STYLE 6 = NO HOOK

* Dimension is approximate.

Hook Styles Detailed on this sheet are for Illustration Only.

Actual Hook Style for any particular bar will be shown under A or G Heading on REINFORCING BAR LIST sheet(s) in Structures Plans.

All Dimensions are out-to-out.

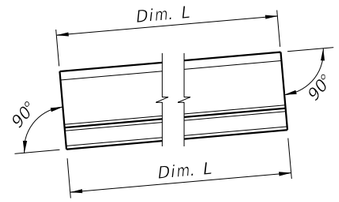
NOTE: For Bar Dimensions See REINFORCING BAR LIST Sheet(s) in Structures Plans.

10/15/2023 11:22:09 AM

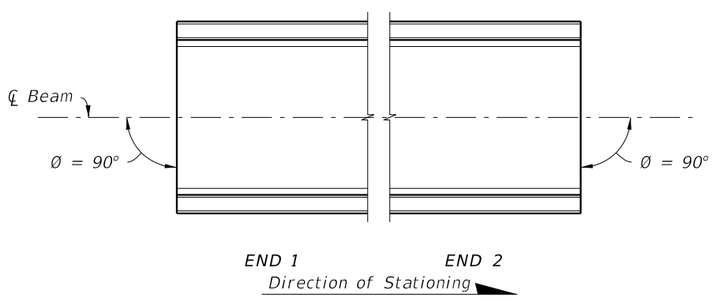
LAST REVISION	REVISION	DESCRIPTION:				
11/01/20			FDOT FY 2024-25 STANDARD PLANS	BAR BENDING DETAILS (STEEL)	INDEX 415-001	SHEET 1 of 1

FABRICATION NOTES

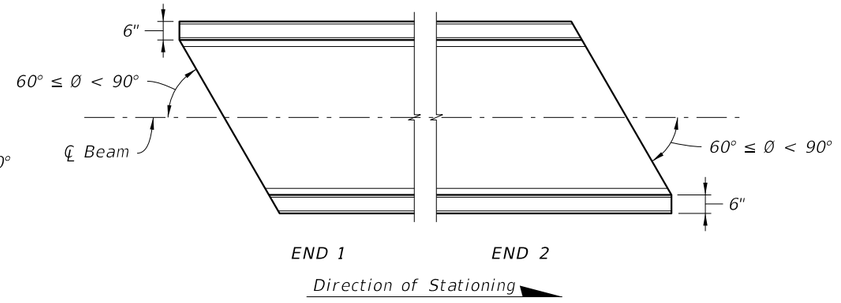
1. *The abbreviated FSB designation for depth and width is FSB "depth" x "width", e.g. FSB 12 x 48.*
2. *All bar dimensions are out-to-out.*
3. *Strands N shall be ASTM A416, Grade 250 or 270, ⅜" Ø or larger strands, stressed to 10,000 lbs. each.*
4. *Unless otherwise noted, the minimum concrete cover for reinforcing steel shall be 2".*
5. *For referenced Dimensions, Angles and Case Numbers, see Florida Slab Beam – Table of Variables in Structures Plans.*
6. *Bars 4D1 & 6Y1 correspond to END 1, and 4D2 & 6Y2 correspond to END 2.*
7. *Bars 5E1 correspond to interior FSBs, and 5E2 correspond to exterior FSBs.*
8. *Rake the top surface of the Slab Beams transversely to provide a roughened surface with ¼" amplitude.*
9. *Embedment of Safety Line Anchorage Devices are permitted to accommodate full protection systems. See shop drawings for details and spacings.*



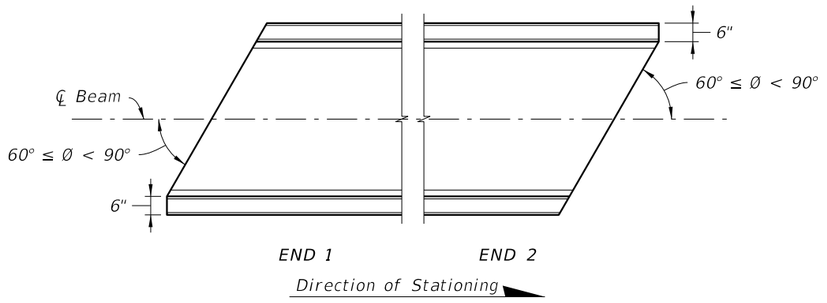
SCHEMATIC SIDE ELEVATION OF BEAM
(Beam on a Positive Grade shown; Beam on a Negative Grade or Horizontal Grade similar.)



CASE 1



CASE 2

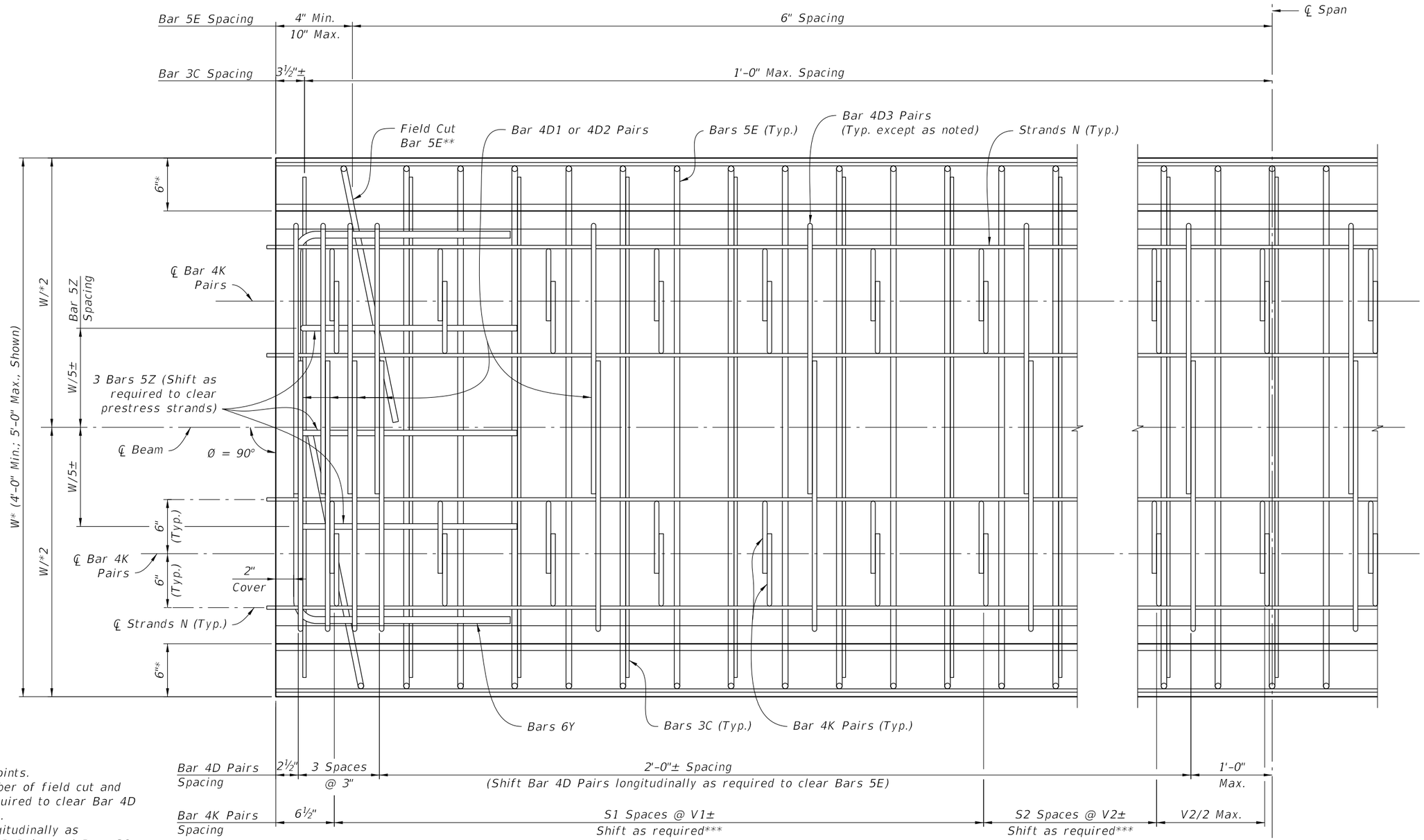


CASE 3

SCHEMATIC PLAN VIEWS AT BEAM ENDS

10/15/2023 11:38:53 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
04/01/23			FDOT FY 2024-25 STANDARD PLANS	FLORIDA SLAB BEAM TYPICAL DETAILS AND NOTES	450-450	1 of 3



* Measured to Working Points.
** At Beam ends, use number of field cut and rotated Bars 5E as required to clear Bar 4D Pairs and Bar 4K Pairs.
*** Shift Bar 4K Pairs longitudinally as required to clear Bar 4D Pairs and Bars 3C and 5E.

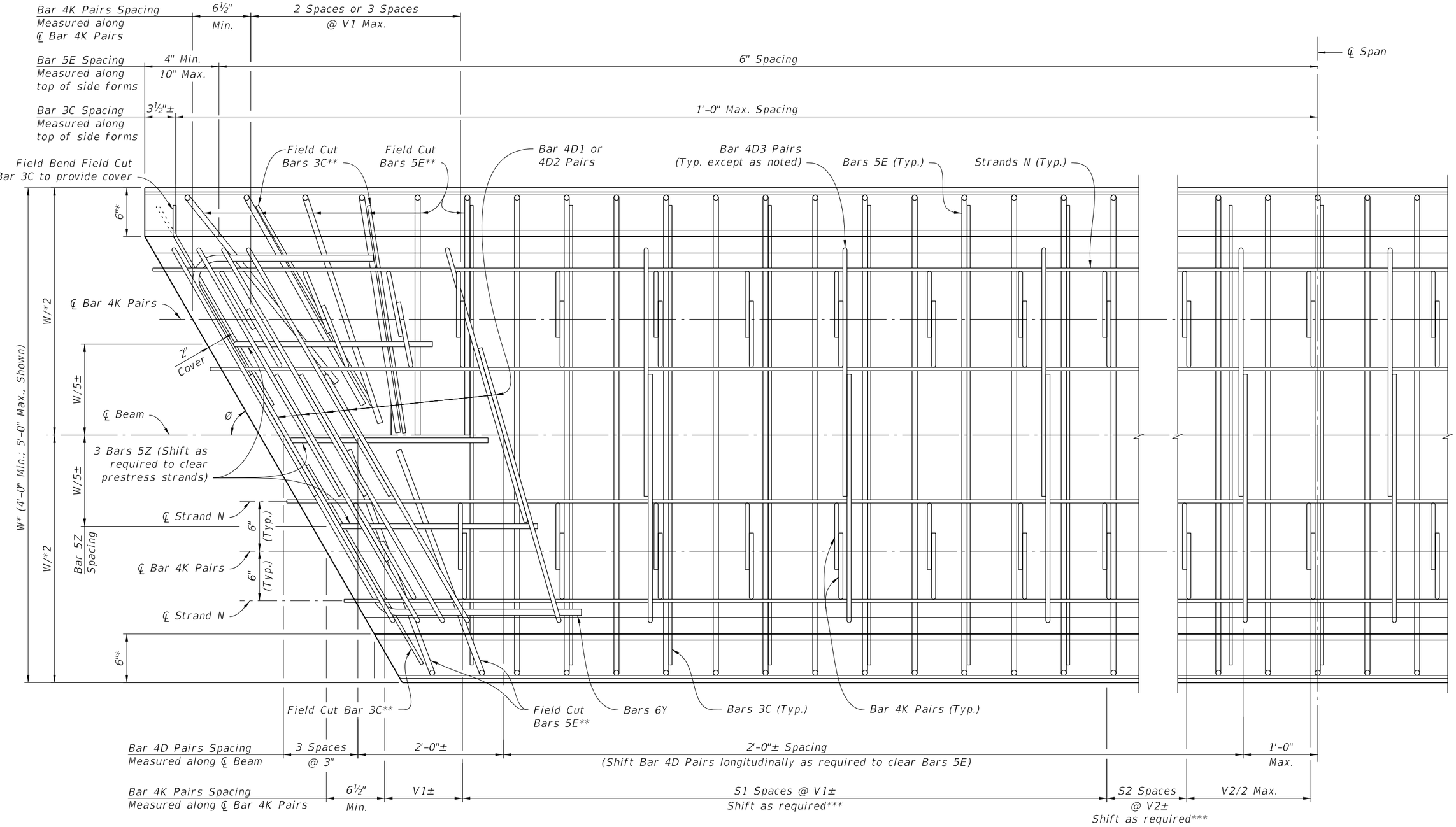
CROSS REFERENCE:
For Dimensions V1, V2 & W and number of spaces S1 & S2, see Florida Slab Beam – Table of Variables in Structures Plans.

See Indexes 450-451, 450-452 and 450-453 for Bars 5E Details.

PARTIAL PLAN VIEW Ø = 90°
(END 1 SHOWN, END 2 SIMILAR)
(INTERIOR BEAM SHOWN, EXTERIOR BEAM SIMILAR, SEE BARS 5E DETAILS)

10/15/2023 11:39:54 AM

LAST REVISION	REVISION	DESCRIPTION:				
04/01/23			FY 2024-25 STANDARD PLANS	FLORIDA SLAB BEAM TYPICAL DETAILS AND NOTES	INDEX 450-450	SHEET 2 of 3



PARTIAL PLAN VIEW 60° ≤ Ø < 90°
(END 1 SHOWN, END 2 SIMILAR)
(INTERIOR BEAM SHOWN, EXTERIOR BEAM SIMILAR, SEE BARS 5E DETAILS)

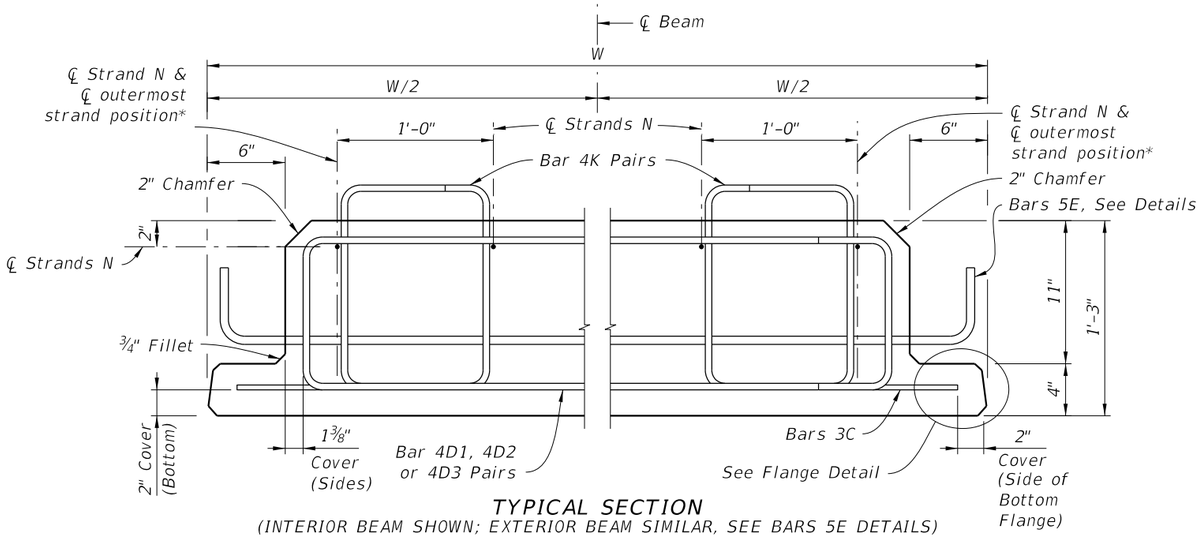
* Measured to Working Points.
** At Beam ends, use number of field cut and rotated Bars 3C and 5E as required to clear Bar 4D Pairs and Bar 4K Pairs.
*** Shift Bar 4K Pairs longitudinally as required to clear Bar 4D Pairs and Bars 3C and 5E.

CROSS REFERENCE:
For Dimensions V1, V2 & W, Angle Ø and number of spaces S1 & S2, see Florida Slab Beam – Table of Variables in Structures Plans.

See Indexes 450-451, 450-452 and 450-453 for Bars 5E Details.

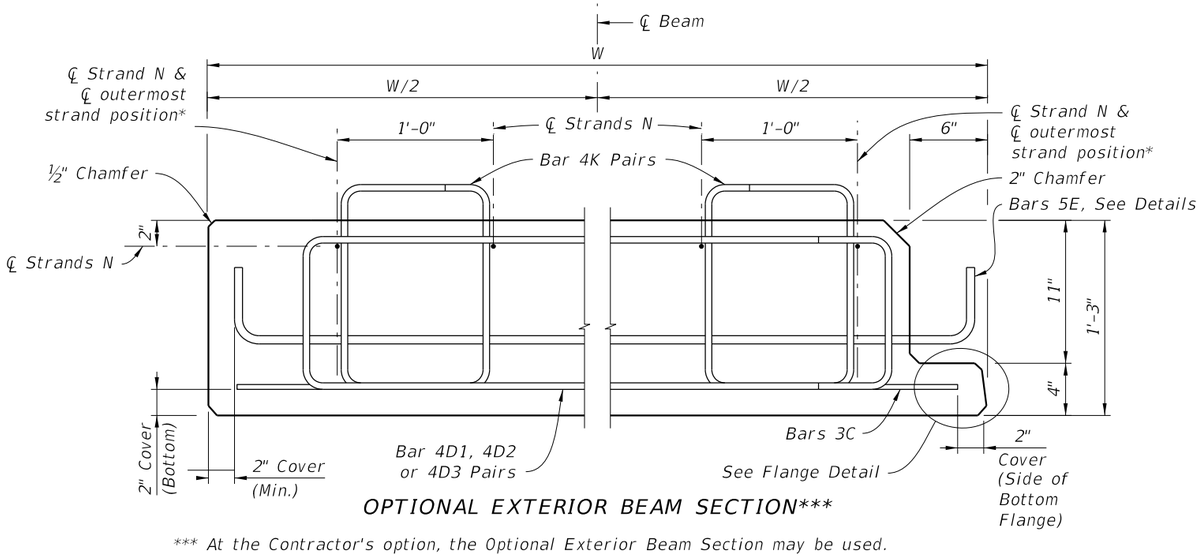
10/15/2023 11:40:05 AM

LAST REVISION	REVISION	DESCRIPTION:			
04/01/23			FY 2024-25 STANDARD PLANS	FLORIDA SLAB BEAM TYPICAL DETAILS AND NOTES	INDEX 450-450 / SHEET 3 of 3



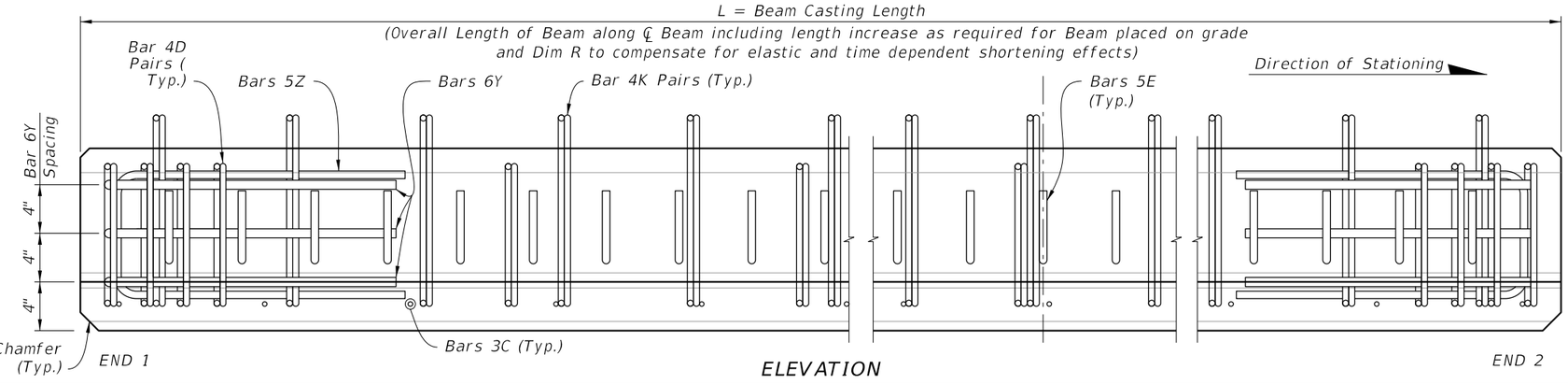
TYPICAL SECTION

(INTERIOR BEAM SHOWN; EXTERIOR BEAM SIMILAR, SEE BARS 5E DETAILS)



OPTIONAL EXTERIOR BEAM SECTION***

*** At the Contractor's option, the Optional Exterior Beam Section may be used.



ELEVATION

NOTES:

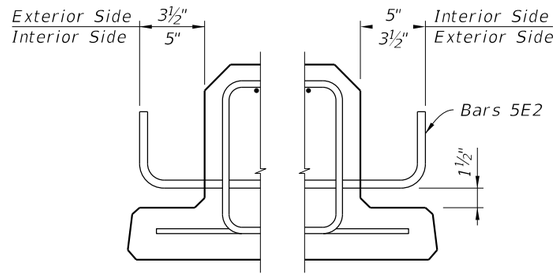
Work this Index with Index 450-450 and Florida Slab Beams – Table of Variables in Structures Plans.

For Dimensions C, D, E, L, R, W & Y and Angle Ø, see Florida Slab Beam – Table of Variables in Structures Plans.

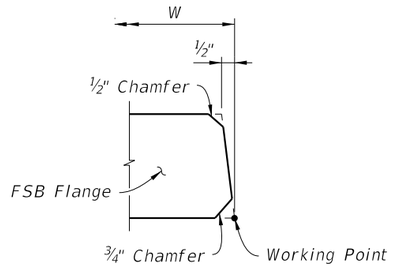
For referenced notes, see Index 450-450, Sheet 1.

* For ℄ of outermost strand positions, see corresponding Strand Pattern on Florida Slab Beams – Table of Variables in Structures Plans.

** At the Contractor's option, the Detail as shown for Interior Beams may be used for Exterior Beams and the Bars 5E field bent on the exterior side of the Beam to provide the specified cover to the coping line.



EXTERIOR BEAMS**
BARS 5E DETAIL

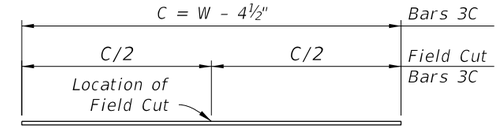


FLANGE DETAIL
(TYPICAL BOTH SIDES OF FSB)

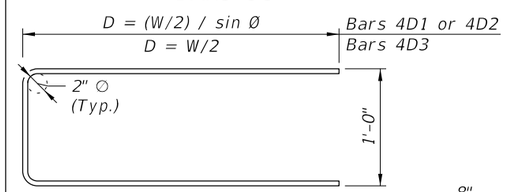
BILL OF REINFORCING STEEL
FOR ONE BEAM ONLY

MARK	SIZE	NOTE NUMBERS	NUMBER REQUIRED	LENGTH (NOTE 1)
C	3		See Table	Varies
D1	4	6	10 (End 1)	Varies
D2	4	6	10 (End 2)	Varies
D3	4		See Table	Varies
E1	5	7	See Table	Varies
E2	5	7	See Table	Varies
K	4		See Table	2'-8"
N	See Note 3	3	4	Varies
Y1	6	6	3 (End 1)	Varies
Y2	6	6	3 (End 2)	Varies
Z	5		6	4'-10½"

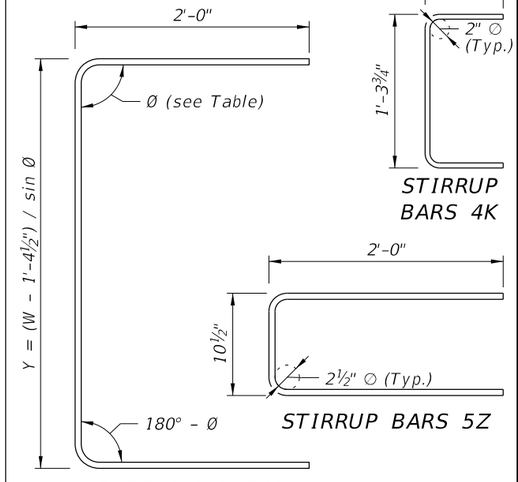
BENDING DIAGRAMS (See Note 1)



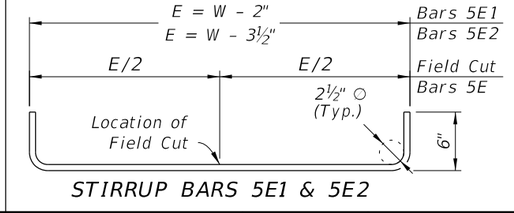
BARS 3C



STIRRUP BARS 4D1, 4D2 & 4D3



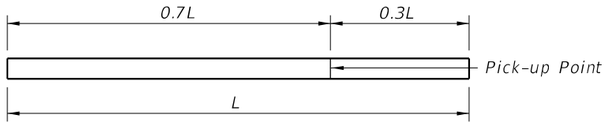
BARS 6Y1 & 6Y2



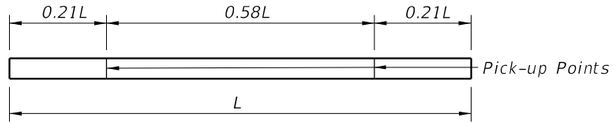
STIRRUP BARS 5E1 & 5E2

LAST REVISION	REVISION	DESCRIPTION:				
11/01/20			FY 2024-25 STANDARD PLANS	15" FLORIDA SLAB BEAM	INDEX 450-452	SHEET 1 of 1

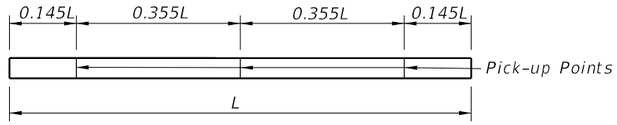
10/15/2023 11:41:45 AM



1-POINT PICK-UP

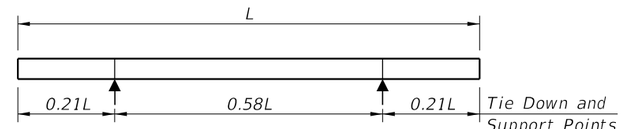


2-POINT PICK-UP

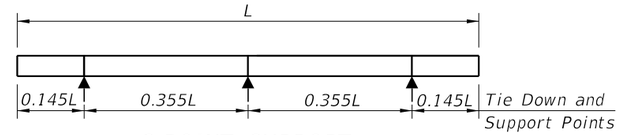


3-POINT PICK-UP

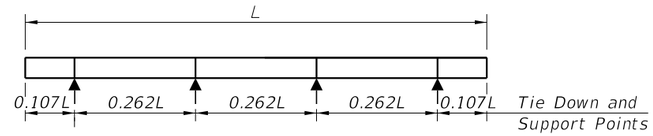
PILE PICK-UP DETAILS



2-POINT SUPPORT



3-POINT SUPPORT



4-POINT SUPPORT

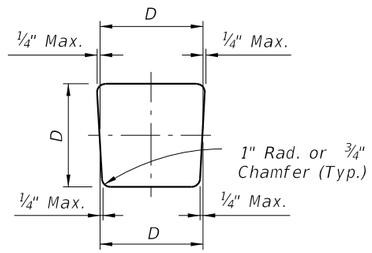
STORAGE AND TRANSPORTATION SUPPORT DETAILS

PRESTRESSED CONCRETE PILE NOTES:

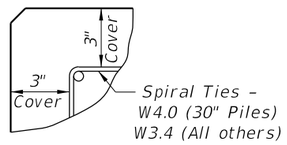
1. Work this Index with the Square Prestressed Concrete Pile Splices (Index 455-002), the Prestressed Concrete Pile Standards (Index 455-012 thru 455-030), the High Moment Capacity Square Prestressed Concrete Pile (Index 455-031) and the Pile Data Table in the Structures Plans.
2. Concrete:
   - A. Piles: Class V, except use Class VI for High Moment Capacity Pile (Index 455-031).
   - B. High Capacity Splice Collar: Class V.
   - C. See "GENERAL NOTES" in the Structures Plans for locations where the use of Highly Reactive Pozzolans is required.
3. Concrete strength at time of prestress transfer:
   - A. Piles: 4,000 psi minimum.
   - B. High Moment Capacity Piles: 6,500 psi minimum.
4. Carbon-Steel Reinforcing:
   - A. Bars: Meet the requirements of Specification Section 415.
   - B. Prestressing Strands: Meet the requirements of Specification Section 933.
   - C. Protect all strands permanently exposed to the environment and not embedded under final conditions in accordance with Specification Section 450.
5. Spiral Ties:
   - A. Tie each wrap of the spiral strand to a minimum of two corner strands.
   - B. One full turn required for spiral splices.
6. Pile Splices: Fill dowel holes and form the joint between pile sections with a Type AB Epoxy Compound in accordance with Specification Section 926. Use an Epoxy Bonding Compound or an Epoxy Mortar as recommended by the Manufacturer.

TABLE OF MAXIMUM PILE PICK-UP AND SUPPORT LENGTHS

	D = Square Pile Size (inches)					Required Storage and Transportation Detail	Pick-Up Detail
	12	14	18	24	30		
Maximum Pile Length (Feet)	48	52	59	68	87	2, 3, or 4 point	1 Point
	69	75	85	98	124	2, 3, or 4 point	2 Point
	99	107	121	140	178	3 or 4 point	3 Point



TYPICAL PILE SHAPE FOR MOLD FORMS



DETAIL SHOWING TYPICAL COVER

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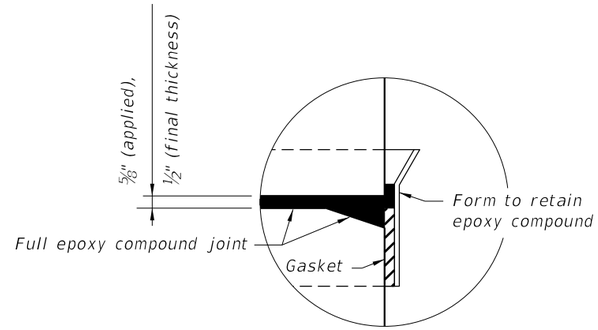
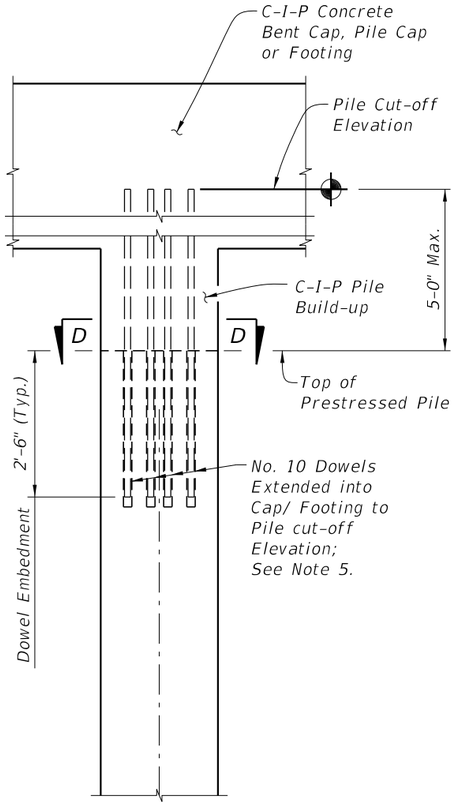
LAST REVISION	REVISION	DESCRIPTION:				
11/01/22			FDOT	FY 2024-25 STANDARD PLANS	SQUARE PRESTRESSED CONCRETE PILES - TYPICAL DETAILS & NOTES	INDEX 455-001 / SHEET 1 of 1

NOTES:

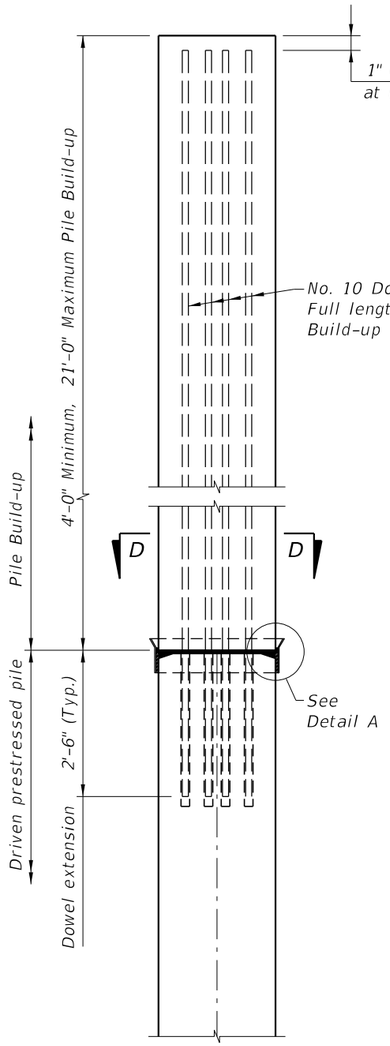
1. For Sections D–D, E–E, & F–F see Index 455–012 thru 455–030 for applicable concrete pile size and Pile Splice Reinforcement Details.
2. Prestressing strands, spiral ties and/or reinforcement are not shown for clarity.
3. When pile splices are necessary due to shipping and handling limitations, use the "Drivable Planned Prestressed Precast Splice Detail" or Mechanical Pile Splices on the Approved Products List (APL).
4. When preformed dowel holes are used, continue the 1" spiral tie pitch to 4'–0" below the head of the pile, See Index 455–018, 455–020 & 455–024. For preformed holes; use either removable preforming material or stay–in–place corrugated galvanized steel ducts meeting ASTM Specification A653, Coating Designation G90, 26 gauge. Use 2" diameter ducts with a minimum corrugation (rib) height of 0.12 in. fabricated with either welded or interlocked seams. Galvanizing of welded seams is not required.
5. For tension piles where top of Prestressed Pile is less than 3 feet below Pile Cut–off Elevation, extend No. 10 Dowels into cap beyond Pile Cut–off Elevation to achieve development as approved by the Engineer.



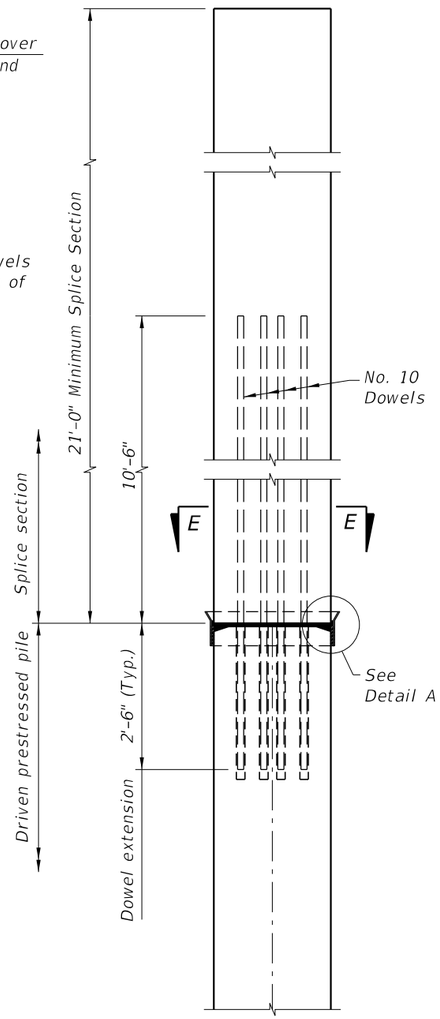
DETAIL A



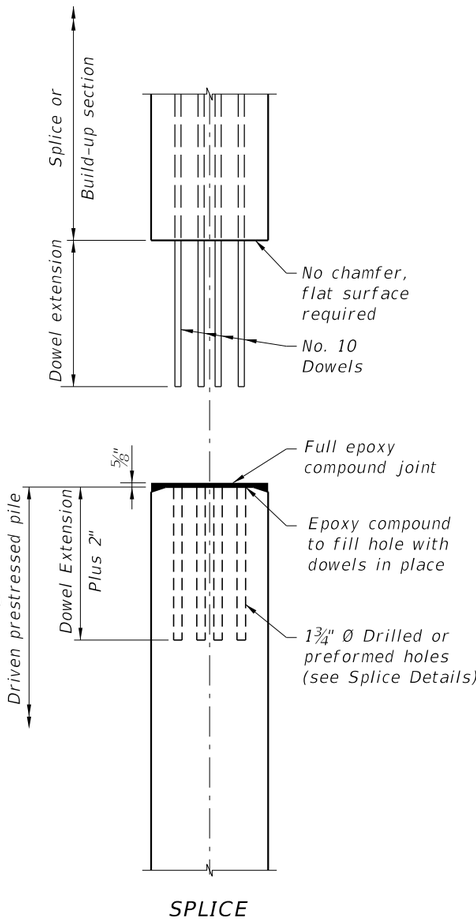
UNPLANNED
REINFORCED C-I-P
PILE BUILD-UP DETAIL



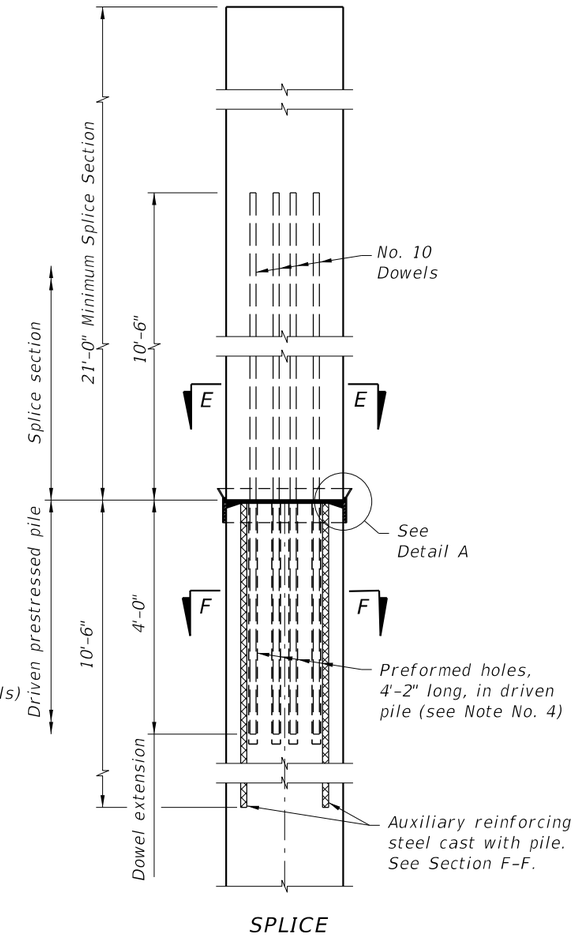
NON-DRIVABLE UNPLANNED
REINFORCED PRECAST
PILE BUILD-UP DETAIL



DRIVABLE UNPLANNED
PRESTRESSED PRECAST
PILE SPLICE DETAIL



SPLICE
BEFORE BONDING



SPLICE
AFTER BONDING

DRIVABLE PLANNED
PRESTRESSED PRECAST
PILE SPLICE DETAIL

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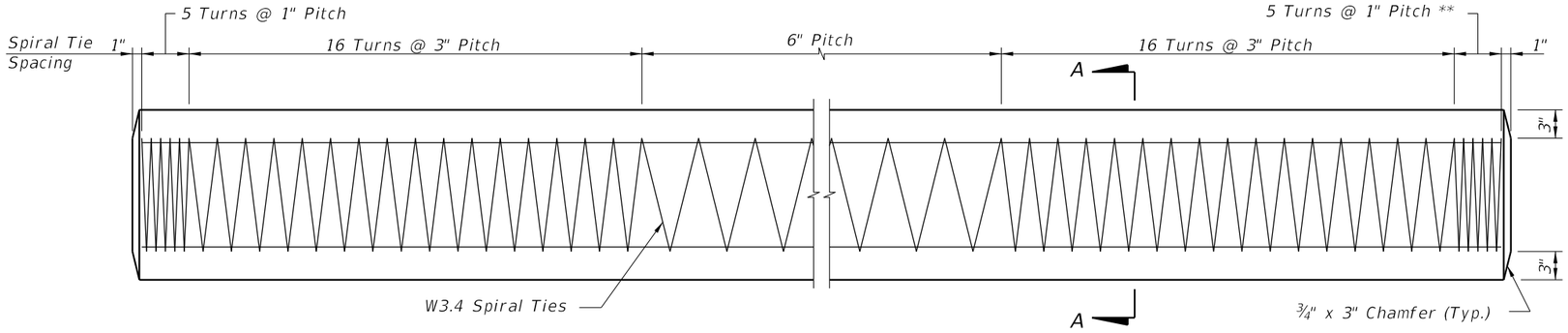
LAST REVISION	REVISION	DESCRIPTION:			
11/01/22			FY 2024-25 STANDARD PLANS	SQUARE PRESTRESSED CONCRETE PILE SPLICES	INDEX 455-002 / SHEET 1 of 1

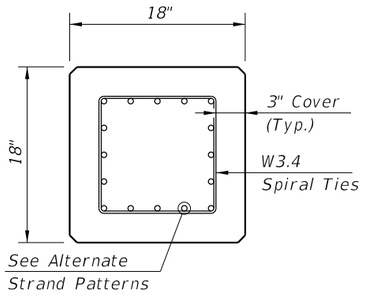


ELEVATION

** See Note 4 on Index 455-002

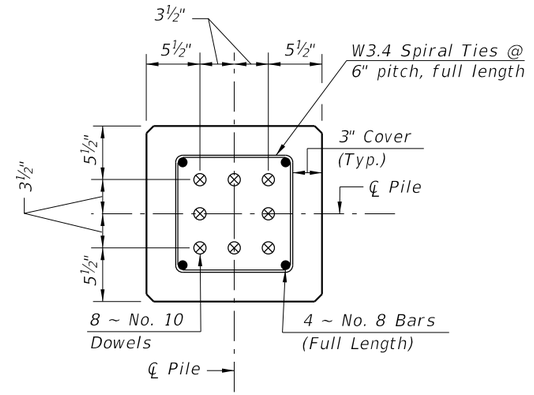
ALTERNATE STRAND PATTERNS

12 ~ 0.6" Ø, Grade 270 LRS, at 35 kips
12 ~ ½" Ø (Special), Grade 270 LRS, at 34 kips
16 ~ ½" Ø, Grade 270 LRS, at 26 kips
20 ~ 7/16" Ø, Grade 270 LRS, at 21 kips
24 ~ ⅜" Ø, Grade 270 LRS, at 17 kips

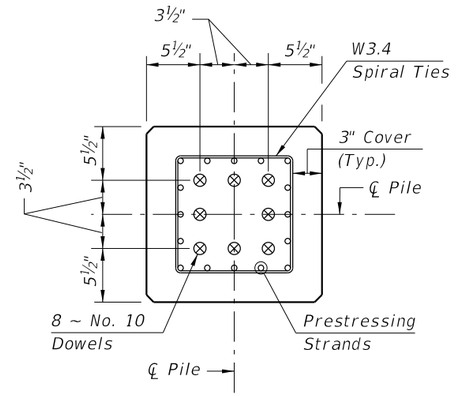


SECTION A-A

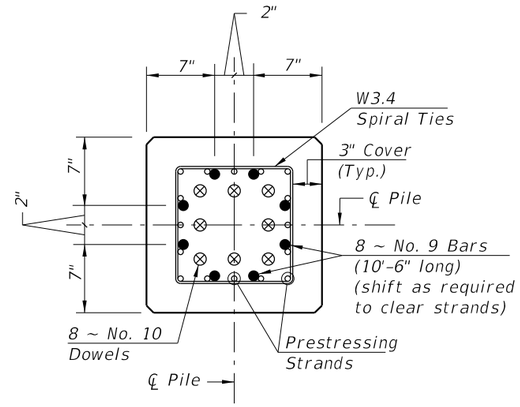
NOTES:
1. Work this Index with Index 455-001 – Typical Details and Notes for Square Prestressed Concrete Piles and Index 455-002 – Square Prestressed Concrete Pile Splices.
2. Any of the given Alternate Strand Patterns may be utilized. The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.



SECTION D-D
(See Non-Drivable Unforeseen Reinforced Precast Splice Detail)



SECTION E-E
(See Drivable Prestressed Precast Splice Detail)



SECTION F-F
(See Drivable Preplanned Splice Detail)

PILE SPLICE REINFORCEMENT DETAILS

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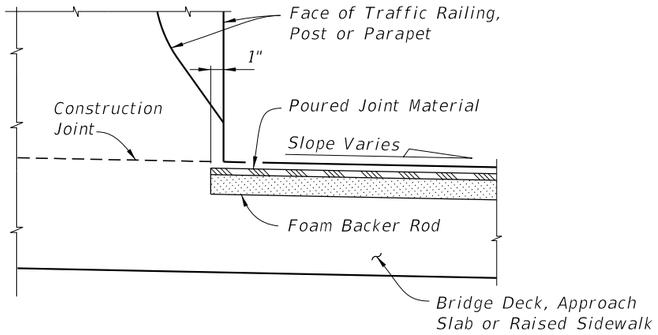
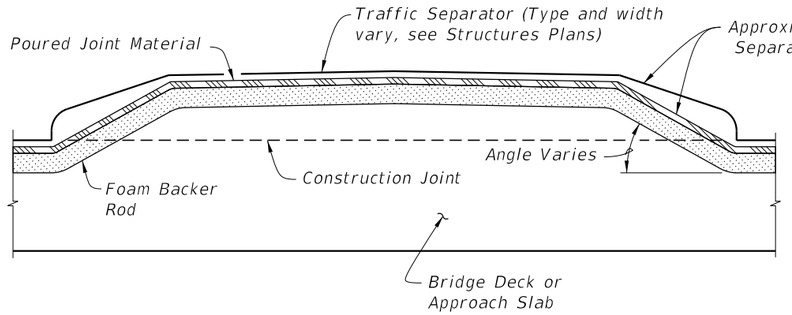
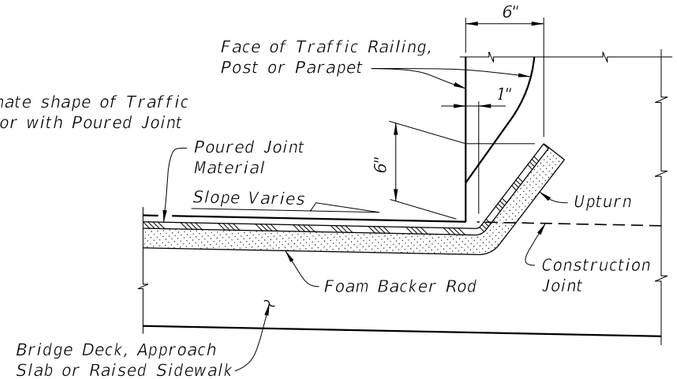
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
01/01/12			FY 2024-25 STANDARD PLANS	18" SQUARE PRESTRESSED CONCRETE PILE	455-018	1 of 1



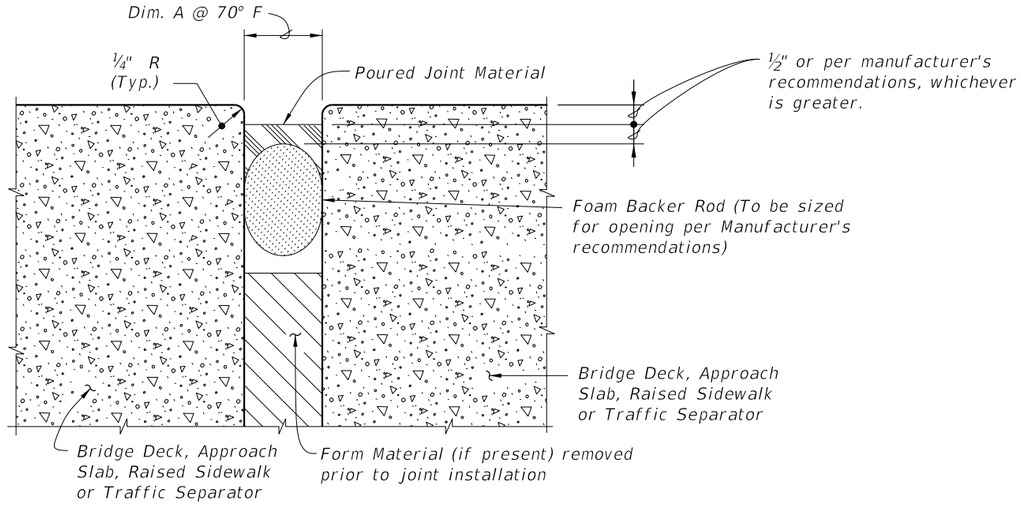
PARTIAL SECTION ALONG ℄ JOINT
JOINT TREATMENT AT HIGH SIDE OF
DECK WITH SLOPES 1% OR GREATER



PARTIAL SECTION ALONG ℄ JOINT,
JOINT TREATMENT AT TRAFFIC SEPARATOR



PARTIAL SECTION ALONG ℄ JOINT
JOINT TREATMENT AT LOW SIDE OF DECK OR
HIGH SIDE OF DECK WITH SLOPES < 1%



TYPICAL SECTION THRU JOINT

GENERAL NOTES:

1. Furnish and install Poured Joint With Backer Rod Expansion Joint Systems in accordance with Specification Sections 458 and 932 using Type D silicone sealant material.
2. Refer to the Structures Plans, Poured Expansion Joint Data Table for Dim. A @ 70° F.

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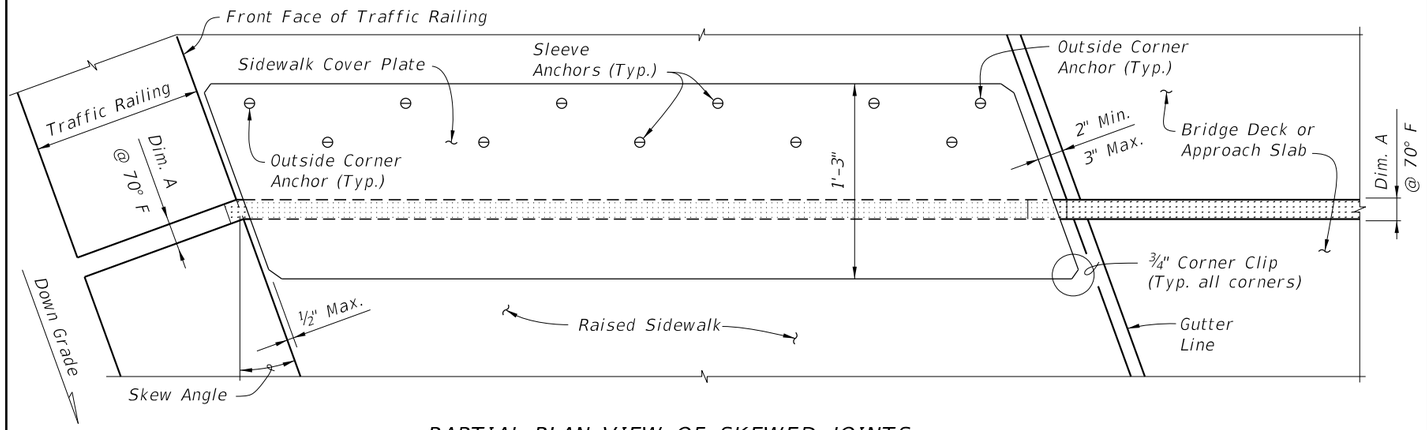
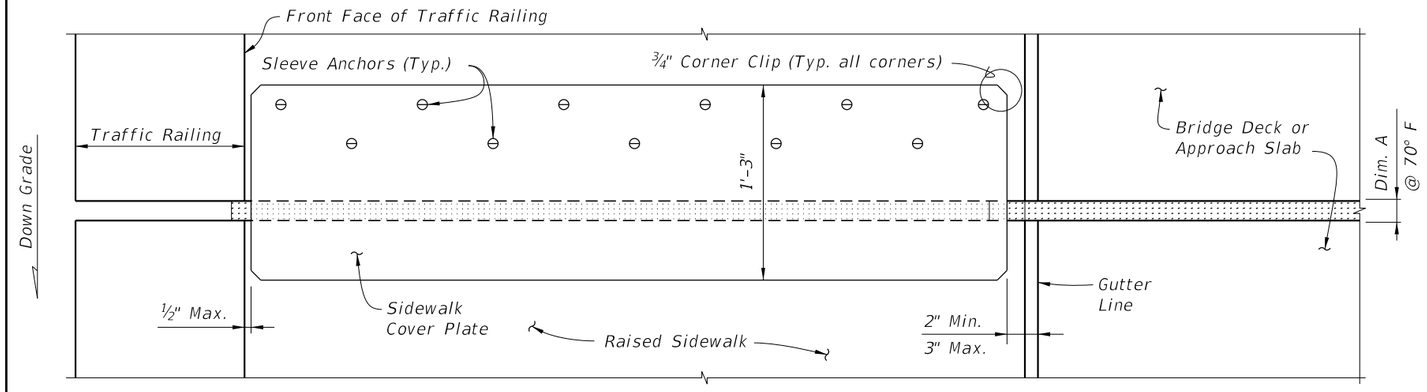
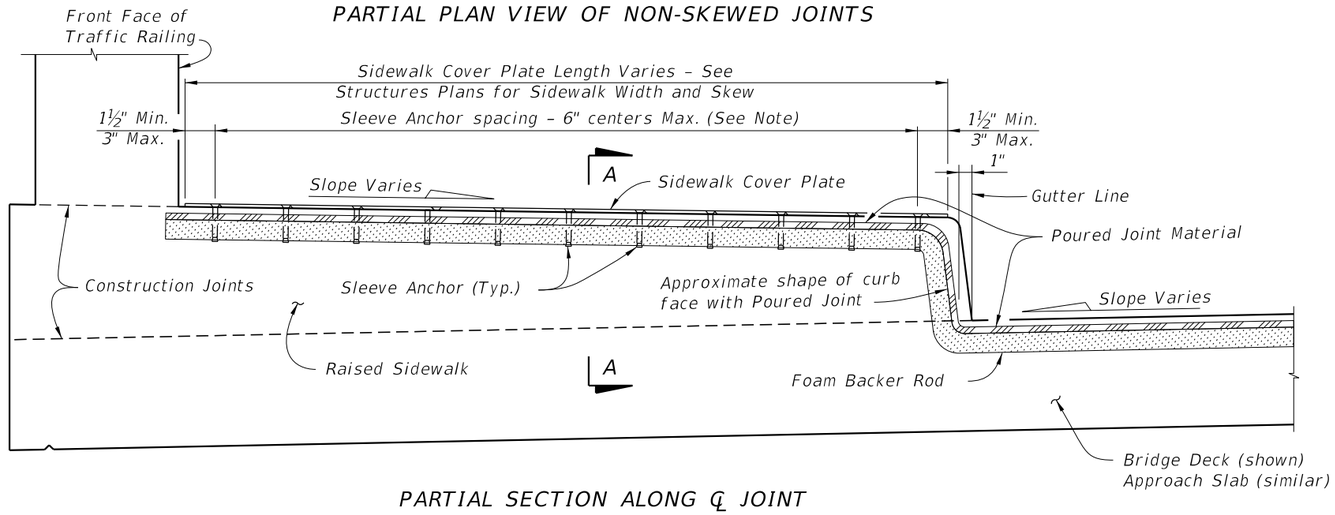
LAST REVISION	REVISION	DESCRIPTION:				
11/01/23			FY 2024-25 STANDARD PLANS	EXPANSION JOINT SYSTEM - POURED JOINT WITH BACKER ROD	INDEX 458-110	SHEET 1 of 2



PARTIAL PLAN VIEW OF SKEWED JOINTS

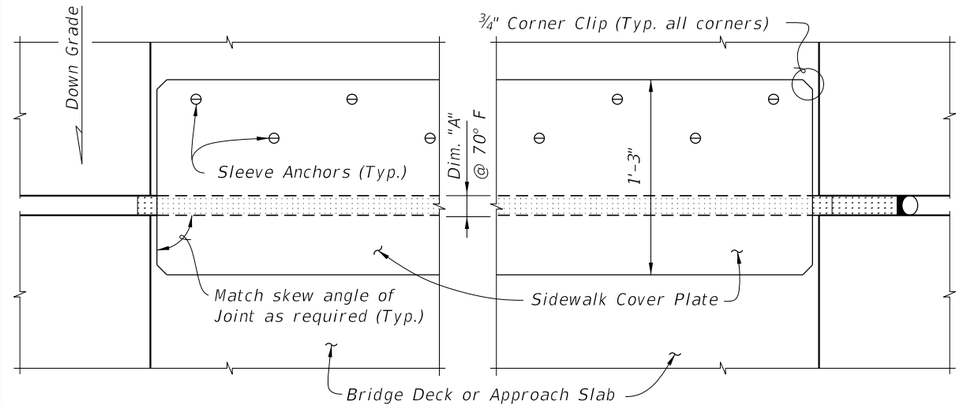


PARTIAL PLAN VIEW OF NON-SKEWED JOINTS

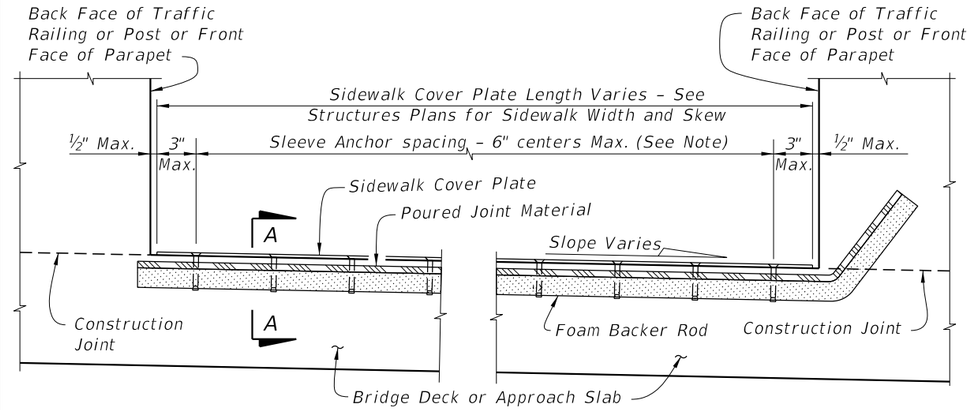


PARTIAL SECTION ALONG ℄ JOINT

RAISED SIDEWALK DETAIL

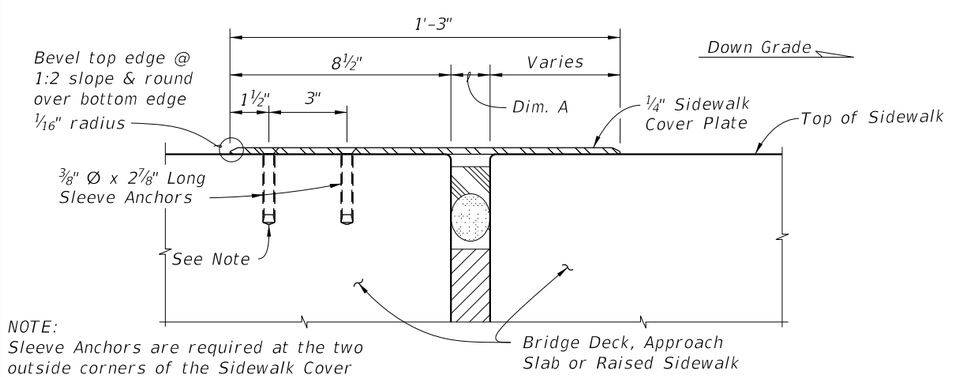


PARTIAL PLAN VIEW



PARTIAL SECTION ALONG ℄ JOINT

FLUSH SIDEWALK DETAIL

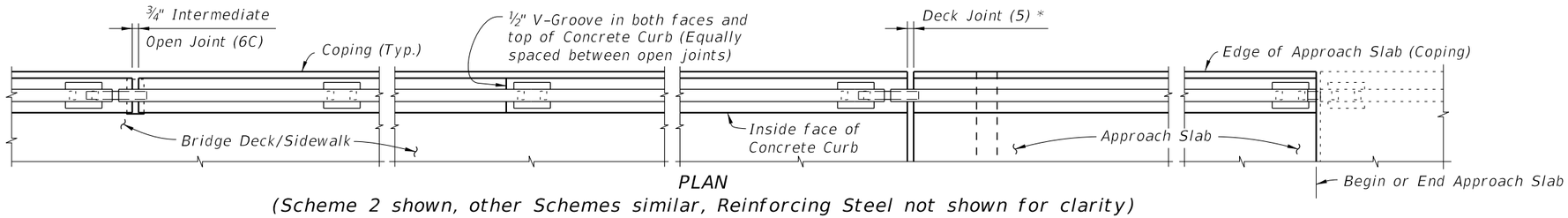


NOTE:
Sleeve Anchors are required at the two outside corners of the Sidewalk Cover Plate. Space Sleeve Anchors uniformly between the corner anchors.

SECTION A-A

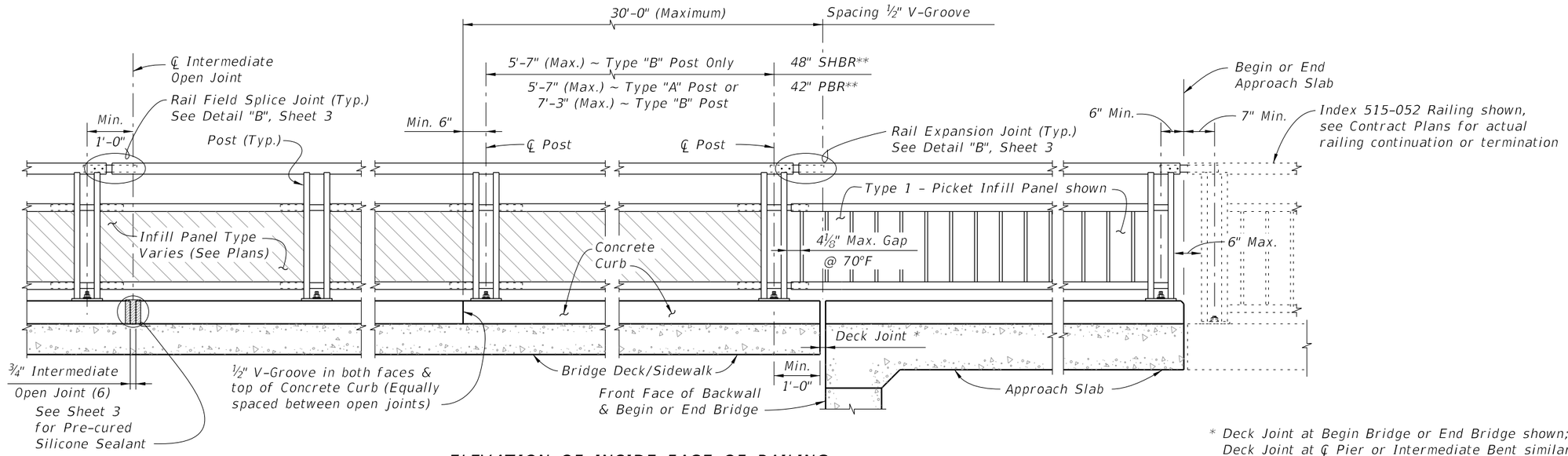
10/15/2023 12:02:22 PM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
07/01/13			FY 2024-25 STANDARD PLANS	EXPANSION JOINT SYSTEM - POURED JOINT WITH BACKER ROD	458-110	2 of 2



PLAN

(Scheme 2 shown, other Schemes similar, Reinforcing Steel not shown for clarity)



ELEVATION OF INSIDE FACE OF RAILING

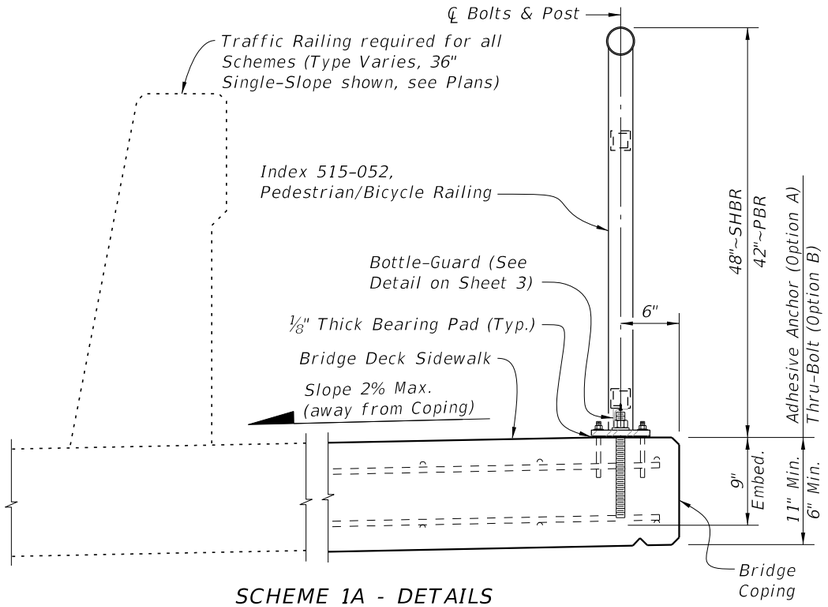
(Scheme 2 shown with Post "A", other Schemes similar, Reinforcing Steel not shown for clarity)

* Deck Joint at Begin Bridge or End Bridge shown;
Deck Joint at ℄ Pier or Intermediate Bent similar.

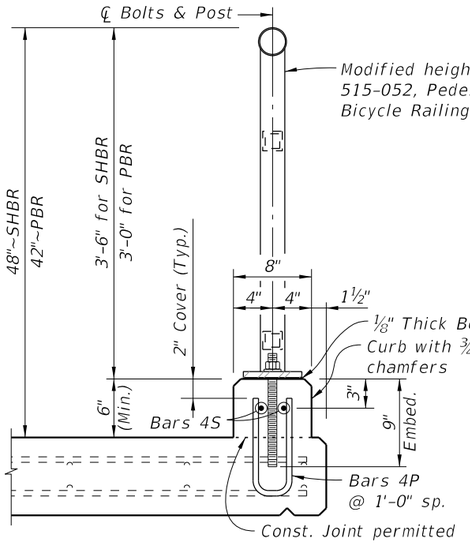
** SHBR~Special Height Bicycle Rail
PBR~Pedestrian/Bicycle Rail

NOTES:

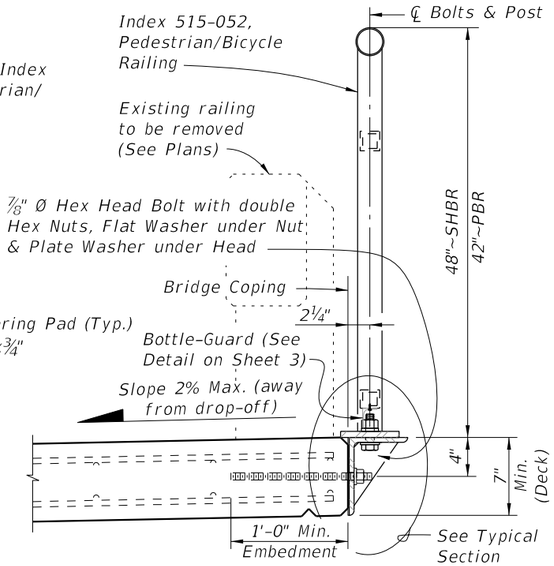
1. Shop Drawings are required.
2. Work this Index with Index 515-052 Bicycle/Pedestrian Railing Details (Steel) and Specification Section 515. Refer to the SPI for Design Criteria and Limits of Use.
3. Materials:
   - A. Steel: Galvanized after fabrication
     - a. Fasteners: Hex Head Bolt ASTM A307, Hex Nuts ASTM A563, Washers ASTM F436
     - b. Support Bracket (Scheme 3) L-shape and Stiffener Plate: ASTM A36
     - c. Bottle-guard (Schemes 1 & 3) L-shape: ASTM A36
   - B. Concrete: Same as bridge deck
   - C. Pre-cured Silicone Sealant: Specification Section 932
   - D. Bearing Pads: Provide ⅛" Plain, Fabric Reinforced or Fabric Laminated bearing pads that meet the requirements of Specification Section 932 for Ancillary Structures.
4. See Structures Plans, Superstructure Sheets for bridge information including concrete type, deck expansion joint locations and orientations, and thermal movement.
5. Railings:
   - A. For thermal movement greater than 4" (up to a maximum of 5"), clear opening between adjacent pickets, or panels at Rail Expansion Joints above Deck Joints must be reduced to 3½".
   - B. For treatment of railings on skewed bridges see Index 521-427.
6. Curbs:
   - A. Match open curb joints at Deck Expansion Joint locations to the deck joint dimension.
   - B. Construct Concrete Curb (Scheme 2) vertical with the top surface finished level transversely. See Concrete Curb Details Sheet 3.
   - C. Provide ¾" Intermediate open joints in curbs coinciding with the ¾" joints in the traffic railing.
7. Payment: Support bracket (Scheme 3) is incidental to the cost of railing. Curb concrete and reinforcing steel (Scheme 2) are included in the bridge deck quantities.



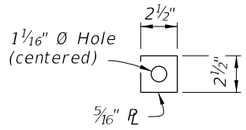
SCHEME 1A - DETAILS
(Adhesive Anchor Option shown)



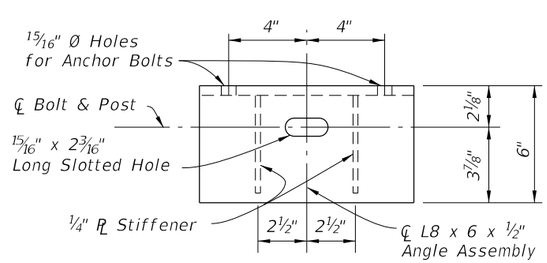
SCHEME 2 -
TYPICAL SECTION THROUGH
CURB MOUNTED RAILING



SCHEME 3 -
TYPICAL SECTION THROUGH
SIDE MOUNTED RAILING (RETROFIT)



THRU-BOLT PLATE
WASHER DETAIL



PLAN VIEW

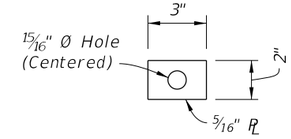
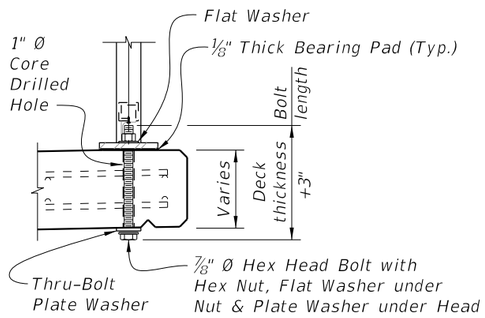
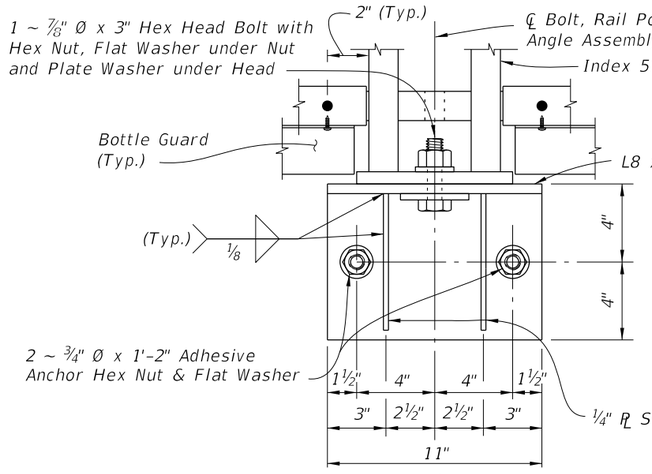


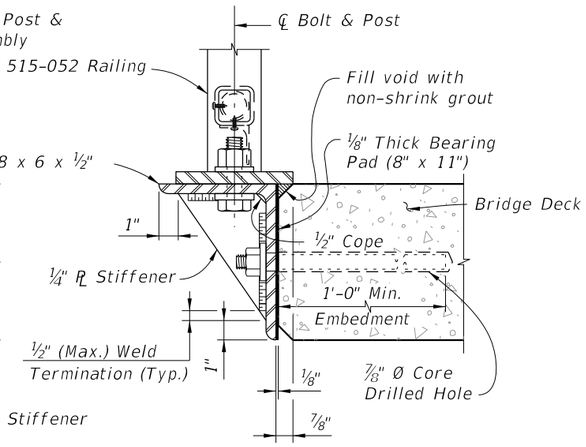
PLATE WASHER DETAIL



SCHEME 1B - DETAILS
(Thru-Bolt Option)



ELEVATION VIEW



TYPICAL SECTION

SCHEME 1 - TYPICAL SECTION THROUGH DECK MOUNTED RAILING

SCHEME 3 - SIDE-MOUNTED SUPPORT BRACKET DETAILS

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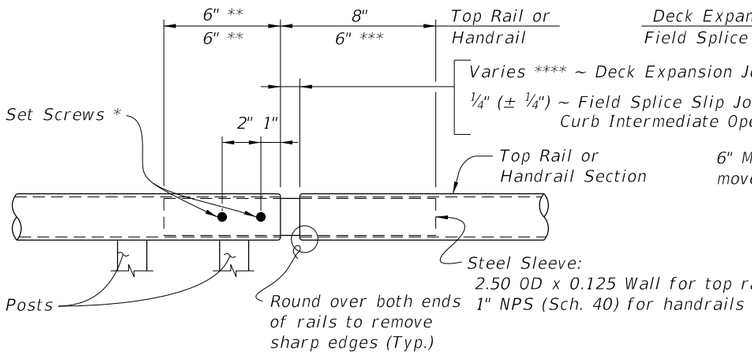
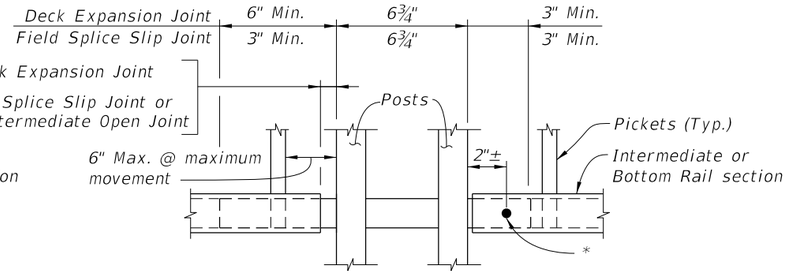
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17			FY 2024-25 STANDARD PLANS	BRIDGE PEDESTRIAN/BICYCLE RAILING (STEEL)	INDEX 515-051	SHEET 2 of 3



ROUND RAILS - TOP RAIL OR HANDRAIL



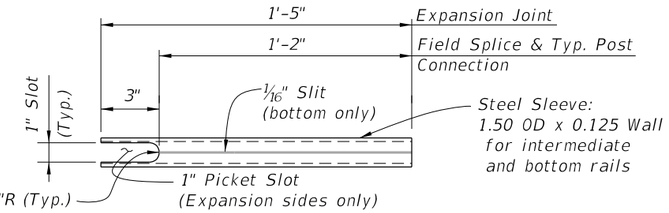
SQUARE RAILS - INTERMEDIATE OR BOTTOM RAIL

* ¼" Ø x ¾" Pan Head Stainless Steel (Type 316 or 18-8 Alloy) Set Screws along outside face of railing. Set screws must be set flush against the rail surface. A ¾" Ø plug weld may be substituted for the two set screws at expansion joints.

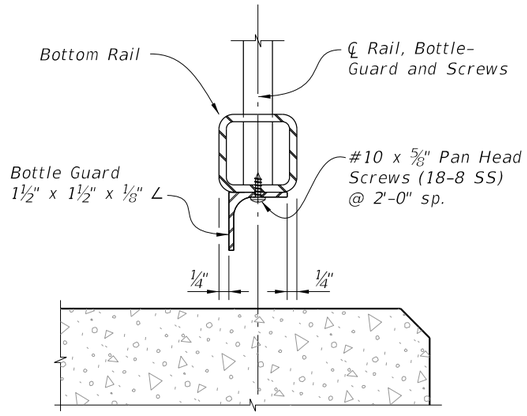
** Embedded length may be 4" for plug welded connection.

*** Increase handrail sleeve embedment to 8" for Expansion Joint openings greater than 2".

**** Expansion Joint opening shall match the clear opening in the deck joint but not greater than 3".



INTERMEDIATE OR BOTTOM RAIL - STEEL SLEEVE DETAIL (Bottom Side Shown)



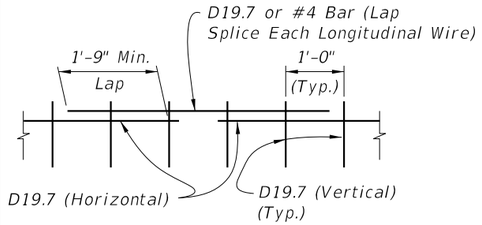
TYPICAL SECTION THROUGH BOTTOM RAIL
(Post Not Shown for Clarity)

DETAIL "B" EXPANSION JOINT (FIELD SPLICE SIMILAR)

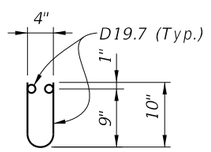
SCHEME 1 - BOTTLE GUARD DETAIL

ALTERNATE REINFORCING (WWR) DETAILS

NOTE: Place wire panels to minimize the end overhang. End Overhangs greater than 4¾" are not permitted.



SPLICE DETAIL
(Between WWR Sections)

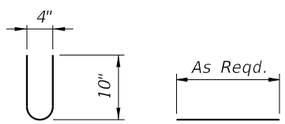


WWR SECTION DETAIL

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

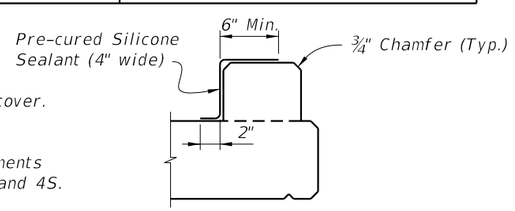
MARK	SIZE	LENGTH
P	4	2'-0"
S	4	As Reqd.



BAR 4P BAR 4S

CURB REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the curb on a retaining wall shall be the same as detailed for an 8" deck.
3. All reinforcing steel at the open joints shall have a 2" minimum cover.
4. Bars 4S may be continuous or spliced at the construction joints. Bar splices for Bars 4S shall be a minimum of 1'-8".
5. Deformed Welded Wire Reinforcement (WWR) meeting the requirements of Specification Section 931 may be used in lieu of all Bars 4P and 4S.



DETAIL "A" - SECTION
AT INTERMEDIATE OPEN JOINT

INTERMEDIATE JOINT SEAL NOTE:

At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.

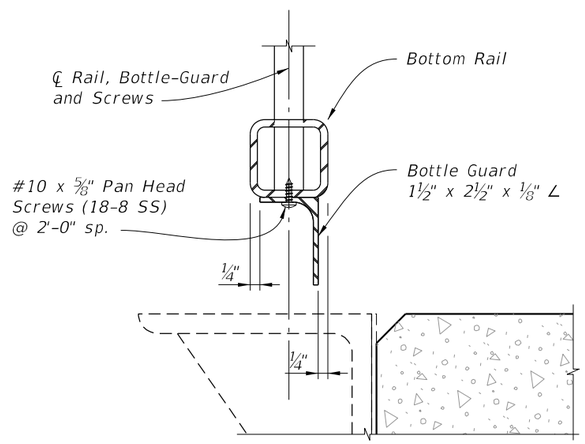
ESTIMATED CONCRETE CURB QUANTITIES (SCHEME 2)

ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.0124
Reinforcing Steel	LB/LF	4.01

SCHEME 2 - CONCRETE CURB DETAILS

CROSS REFERENCE:

See Sheet 1 for Bridge Railing Notes.



TYPICAL SECTION THROUGH BOTTOM RAIL
(Post Not Shown for Clarity)

SCHEME 3 - BOTTLE GUARD DETAIL

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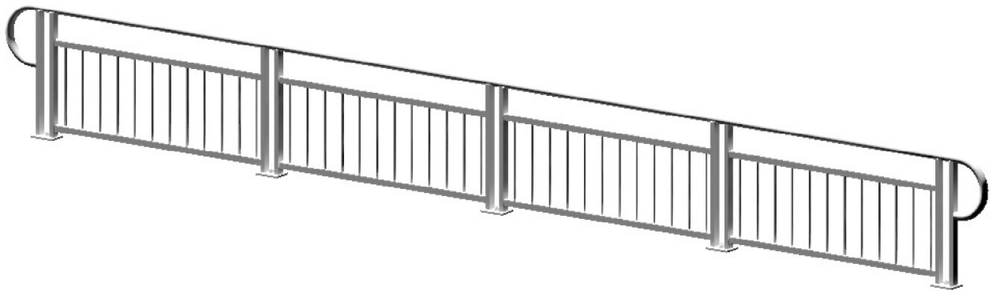

3D VIEW OF RAILING WITH TYPE 1 - PICKET INFILL PANEL
(42" Height shown, 48" Height Similar)

TABLE 1 - RAILING MEMBERS			
MEMBER	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS
Post "A"	HSS 2½ x 1½ x⅛	2.50" x 1.50"	0.125"
Post "B"	HSS 2½ x 1½ x 3/16	2.50" x 1.50"	0.188"
Top Rail	2½" NPS (Sch. 10)	2.875"	0.120"
	HSS 3.000 x 0.120	3.000"	0.120"
End Hoops	2½" NPS (Sch. 10)	2.875"	0.120"
	HSS 3.000 x 0.120	3.000"	0.120"
Top Rail Joint/Splice Sleeves	HSS 2.500 x 0.125	2.500"	0.125"
Intermediate & Bottom Rail	HSS 2 x 2 x 3/16	2.00" x 2.00"	0.188" (1)
Int. & Bottom Rail Post Connection Sleeve	HSS 1.500 x 0.125	1.500"	0.125" (1)
Handrail Joint/Splice Sleeves	1" NPS (Sch. 40)	1.315"	0.133"
	HSS 1.500 x 0.125	1.500"	0.125"
Handrails	1½" NPS (Sch. 40)	1.900"	0.145"
Handrail Support Bar	¾" Ø Round Bar	0.750"	N/A
Pickets (Type 1 Infill Panel)	¾" Ø Round Bar	0.750"	N/A
Infill Panel Members (Types 2 – 5)	Varies (See Details)	Varies	Varies

TABLE 1 NOTES:

(1) 0.125" wall thickness permitted for rails with post spacings less than 5'–8", except that Post Connection Sleeve must be 1¼" NPS (Sch. 40).

NOTES

Notes:

1. Shop Drawings are required; see Specification Section 515
2. For bridge mounted railings work this Index with Index 515-051 Bridge Bicycle/Pedestrian Railing
3. Materials:
   - A. Pipe Rails and Pickets: ASTM A500 Grade B, C or D, or ASTM A53 Grade B for standard weight pipe (Schedule 40) and ASTM A36 for bars.
   - B. Structural Tube: ASTM A500 Grade A, B, C, or D or ASTM A501
   - C. Steel Plate: ASTM A36 or ASTM A709 Grade 36
   - D. U-Channels and filler plates: ASTM A36 or ASTM A1011 (Grade 36).
   - E. Stainless steel (SS) screws: Type 316 or 18-8 Alloy
   - F. Galvanized Steel Fasteners: coated in accordance with Specification Section 962.
     - a. Hex Head Bolts: ASTM A 307
       1. ⅞" diameter single bolt option, Grade 36
       2. 7/16" four bolt option, Grade 55
     - b. Adhesive Anchors: ASTM F1554 fully threaded rods, Grade 55
     - c. Hex Nuts: ASTM A563
     - d. Flat Washers: ASTM F436
     - e. Plate Washers: ASTM A36 or ASTM A706 Grade 36.
   - G. Shims: ASTM B209 Alloy 6061
   - H. Bearing Pads: ⅛" Plain, Fabric Reinforced or Fabric Laminated pads that meet the requirements of Specification Section 932 for Ancillary Structures.
4. Fabricate pickets and vertical panel elements parallel to the posts; except Type 2, 3 and 5 panel infills may be fabricated parallel to the longitudinal grade. Maintain a maximum clear opening of 5⅞" for standard installations and 3⅞" when a 4" sphere requirement is indicated in the Data Tables.
5. Maximum spacing between expansion joints is 40'-0". Locate an Expansion Joint between the posts on either side of the Deck Expansion Joint.
6. Field splices are similar to the Expansion Joint Detail and may be approved by the Engineer to facilitate handling; but the top rail must be continuous across a minimum of two posts.
7. For intermediate and bottom horizontal rails, the screwed joints shown may be substituted with alternate joints shown in detail "K".
8. Make corners and changes in tangential longitudinal alignment with a 9" bend radius or terminate adjoining sections with mitered end sections when handrails are not required.
9. For changes in tangential longitudinal alignment greater than 45', position posts a maximum of 2'-0" each side of the corner but not at the corner apex.
10. For curved longitudinal alignments, shop bend the top and bottom rails and handrails to match the alignment radius.
11. Handrails are required and must be continuous at landings for:
    - A. Grades Steeper than 5%,
    - B. Three or more steps
12. Installation: Cutting of reinforcing steel is permitted for post installed anchors.

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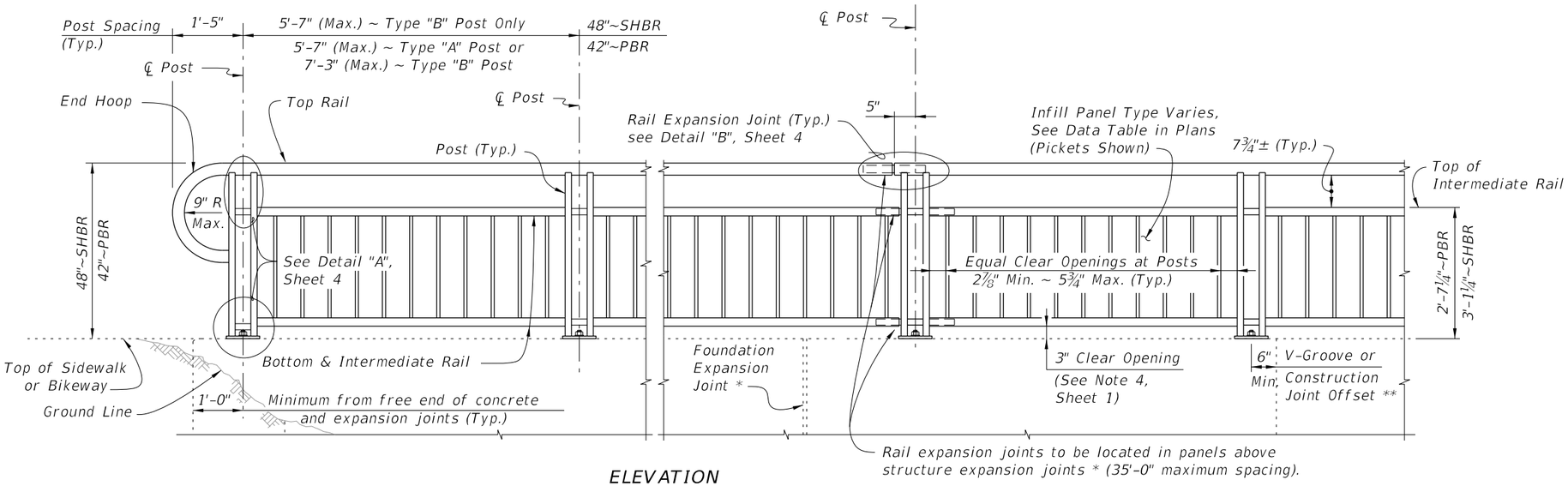
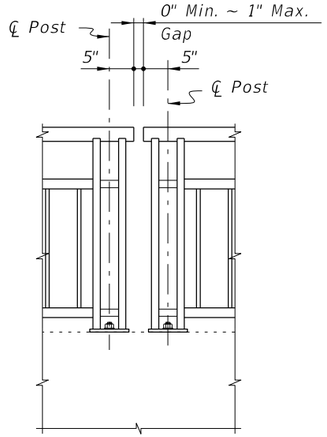


ELEVATION
(Showing Outside Face of Railing with Type "A" Posts)

TYPICAL RAILING DETAILS & RAILINGS ON GRADES 0% TO 5%
(Type 1 - Picket Railing Shown, Other Types Similar)

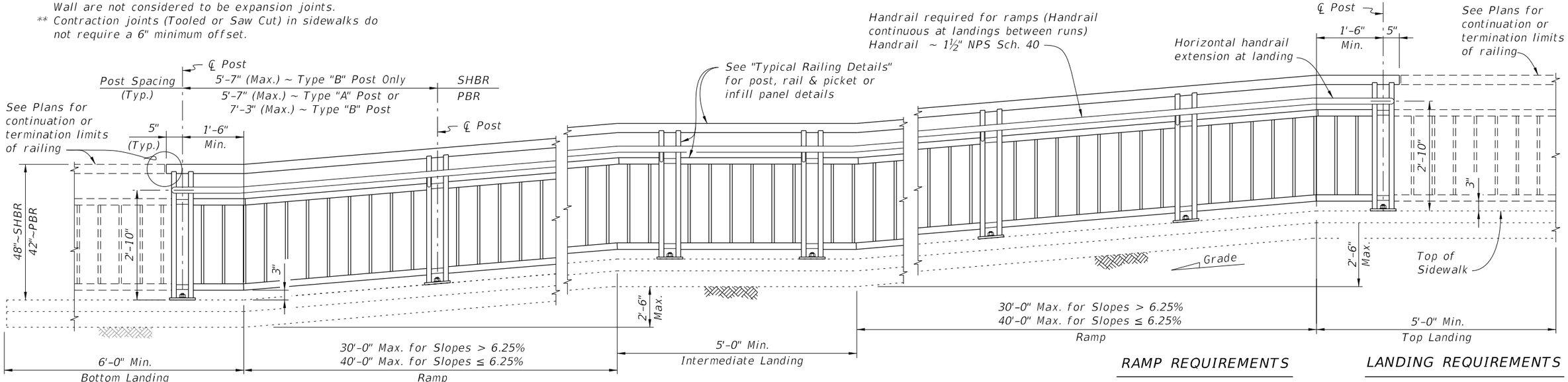


Note: Non-continuous corners are permitted when handrails are not required.

EXPANDED ELEVATION AT CORNERS

DETAIL FOR NON-CONTINUOUS RAILING AT CORNERS

NOTES:
* Keyed construction joints in Index 400-011 Gravity Wall are not considered to be expansion joints.
** Contraction joints (Tooled or Saw Cut) in sidewalks do not require a 6" minimum offset.



ELEVATION
(Showing Inside Face of Railing with Type "A" Posts)

RAMP REQUIREMENTS

For slopes greater than 5%:
Max. ramp slope = 8.33%
Max. ramp cross-slope = 2.0%

LANDING REQUIREMENTS

Max. landing slope = 2%
Max. landing cross-slope = 2%

RAILINGS ON GRADES STEEPER THAN 5%
(Type 1 - Picket Railing Shown, Other Types Similar)

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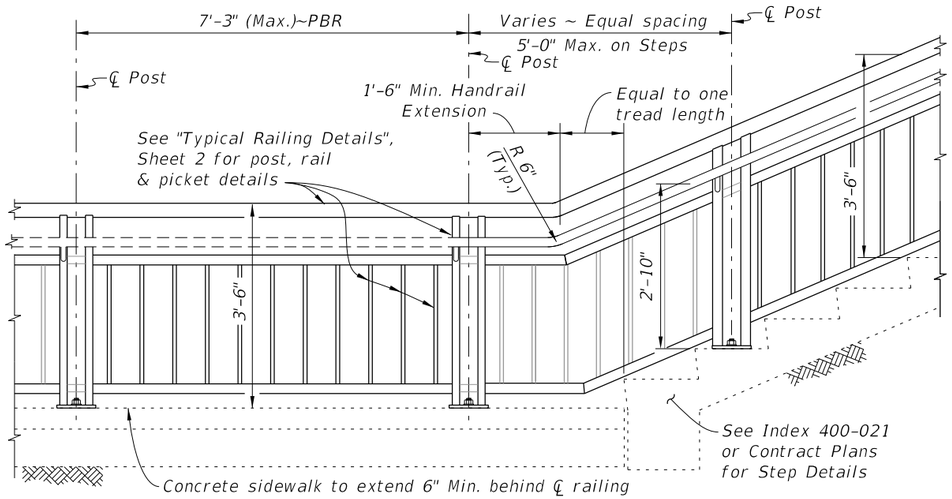
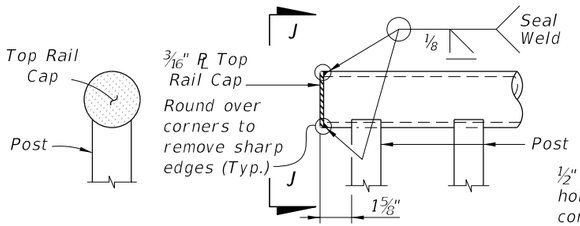
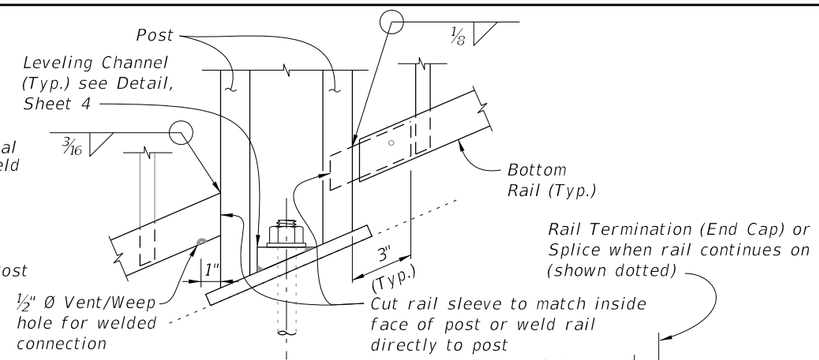


RAILING CONTINUATION BEYOND STEPS OR STAIRS
(Bottom shown, Top similar)

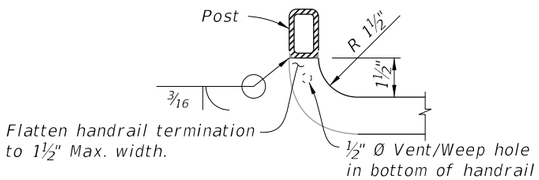


VIEW J-J DETAIL "J" - ELEVATION VIEW TOP RAIL TERMINATION

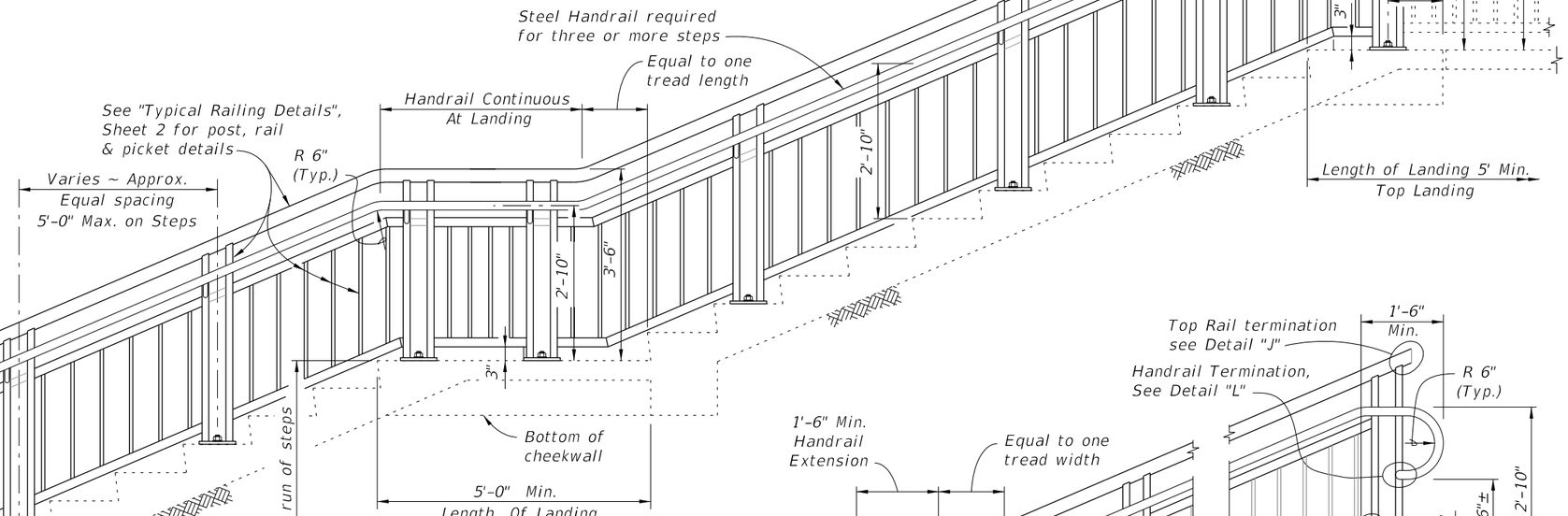


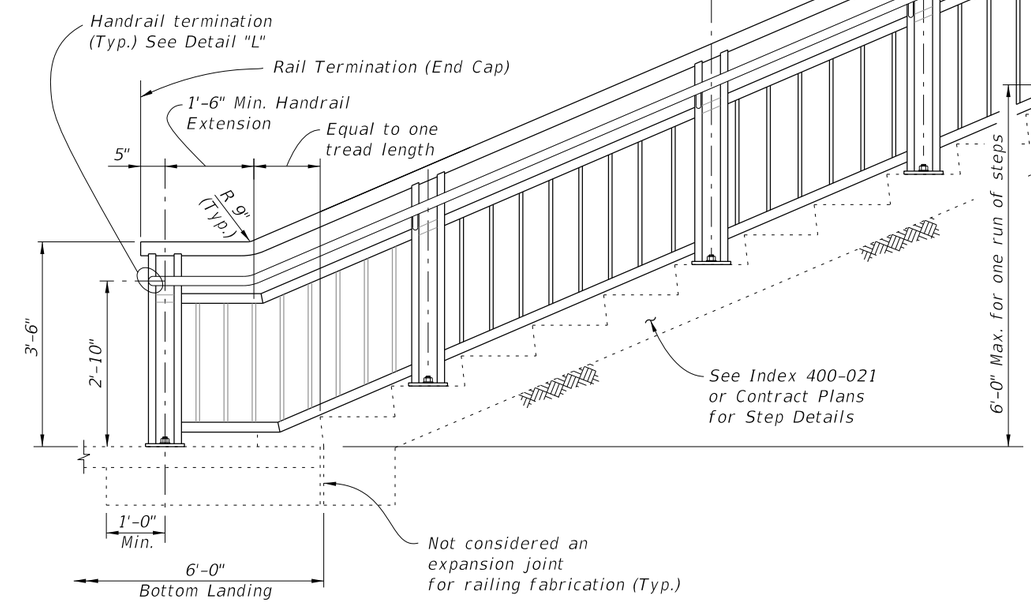
DETAIL "K" - ELEVATION VIEW BOTTOM RAIL CONNECTION
(Intermediate Rail Similar)

RAIL TERMINATION DETAILS

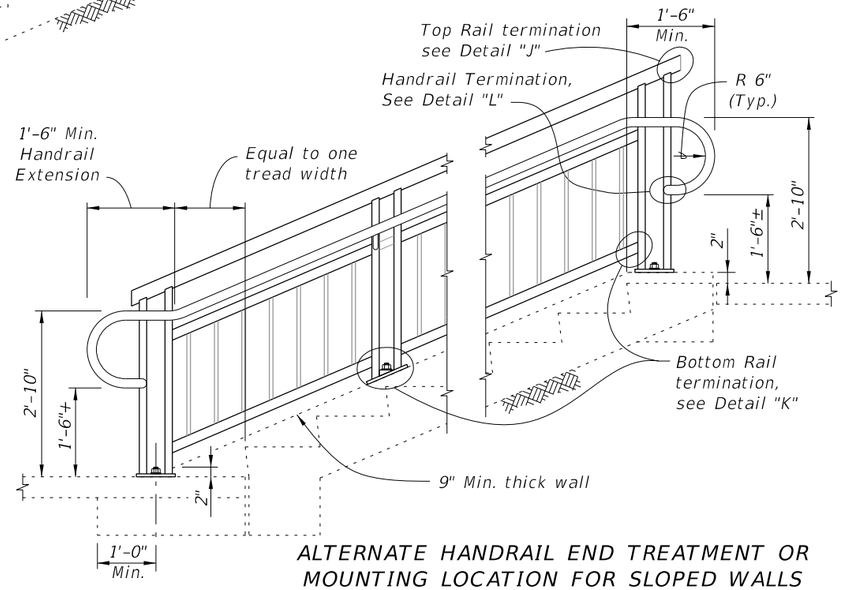


DETAIL "L" - PLAN VIEW
HANDRAIL TERMINATION





ELEVATION
(At-Grade Steps shown,
Elevated Stairs similar)



ALTERNATE HANDRAIL END TREATMENT OR
MOUNTING LOCATION FOR SLOPED WALLS

RAILINGS ON STEPS & STAIRS

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LAST REVISION	REVISION	DESCRIPTION:	FY 2024-25 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (STEEL)	INDEX	SHEET
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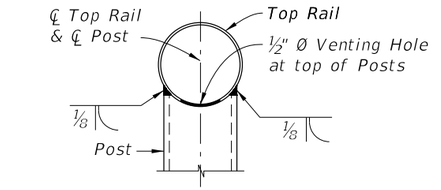
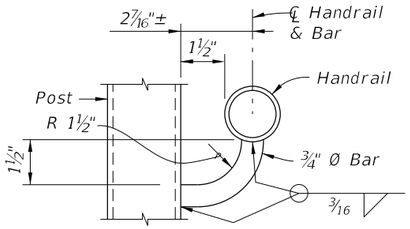
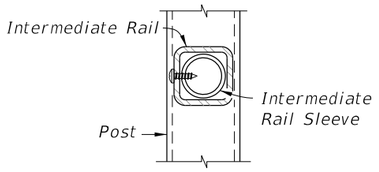


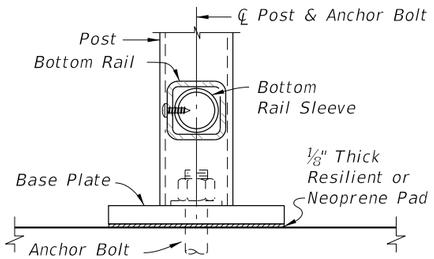
SECTION A-A
(Top Rail Connection)



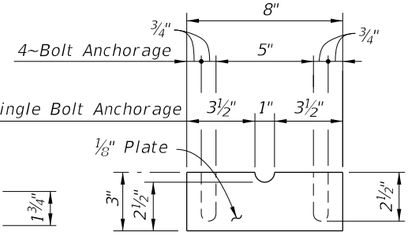
SECTION B-B
(Handrail Connection)



SECTION C-C
(Intermediate Rail Connection)



SECTION D-D
(Bottom Rail Connection -
Single Anchor Bolt Shown)



SHIM PLATE DETAIL

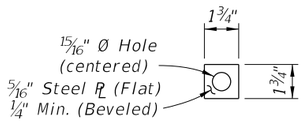
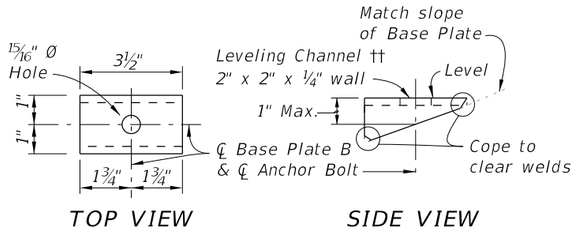
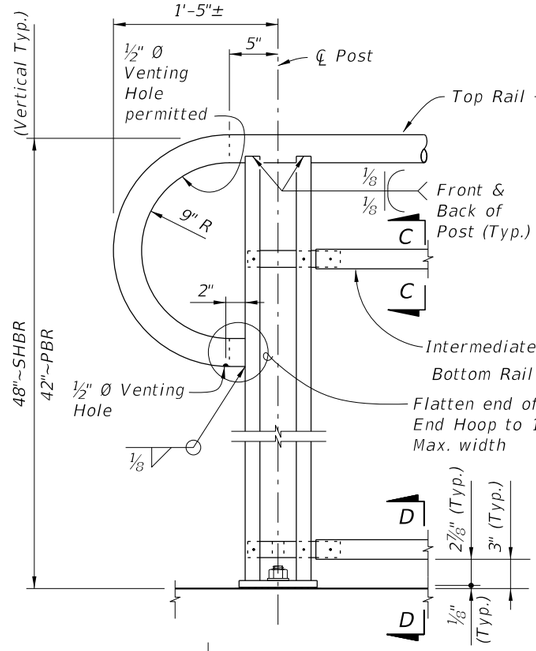


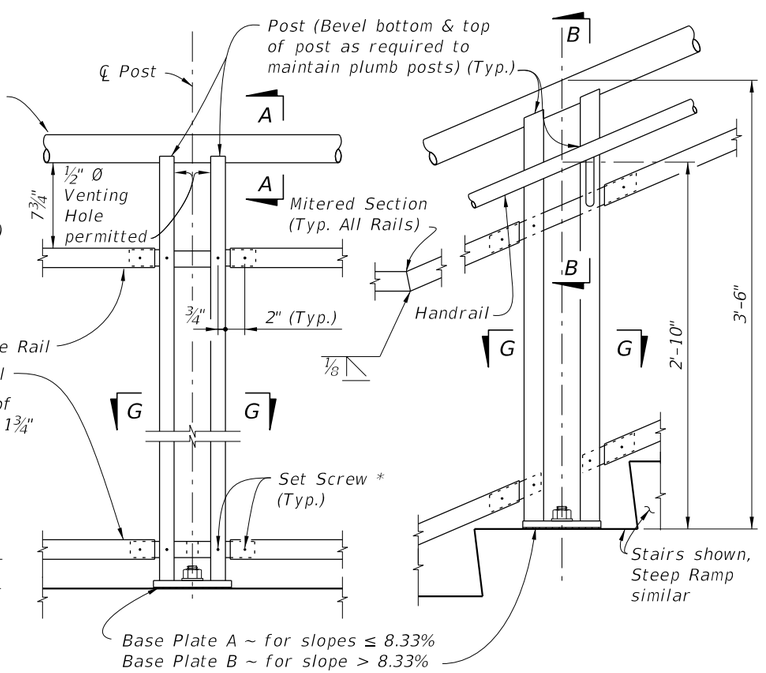
PLATE WASHER
DETAIL



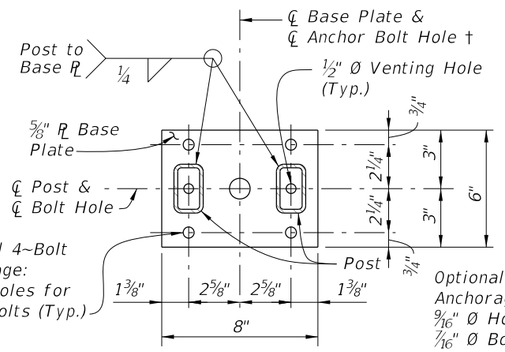
TOP VIEW SIDE VIEW

LEVELING CHANNEL DETAIL

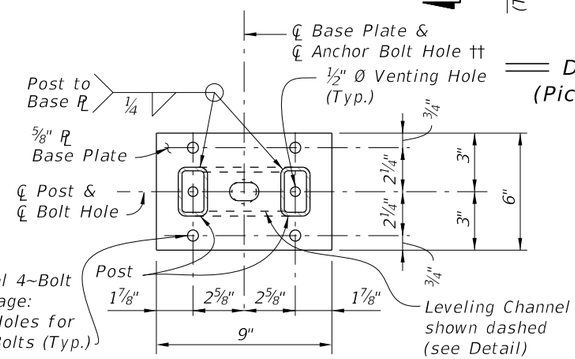




DETAIL "A" - RAIL CONNECTIONS
(Pickets/Panels and 4~Bolt Anchorage
Not Shown for Clarity)



BASE PLATE A



BASE PLATE B

SECTION G-G - BASE PLATE DETAILS

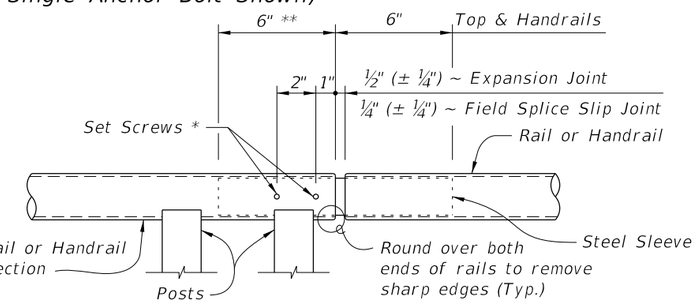
NOTES:

† *Base Plate A (Ramps – Bolts normal) use 1 1⁄16" Ø Holes for Single Anchor Bolts with Flat Washers for slopes ≤ 8.33%.*

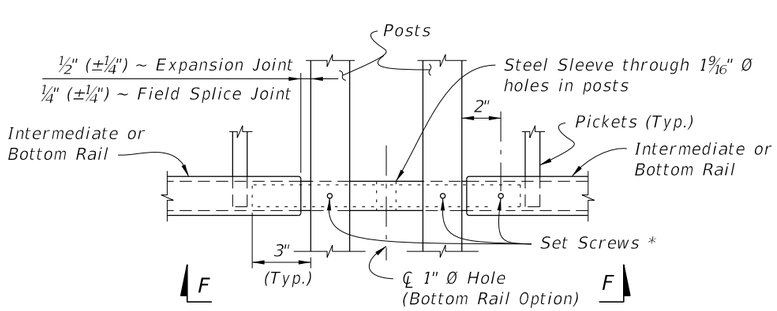
†† *Base Plate B (Stairs – Bolts plumb) use 1¼" Ø Holes for Single Anchor Bolts with Beveled Plate and Washers for slopes > 8.33% to ≤ 15%; use 15⁄16" x 1½" Slotted Holes with Leveling Channel for slopes > 15%.*

* *¼" Ø x ¾" Pan Head Stainless Steel (Type 316 or 18-8 Alloy) Set Screws. Screws must be set flush against the outside face of rails & posts and underside of handrails. ½" Ø plug welds may be substituted for the Set Screws. Do not provide Set Screws for Rails at free end of Expansion Joints.*

** *Embedded length may be 4" for plug welded connection.*

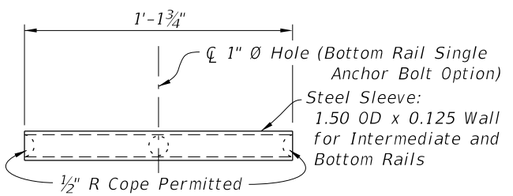


ROUND RAILS - TOP RAIL OR HANDRAIL
(Top Rail at Expansion Joint Shown)



SQUARE RAILS - INTERMEDIATE OR BOTTOM RAIL
(Bottom Rail at Expansion Joint Shown)

DETAIL "B" - EXPANSION JOINT (FIELD SPLICE SLIP JOINT SIMILAR)



VIEW F-F
INTERMEDIATE OR BOTTOM RAIL -
STEEL SLEEVE DETAIL (Bottom Side Shown)

CROSS REFERENCE:

For location of Details "B", See Sheet 2.

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LAST REVISION	REVISION	DESCRIPTION:	FY 2024-25 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (STEEL)	INDEX	SHEET
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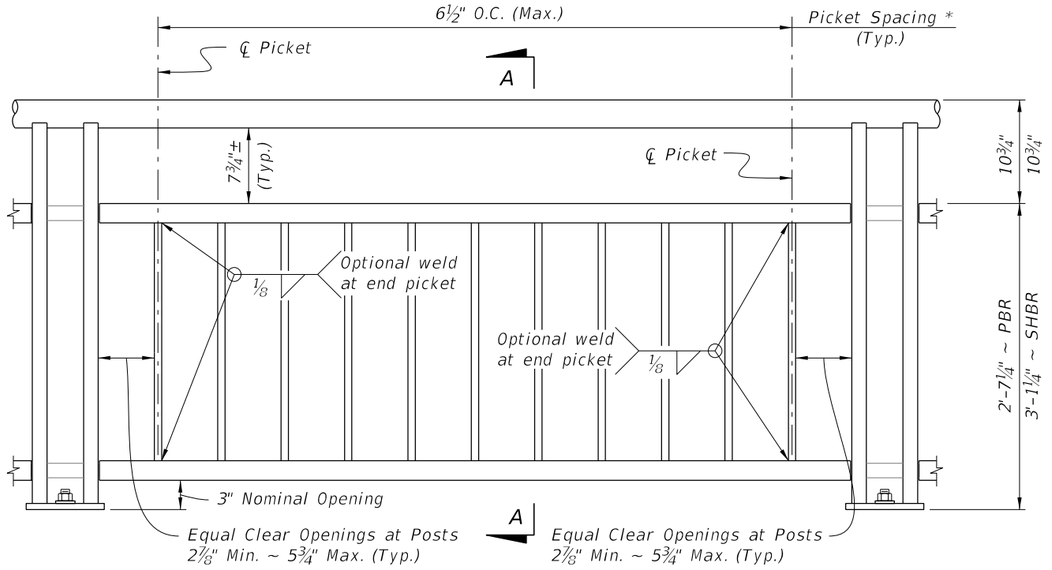
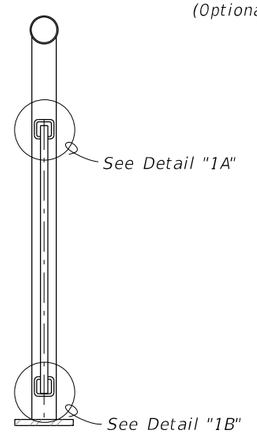
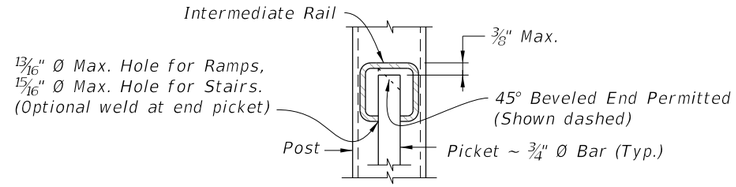


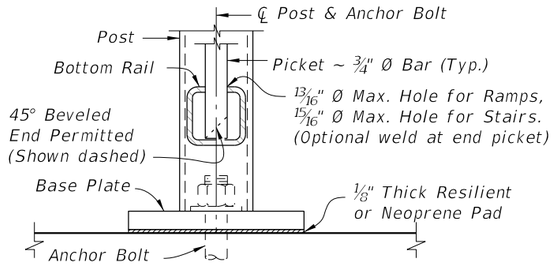
TYPE 1 - PICKET INFILL PANEL



SECTION A-A

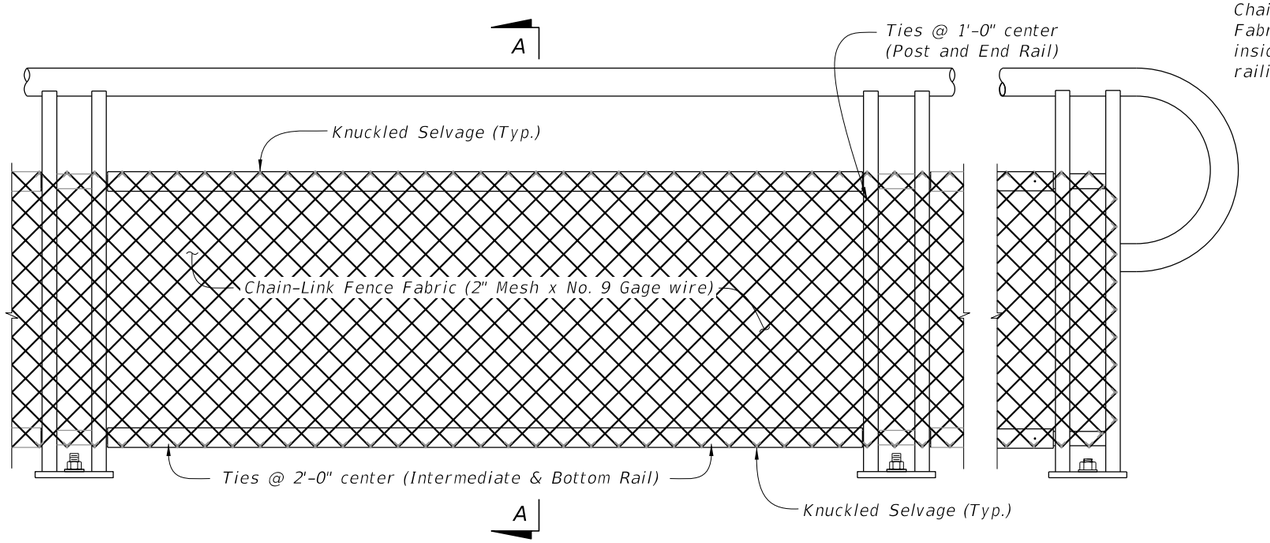


DETAIL "1A"
(Top of Picket Connection)

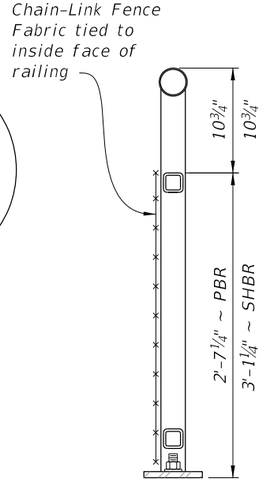


DETAIL "1B"
(Bottom of Picket Connection)

PICKET NOTES:
* Picket Spacing of 6½" centers is based on a ¾" Ø Bar for standard applications. When shown in the Contract Plans a 4½" picket spacing may be required. See Note 4 (Sheet 1).



TYPE 2 - CHAIN-LINK (Continuous Infill Panel)



SECTION A-A

TABLE 2 - CHAIN-LINK PANEL COMPONENT MATERIALS		
COMPONENT	ASTM	COMPONENT INFORMATION
Chain-Link Fence Fabric (2" mesh with knuckled top and bottom selvage)	A 392	Zinc-Coated Steel – No. 9 gage (coated wire diameter), Class 2 Coating
	A 491	Aluminum-Coated Steel – No. 9 gage (coated wire diameter)
	F 668	Polyvinyl Chloride (PVC) Coated Steel – No. 9 gage Zinc-Coated Wire (metallic-coated core wire diameter) ~ See Plans for specified color of PVC.
Tie Wires	F 626	Zinc-Coated Steel Wire – No. 9 gage with coating to match Chain-Link Fence Fabric.
Tension Bars	F 626	3⁄16" (Min. thickness) x ¾" (Min. width) x 2'-3' (Min. height) Steel Bars
Miscellaneous Fence Components	F 626	Zinc-Coated Steel

CHAIN-LINK PANEL NOTE:
Chain-Link Fence Fabric shall be continuous along limits of railing. Splicing of Chain-Link panels using Tension Bars at 20'-0" minimum increments is permitted.

NOTES:
1. See Plans for Infill Panel option required.

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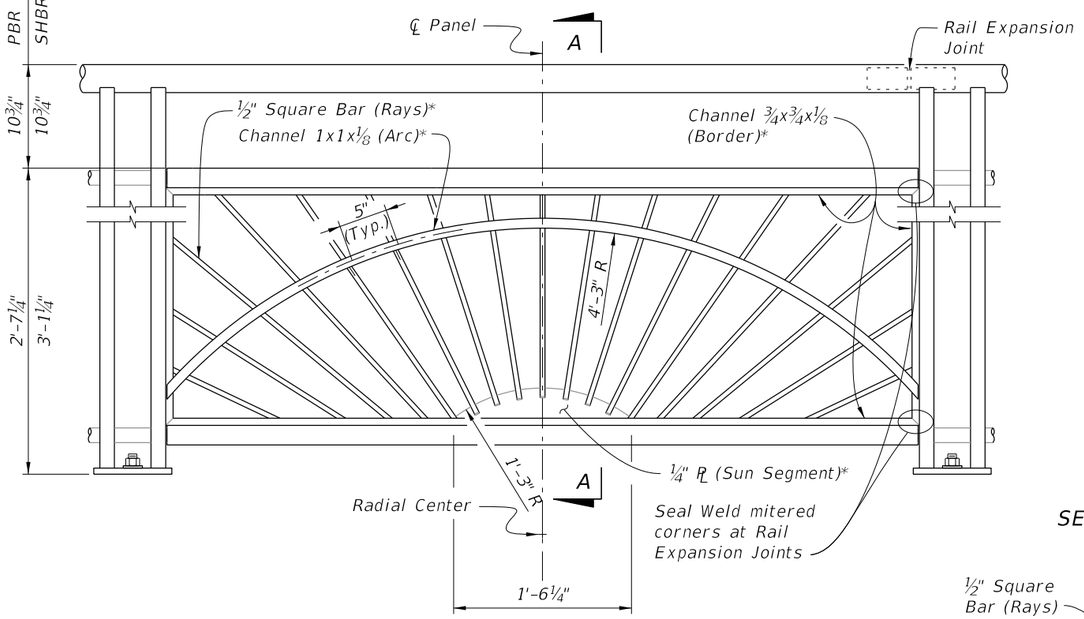
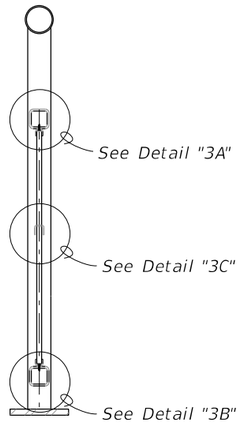
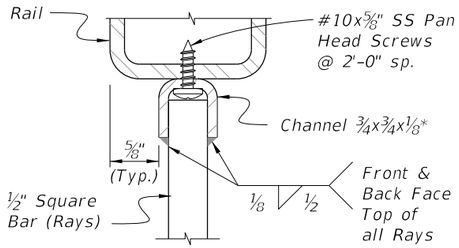


TYPE 3 - SUNSHINE INFILL PANEL

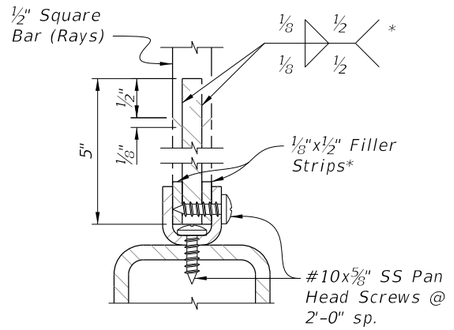
* Arc, Rays and Sun Segment may be formed in a single panel from ½" steel plate pattern cut with laser or plasma CNC, welded to a 1x1x⅛ Angle Border or the ¾x¾x⅛ Channel Border shown.



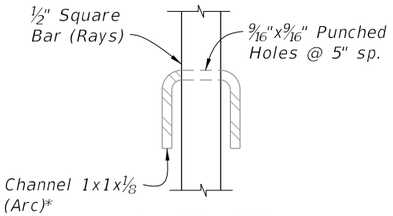
SECTION A-A



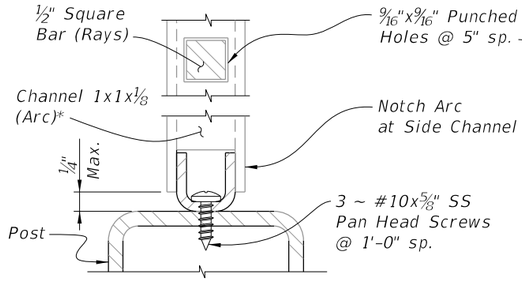
DETAIL "3A"
INTERMEDIATE RAIL/RAY CONNECTION



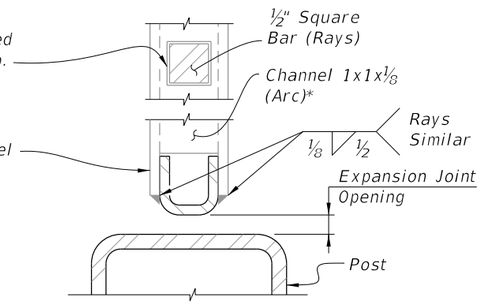
DETAIL "3B"
BOTTOM RAIL/RAY CONNECTION



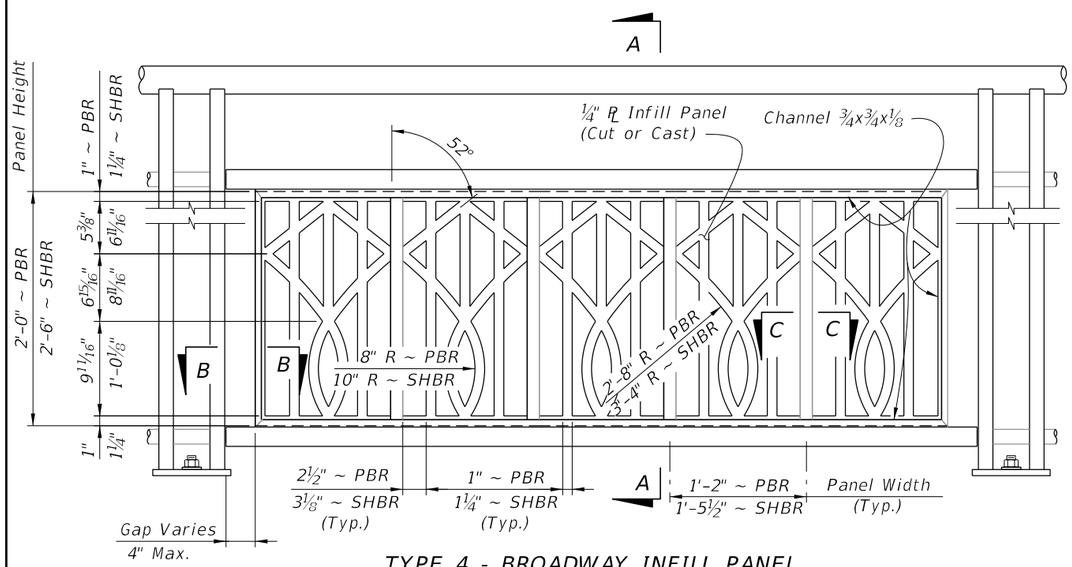
DETAIL "3C"
RAY/ARC CONNECTION



DETAIL "3D"
ARC/POST CONNECTION
(Continuous Top Rail)

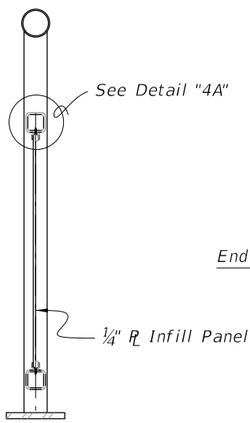


DETAIL "3E"
PANEL END CONNECTION
AT POST WITH EXPANSION JOINT

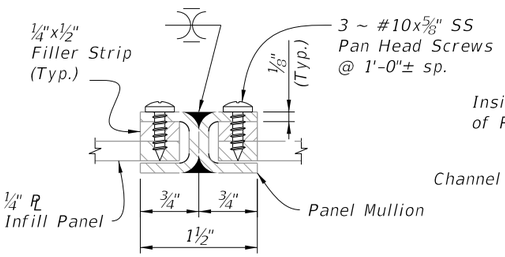


TYPE 4 - BROADWAY INFILL PANEL

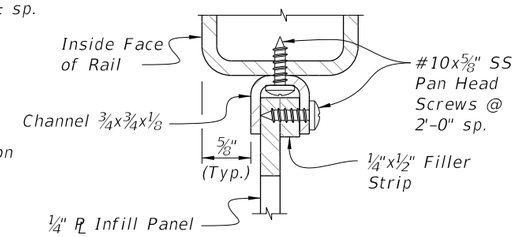
NOTE:
See Plans for Infill Panel Option required.



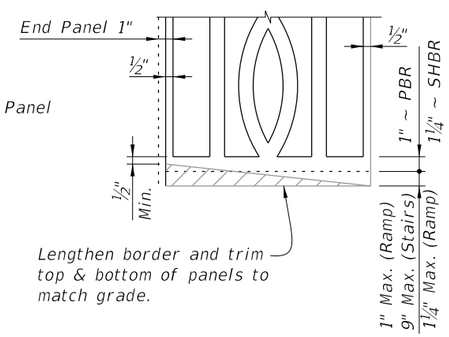
SECTION A-A



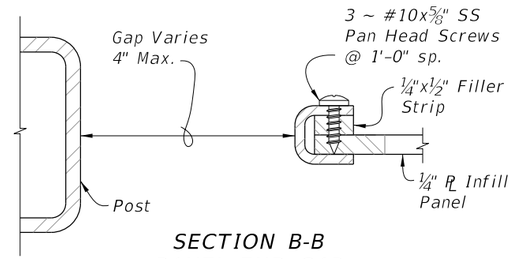
SECTION C-C
PANEL/SPLICE CONNECTION



DETAIL "4A"
PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)



PANEL ADJUSTMENT FOR RAILINGS ON GRADES



SECTION B-B
PANEL END CAP

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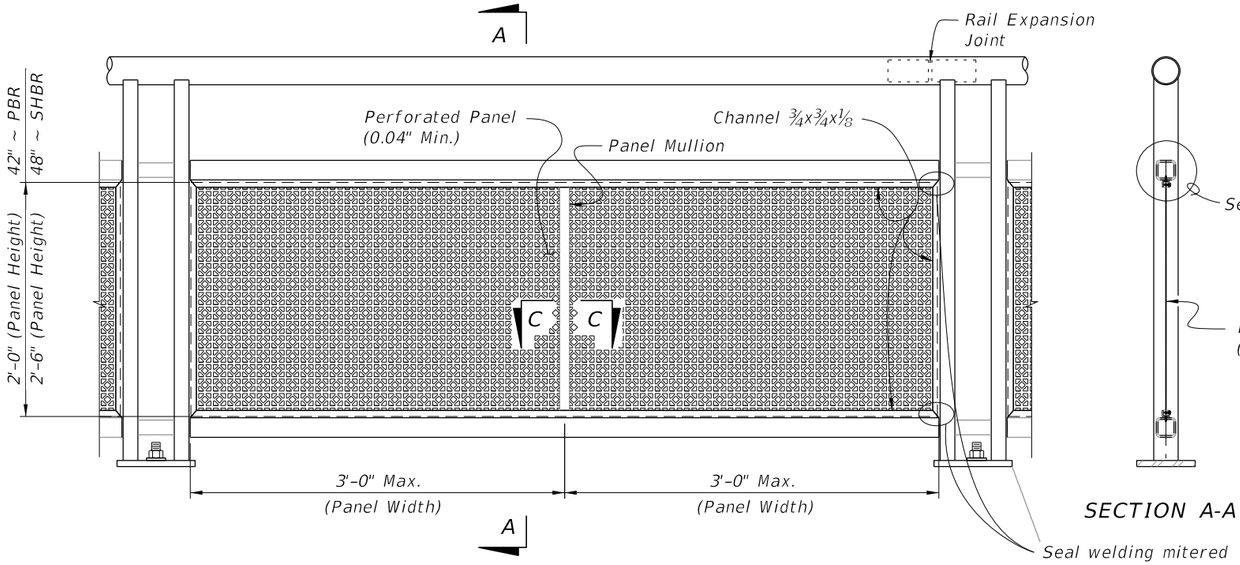
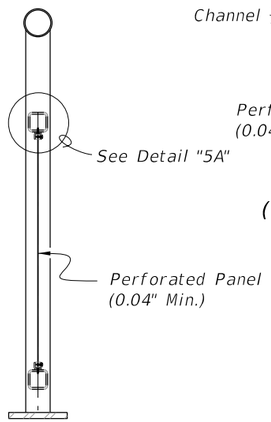
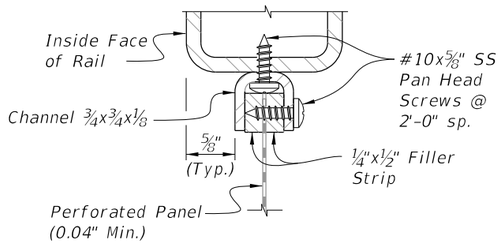
LAST REVISION	REVISION	DESCRIPTION:	FY 2024-25 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (STEEL)	INDEX	SHEET
11/01/16					515-052	6 of 8



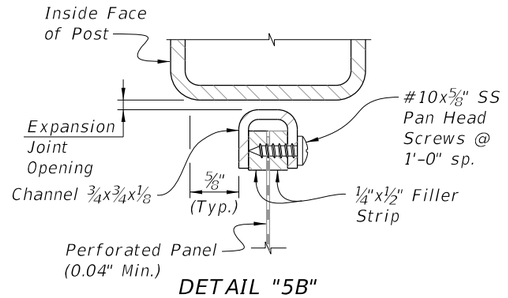
TYPE 5 - PERFORATED INFILL PANEL



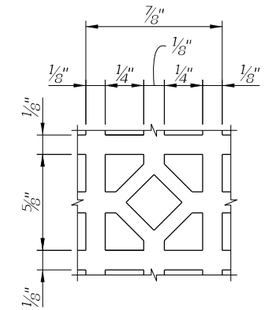
SECTION A-A



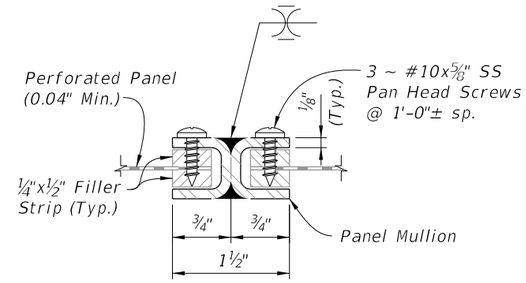
DETAIL "5A"
PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)



DETAIL "5B"
PANEL END CONNECTION
(Expansion Joint Shown, Sides Similar)



REPEATING PATTERN DETAIL
FOR PERFORATED PANEL



SECTION C-C
PANEL/SPLICE CONNECTION

NOTES:

1. See Plans for Infill Panel Type required.

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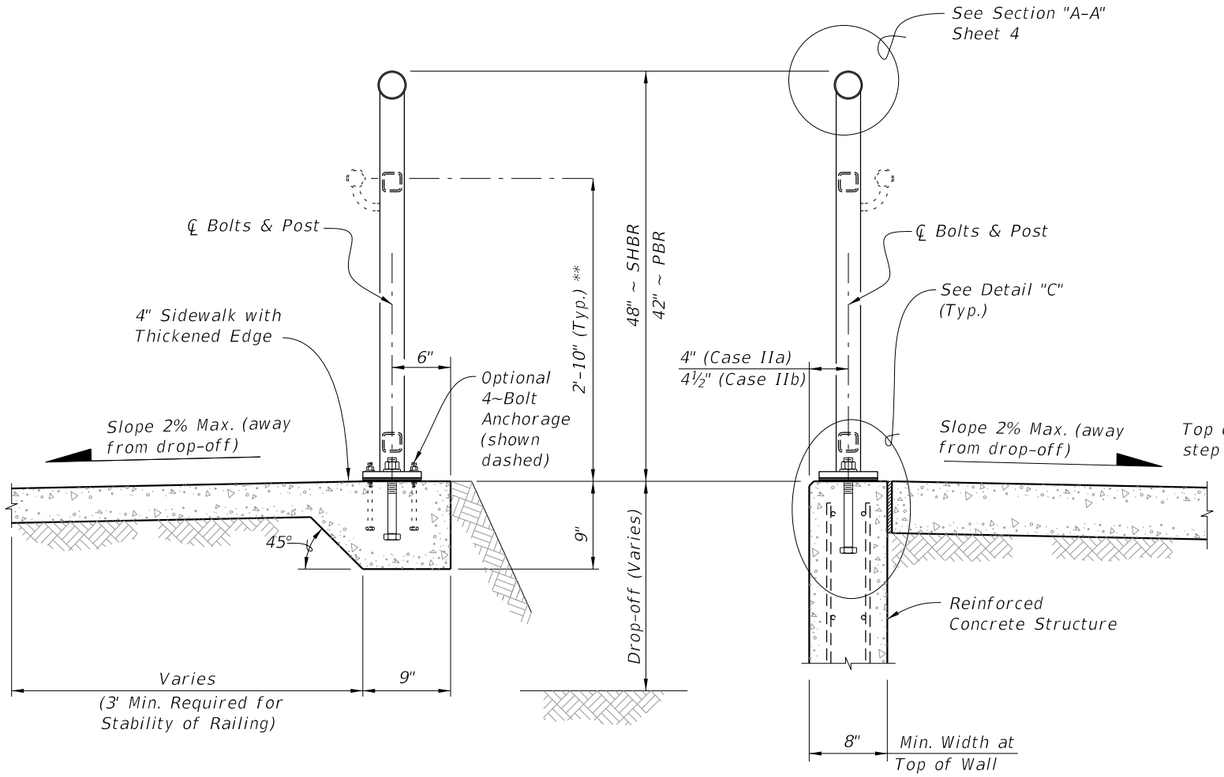
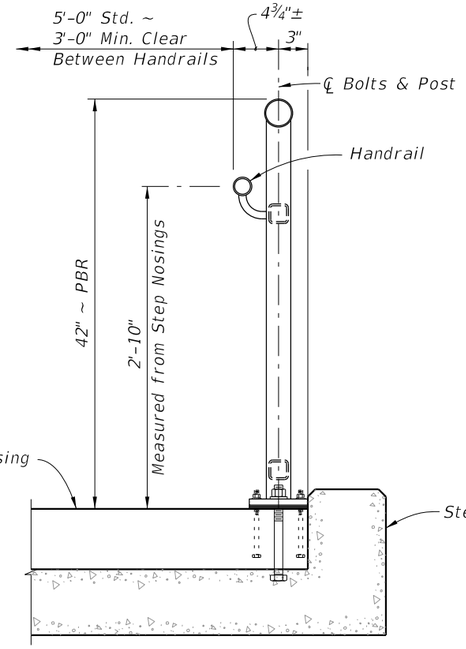
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FY 2024-25 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (STEEL)	INDEX 515-052	SHEET 7 of 8

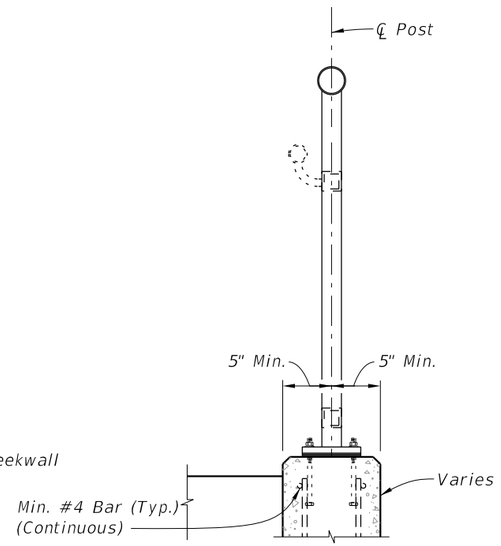


TYPICAL SECTION ON CONCRETE SIDEWALK
(Case I)

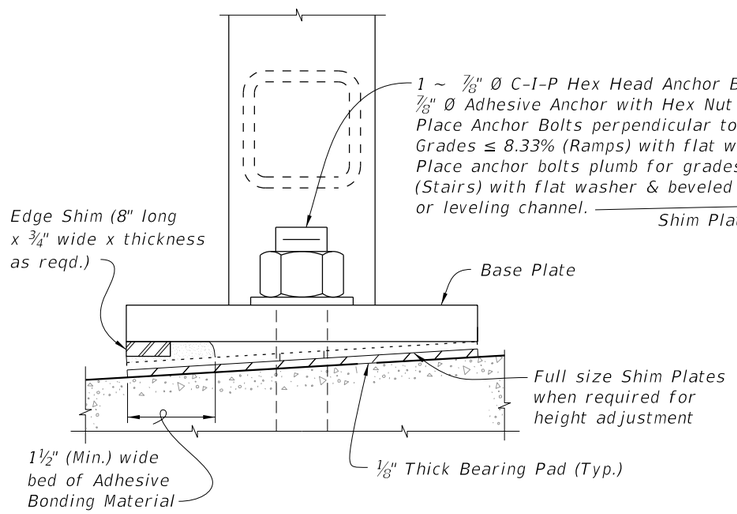
TYPICAL SECTION ON RETAINING WALL
(Case II)



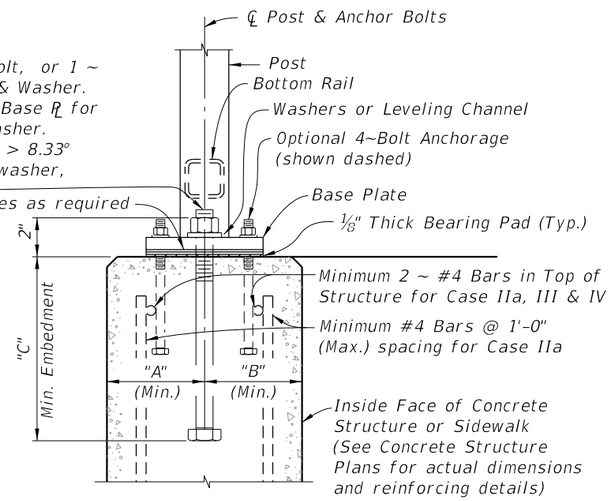
TYPICAL SECTION ON STEPS & STAIRS
(Case III)



TYPICAL SECTION FOR 4~BOLT ANCHORAGE
(Case IV)



DETAIL "D" (OPTIONAL SHIMMING DETAIL
FOR CROSS SLOPE CORRECTION)
(Used in lieu of Beveled Shim Plates)



DETAIL "C"
(Cast-In-Place Anchor Bolts shown,
Adhesive Anchors similar)

ANCHOR BOLT TABLE							
CASE	STRUCTURE TYPE	DIMENSIONS			ANCHOR LENGTH		ANCHOR SIZE
		A Edge Dist.	B Edge Dist.	C Embedment	C-I-P Hex Head Bolt	Adhesive Anchor	
I	Unreinforced Concrete	6"	1'-2"	6"	7½"	8"	⅞" Ø
IIa	Reinforced Concrete	4"	4"	9"	10½"	11"	⅞" Ø
IIb	Gravity Wall Index 400-011	4½"	3½" @ top	9"	10½"	11"	⅞" Ø
III	Step Cheekwall	4½"	4½"	9"	10½"	11"	⅞" Ø
IV	Varies	5"	5"	5"	6½"	7"	7/16" Ø

** When required; measured from top of sidewalk.

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