

SHEET TITLE :

1. GENERAL ARRANGEMENT
2. NOTES AND SPECIFICATIONS
3. GIRDER TO CAP CONNECTION
4. PRESTRESSED GIRDER
5. PRECAST SUPERSTRUCTURE
6. PRECAST SUPERSTRUCTURE
7. FOUR PILE, SINGLE ROW BENT
8. THREE PILE, SINGLE ROW BENT
9. SINGLE ROW CAP
10. TWO ROW BENT
11. TWO ROW ABUTMENT
12. TWO ROW CAP
13. PIPE PILE DETAILS
14. TANGENT DIAPHRAGM
15. CURVE DIAPHRAGM

TYPICAL INSTALLATION :

1. STAGE MATERIALS AND EQUIPMENT.
2. LAYOUT BENT CENTERS AND PILE LOCATIONS.
3. RELOCATE AND PROTECT FIBER OPTIC CABLE(S) AND TRAY(S).
4. DRIVE PILES FOR ABUTMENTS AND INTERMEDIATE BENTS.
5. MARK AND CUT OFF PILING AT MINUS 7'-6" FROM TOP OF TIE.
6. FILL PILING WITH CONCRETE.
7. SET AND WELD CAPS.
8. STAGE CBD SECTIONS ALONGSIDE TRACK NEAR INSTALLATION ON DUNNAGE.
9. REPLACE BRIDGE TIES WITH MAINLINE TIES ON TRESTLE.
10. JACK AND SUPPORT TRACK NORTH AND SOUTH OF FIRST NEW SPAN LOCATION.
11. REMOVE TIMBER CHORDS AND PILE BENTS. DISPOSE OF WASTE AT APPROVED LOCATION. CUT OFF TIMBER PILES AT MUDLINE THAT CANNOT BE COMPLETELY EXTRACTED.
12. PICK AND SET CBD SECTIONS ONTO TEMPORARY PLYWOOD PADS USING STEEL TEES TO HOLD SPACE BETWEEN SECTIONS.
13. BOLT SECTIONS TOGETHER AT DIAPHRAGMS, PICK INDIVIDUAL CORNERS, REMOVING PLYWOOD AND INSTALLING ELASTOMERIC BEARING PADS.
14. INSTALL ANCHOR BRACKETS AND BOLTS. USE LOW TEMPERATURE GROUT IF BELOW 40°F.
15. INSTALL TEMPORARY BULKHEAD BOARD AT TRESTLE ENDS.
16. PLACE BALLAST. TAMP AND LINE TRACK.
17. REMOVE NEXT OR REMAINING 28 FOOT CHORDS AND BENTS.
18. REPEAT STEPS 12 THROUGH 17 AS REQUIRED.
19. DRIVE SHEET PILE BULKHEADS AND INSTALL ABUTMENT CLOSURE PLATES.
20. REPLACE FIBER OPTIC CABLE(S) AND TRAY(S) ONTO NEW SPANS.
21. FILL AND REMOVE REMAINING TIMBER TRESTLE. DIRECT-BURY FIBER OPTIC CABLE(S).
22. VEGETATE DISTURBED SLOPES USING APPROVED SEED MIX.
23. DEMOBILIZE.

ALASKA RAILROAD CORPORATION ENGINEERING SERVICES <small>P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500</small>		
PROJECT :		
STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)		
TITLE:		
GENERAL ARRANGEMENT PLAN, ELEVATION AND NOTES		
DESIGNED BY: ARRC	SCALE : AS NOTED	APE NO.:
DRAWN BY: ARRC	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO.
APPROVED BY: BAL		1 OF 15

GENERAL NOTES:

THIS STANDARD WAS DESIGNED IN ACCORDANCE WITH THE 1997 EDITION OF AREA (AREMA) SPECIFICATIONS CHAPTER 8 – CONCRETE STRUCTURES AND FOUNDATIONS AND CHAPTER 15 – STEEL STRUCTURES.

ALL METALWORK HARDWARE, UNLESS OTHERWISE NOTED SHALL BE HOT DIP GALVANIZED.

MAIN TRACK BALLAST TO BE FURNISHED SHALL CONFORM TO THE SPECIFICATIONS DETAILED IN THE CURRENT EDITION OF THE AREMA SPECIFICATIONS CHAPTER 2, "BALLAST".

BRIDGE DRAINAGE SYSTEM PIPE SHALL BE 3"Ø, SCHEDULE 80, PVC.

ALL DIMENSIONS SHOWN ON THE PLANS ARE TRUE HORIZONTAL AND TRUE VERTICAL AT 68°F NORMAL TEMPERATURE.

THE LOADS DESCRIBED AS FOLLOWS ARE COMBINED AS REQUIRED BY AREA (AREMA) SERVICE LOAD DESIGN.

- DL = DEAD LOAD OF COMPLETE STRUCTURE WITH 14" MAXIMUM BALLAST DEPTH.
- LL = LIVE LOAD, COOPER E-80. E-80 ALTERNATE LIVE LOAD IS NOT CONSIDERED.
- I = IMPACT FOR DIESEL LOCOMOTIVES.
- W = WIND ON 30 PSF ON LOADED BRIDGE AND 50 PSF ON UNLOADED BRIDGE.
- WL = WIND ON LIVE LOAD OF 300 PLF.
- LF = LONGITUDINAL FORCE FROM LIVE LOAD.
- E = EARTH PRESSURE FORCE.
- EQ = EARTHQUAKE LOAD BASED ON 1997 AASHTO INTERIM SPECIFICATIONS, AN ACCELERATION COEFFICIENT OF 0.25 WITH RETURN PERIOD OF 100 YEARS AND SOIL PROFILE TYPE I OR II.

SPECIFICATIONS FOR STRUCTURAL STEEL:

STRUCTURAL STEEL TO BE ASTM A36.

STEEL PIPE PILES FOR BENT SHALL BE 12"Ø OR 16"Ø X 1/2" WALL THICKNESS. DEPTH OF PILES TO BE DETERMINED BY PROJECT ENGINEER IN ACCORDANCE WITH PLAN DESIGN LOADS.

SPECIFICATIONS FOR BEARING PAD:

BEARING PAD MATERIAL SHALL BE LAMINATED ELASTOMER MADE OF NATURAL RUBBER HAVING A 60 DUROMETER HARDNESS, CONFORMING TO GRADE 5 OF THE CURRENT AASHTO SPECIFICATIONS.

SPECIFICATIONS FOR PRECAST AND PRESTRESSED CONCRETE:

CONCRETE:

CONCRETE MATERIAL, PLACING AND CURING TO BE PER CURRENT AREMA SPECIFICATIONS, CHAPTER 8 – CONCRETE STRUCTURES AND FOUNDATIONS.

COMPRESSIVE STRENGTH OF THE PRESTRESSED CONCRETE SHALL EXCEED 6,000 PSI AT 28 DAYS AND 4,500 PSI AT THE TRANSFER OF THE PRESTRESSING FORCE.

COMPRESSIVE STRENGTH OF THE REINFORCED CONCRETE SHALL EXCEED 4,000 PSI AT 28 DAYS, UNLESS OTHERWISE NOTED.

COPIES OF THE CONCRETE MIX DESIGN SHALL BE SUBMITTED TO ALASKA RAILROAD FOR APPROVAL BY THE CHIEF ENGINEER PRIOR TO THE START OF THE CASTING OPERATION.

PRESTRESSING STRAND:

ALL PRESTRESSING STRANDS SHALL BE 1/2 INCH DIAMETER, SEVEN WIRE, UNCOATED, LOW RELAXATION WITH A MINIMUM F'S=270 KSI AND MEET THE REQUIREMENTS OF ASTM A-416 SPECIFICATIONS. INITIAL PRESTRESS SHALL BE 0.75F'S=30,983 LBS. PER STRAND.

REINFORCING STEEL:

REINFORCING STEEL TO BE DEFORMED NEW BILLET BARS PER CURRENT ASTM A-615 SPECIFICATIONS AND TO MEET GRADE 60 REQUIREMENTS.

FABRICATION OF REINFORCING STEEL SHALL BE PER CHAPTER 7 OF THE CRSI MANUAL OF STANDARD PRACTICE. DIMENSIONS OF BENDING DETAILS ARE OUT TO OUT OF BAR.

REINFORCING STEEL IS TO BE BLOCKED TO PROPER LOCATION AND SECURELY WIRED AGAINST DISPLACEMENT. TACK WELDING OF REINFORCING IS PROHIBITED. MINIMUM CONCRETE COVER ON REINFORCEMENT SHALL MEET CURRENT AREMA SPECIFICATIONS.

MANUFACTURE:

EXPOSED SURFACES ARE TO BE FORMED IN A MANNER WHICH WILL PRODUCE A SMOOTH AND UNIFORM APPEARANCE WITHOUT RUBBING OR PLASTERING. EXPOSED EDGES OF 90 DEGREES OR LESS ARE TO EITHER CHAMFERED 3/4 INCH BY 3/4 INCH OR FINISHED TO A ROUNDED EDGE.

THE AREA AROUND ALL LIFTING LOOPS SHALL BE RECESSED SO THAT THE LOOPS CAN BE REMOVED TO A DEPTH OF 3/4 INCH AND GROUTED.

FABRICATOR SHALL BE RESPONSIBLE FOR DEVELOPING LIFTING LOOP ANCHORAGE DETAILS TO PROVIDE SAFETY FACTOR OF 4 ON WORKING LOAD. LIFTING LOOP MUST BE HOT DIP GALVANIZED. DETAIL SHALL BE PROOF-TESTED WITH TEST RESULTS PROVIDED TO ALASKA RAILROAD.


PRODUCTION PROCEDURES FOR THE MANUFACTURE OF PRECAST, PRESTRESSED MEMBERS SHALL BE IN ACCORDANCE WITH THE PRESTRESSED CONCRETE INSTITUTE'S MANUAL OF MNL 116-77 FOR QUALITY CONTROL AND IN ACCORDANCE WITH THE CURRENT AREMA SPECIFICATIONS, CHAPTER 8.

ENDS OF THE STRANDS SHALL BE BURNED OFF AND RECESSED TO A DEPTH OF 1 INCH. SUCH RECESSED AND MINOR CONCRETE SPALLS SHALL BE FILLED AND FINISHED TO THE PLAN DIMENSIONS USING AN EPOXY BONDING COMPOUND AND GROUT.

CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR PRESTRESSED GIRDERS TO ALASKA RAILROAD FOR APPROVAL PRIOR TO FABRICATION.

FABRICATOR SHALL BE RESPONSIBLE FOR LOADING AND PROPERLY SECURING ALL PRECAST CONCRETE MEMBERS FOR SHIPMENT TO RAILROAD SIDING, ALL CONCRETE COMPONENTS SHALL BE INSPECTED BY ALASKA RAILROAD AT THE FABRICATOR'S PLANT BEFORE SHIPMENT.

FABRICATOR TO MARK EACH PIECE WITH BRIDGE NUMBER AND PIECE MARK.

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		PROJECT :	
		STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)	
TITLE:		NOTES AND SPECIFICATIONS	
DESIGNED BY: FC	SCALE : AS NOTED	AFE NO.:	
DRAWN BY: ARRC	DATE : FEB/2019	ACAD FILE:	
CHECKED BY: CDR		DWG NO.	
APPROVED BY: BAL		2 OF 15	

BRIDGE PILING SPECIFICATIONS :

GENERAL INFORMATION AND REQUIREMENTS:

PILING IS TO BE USED IN A STRUCTURAL BRIDGE APPLICATION, WHICH INCLUDES TYPICAL FIELD WELDING APPLICATIONS, WITH A PORTION OF THE PILING EXTENDING ABOVE GROUND.

HELICAL SEAM PIPE WILL BE ACCEPTED PROVIDED THE OUTSIDE DIAMETER DOES NOT VARY BY MORE THAN 1% OF THE SPECIFIED DIAMETER AND THE MINIMUM WALL THICKNESS, AT ANY POINT, IS NOT LESS THAN 12.5% UNDER THE SPECIFIED NOMINAL WALL THICKNESS.

DELIVERY: PILING AND ASSOCIATED MATERIALS SHALL BE DELIVERED, FOB, TO :

ALASKA RAILROAD CORPORATION
485 OCEAN DOCK ROAD
ANCHORAGE, ALASKA 99501

SPECIFICATION:

PILING SHALL MEET ONE OF THE FOLLOWING SPECIFICATIONS:

1. ASTM A53 GRADE B:
HYDROSTATIC TEST REQUIREMENTS ARE WAIVED.
NONDESTRUCTIVE ELECTRIC TEST REQUIREMENTS ARE WAIVED.
2. ASTM A 252 GRADE 2:
CHEMICAL COMPOSITION MUST MEET THE REQUIREMENTS OF ASTM A53, GRADE B, OR API SPECIFICATION 5L, PRODUCT SPECIFICATION LEVEL 1, GRADE X52,
OR,
BIDDERS MUST ESTABLISH WELDING PROCEDURES BY QUALIFICATION IN ACCORDANCE WITH AWS D1.1. WELDING PROCEDURES SHALL INCLUDE FULL PENETRATION WELDS FOR FIELD AND SHOP PILE SPLICES. PROCEDURES SHALL BE FURNISHED WITHIN 15 DAYS OF THE BID DUE DATE.
3. ANSI/API SPECIFICATION 5L, PSL 1, GRADE X52;
4. ANSI/API SPECIFICATION 2B, FABRICATED STRUCTURAL STEEL PIPE;

PIPE MUST BE FABRICATED FROM A LISTED BASE METAL PLATE FOUND IN AWS D1.1 UNDER TUBULAR STRUCTURES.


MILL CERTIFICATION DOCUMENTATION IS REQUIRED. IN ADDITION, CHEMICAL COMPOSITION DOCUMENTATION IS REQUIRED FOR PILING SUPPLIED UNDER THE SPECIFICATION FOR ASTM A 252 GRADE 2.

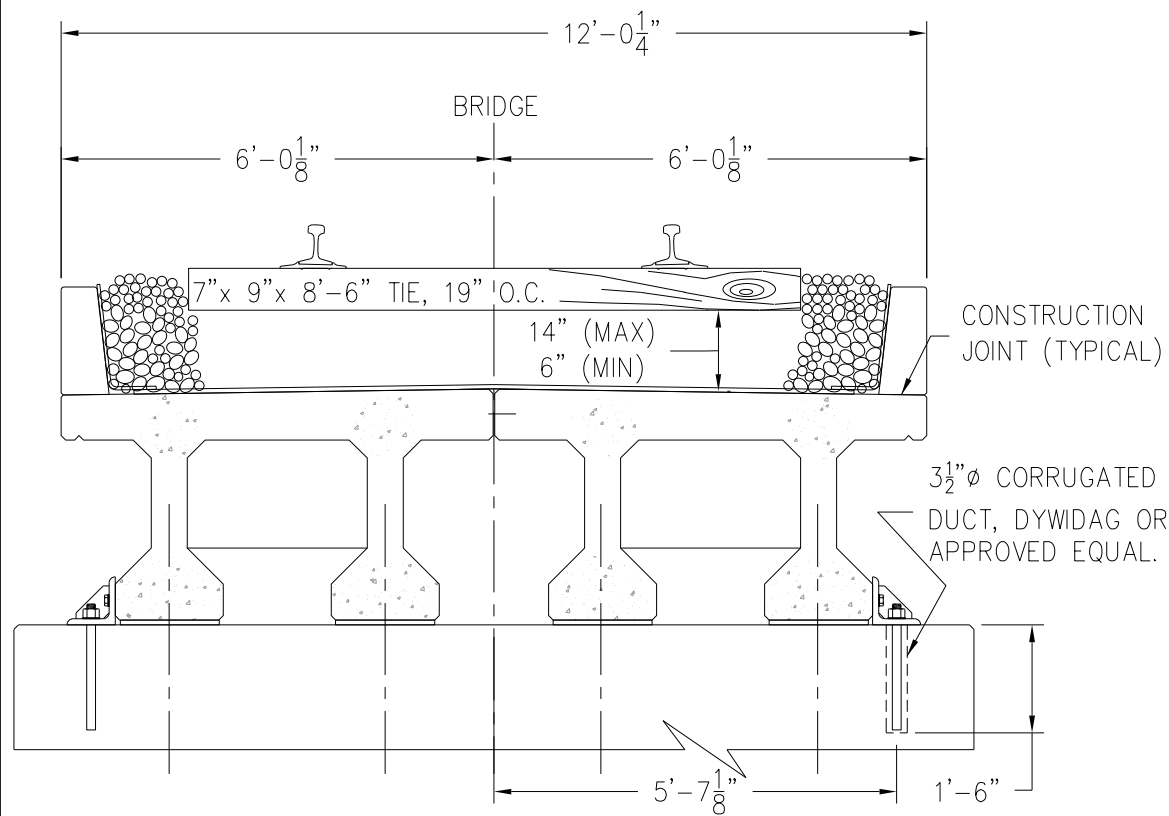
PILES SHALL BE FURNISHED COMPLETE AS DESCRIBED IN THE FOLLOWING (SAMPLE) TABLE:

ITEM:	DESCRIPTION:	QUANTITY:	FINISH:	MODIFICATIONS AND ACCESSORIES:
1.	PIPE PILE; 0.500 INCH WALL THICKNESS x 16 INCH OUTSIDE DIAMETER x 40 FEET LONG	30 EACH	GALVANIZED	SQUARE OR BEVEL ENDS
2.	PIPE PILE; 0.500 INCH WALL THICKNESS x 16 INCH OUTSIDE DIAMETER x 50 FEET LONG	15 EACH	GALVANIZED	SQUARE OR BEVEL ENDS
3.	16 INCH SPLICE RINGS; COMPRESSION FIT MECHANICAL SPLICER	32 EACH	GALVANIZED	
4.	16 INCH DRIVE SHOES	30 EACH	BLACK OR GALVANIZED	INSIDE FLANGE, OPEN ENDED

NOTES:

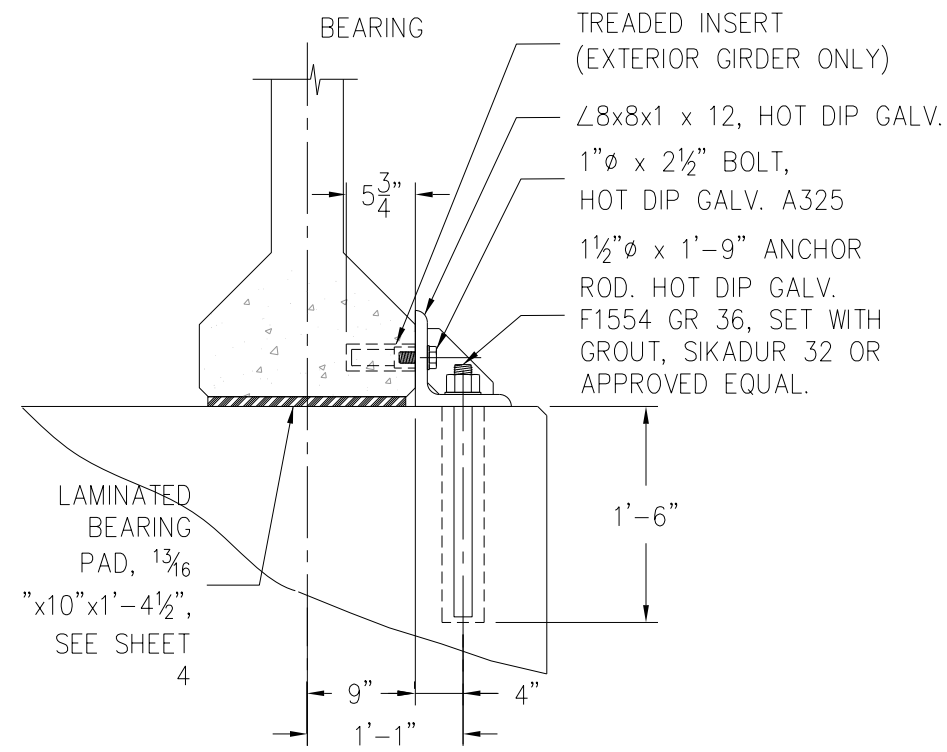
1. DESCRIPTION DENOTES WALL THICKNESS IN INCHES BY OUTSIDE DIAMETER IN INCHES BY LENGTH IN FEET. A SLIGHTLY HEAVIER WALL THICKNESS MAY BE SUBSTITUTED SUBJECT TO ALASKA RAILROAD APPROVAL.
2. GALVANIZING SHALL BE IN ACCORDANCE WITH ASTM A 123.
3. INDIVIDUAL PIPE LENGTHS MUST BE DELIVERED WITHIN TOLERANCE OF PLUS OR MINUS 12 INCHES FROM THE LENGTH SPECIFIED IN THE ABOVE TABLE. THE TOTAL LENGTH FURNISHED OF EACH LINE IN THE TABLE SHALL NOT BE LESS THAN THE SUMMATION OF THE NOMINAL SPECIFIED LENGTH TIME THE NUMBER REQUIRED.
4. THERE ARE (no) BUY AMERICA REQUIREMENTS FOR THIS MATERIAL.

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TITLE:		
NOTES AND SPECIFICATIONS		
DESIGNED BY: FC	SCALE : AS NOTED	AFE NO.:
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CHECKED BY: CDR	DATE : FEB/2019	DWG NO. 3 OF _____
APPROVED BY: BAL		



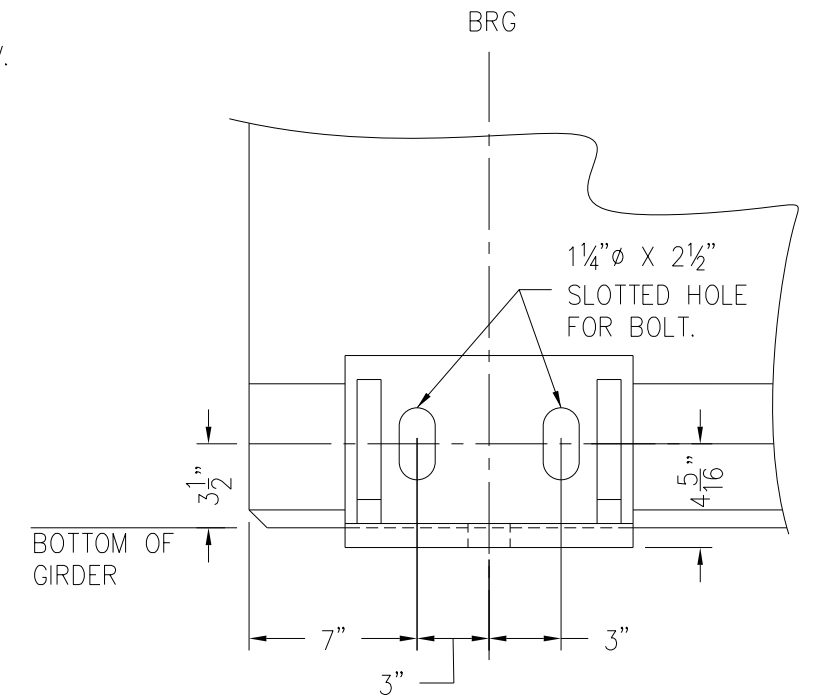
CROSS SECTION AT CAP

SCALE 3/8" = 1'-0"



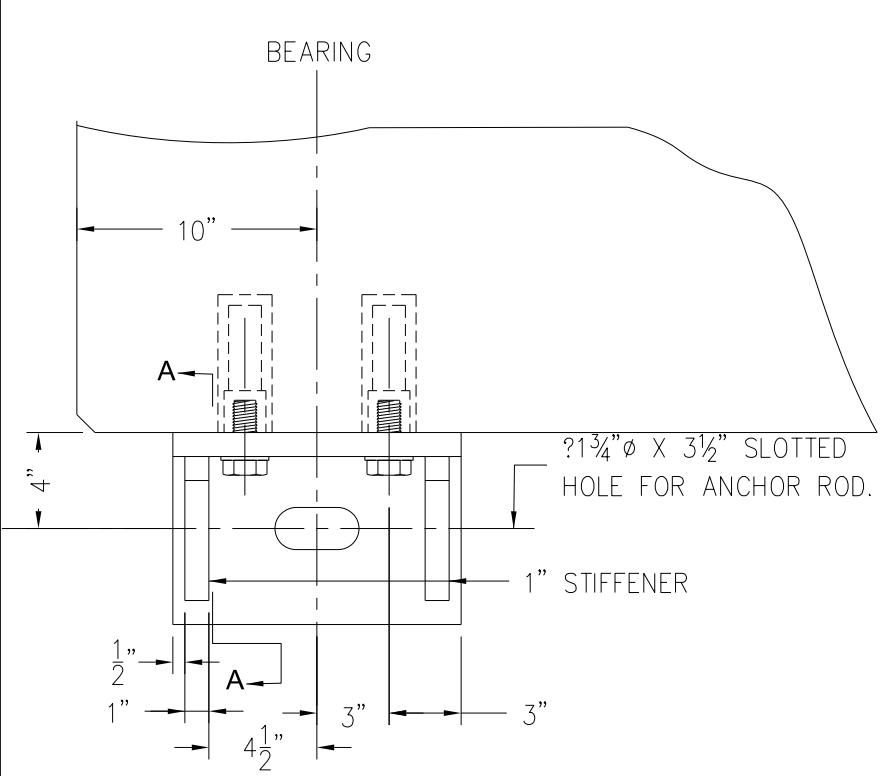
TYPICAL GIRDER END VIEW

SCALE 3/4" = 1'-0"



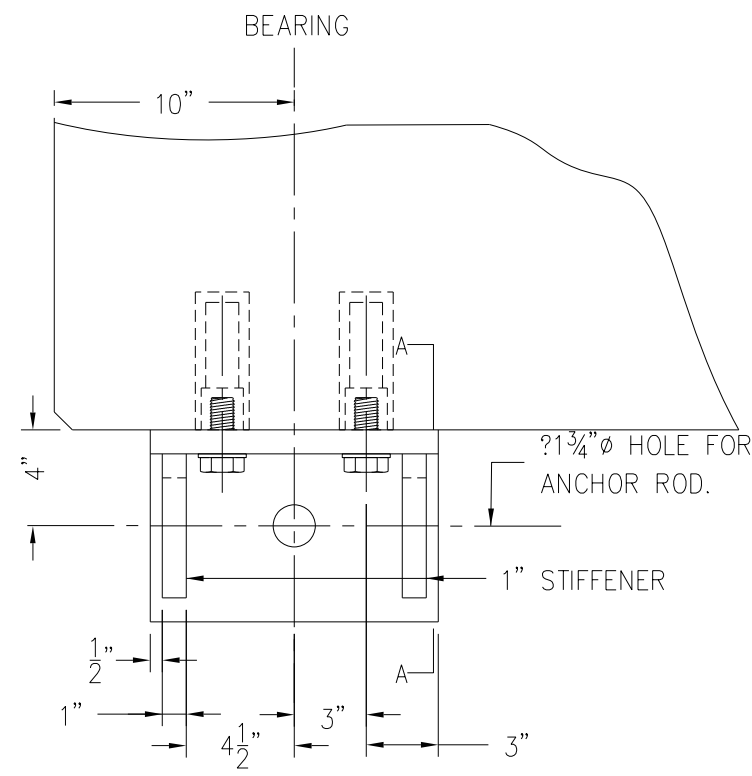
PART ELEVATION

SCALE 1 1/2" = 1'-0"



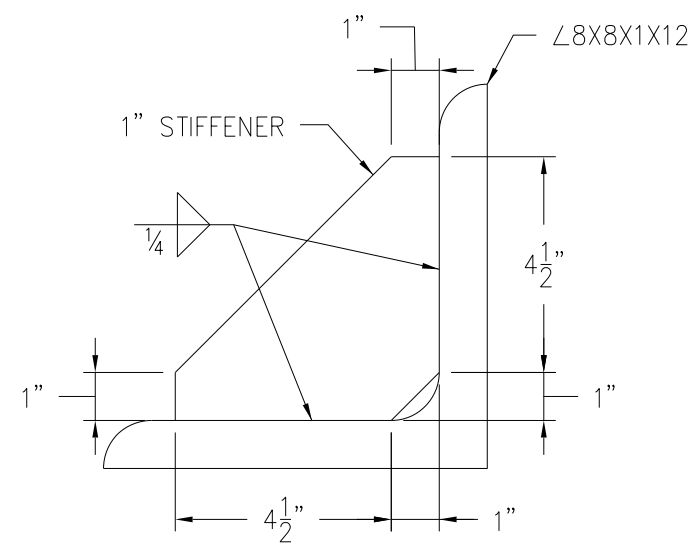
PART PLAN AT GIRDER EXPANSION END

SCALE 1 1/2" = 1'-0"



PART PLAN AT GIRDER FIXED END

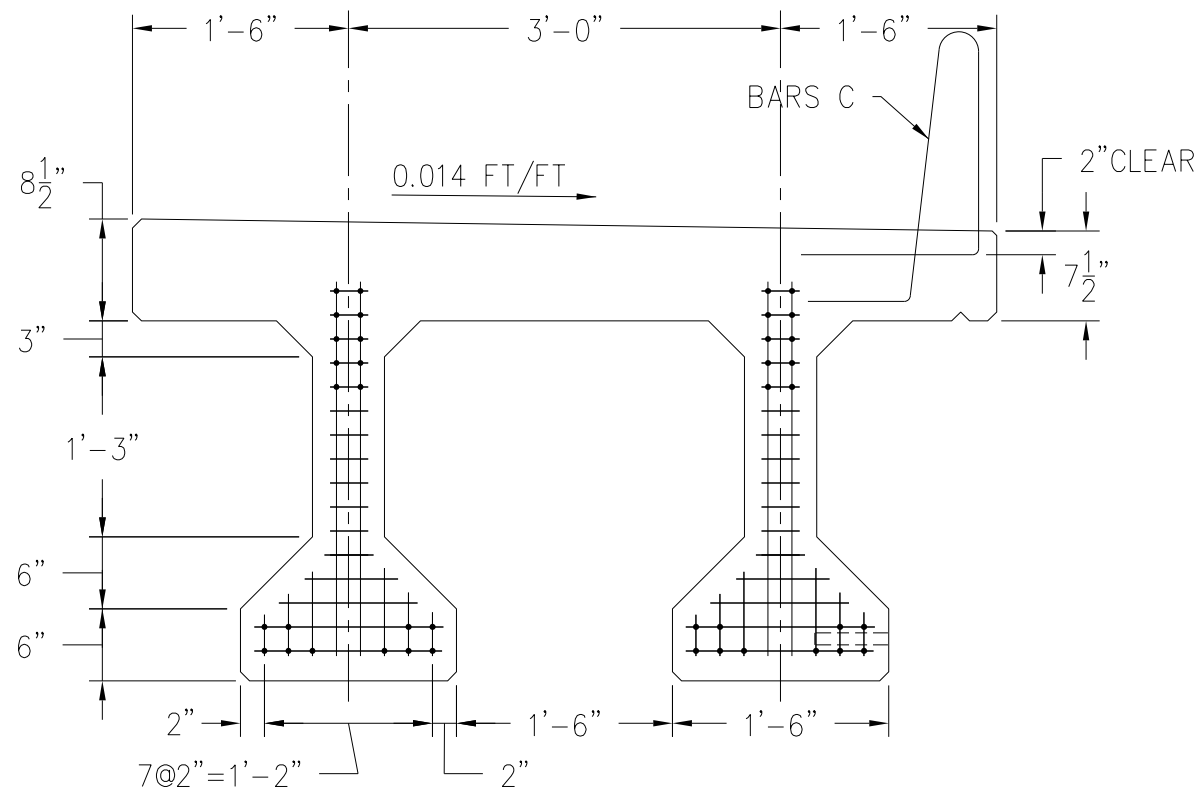
SCALE 1 1/2" = 1'-0"



SECTION A - A

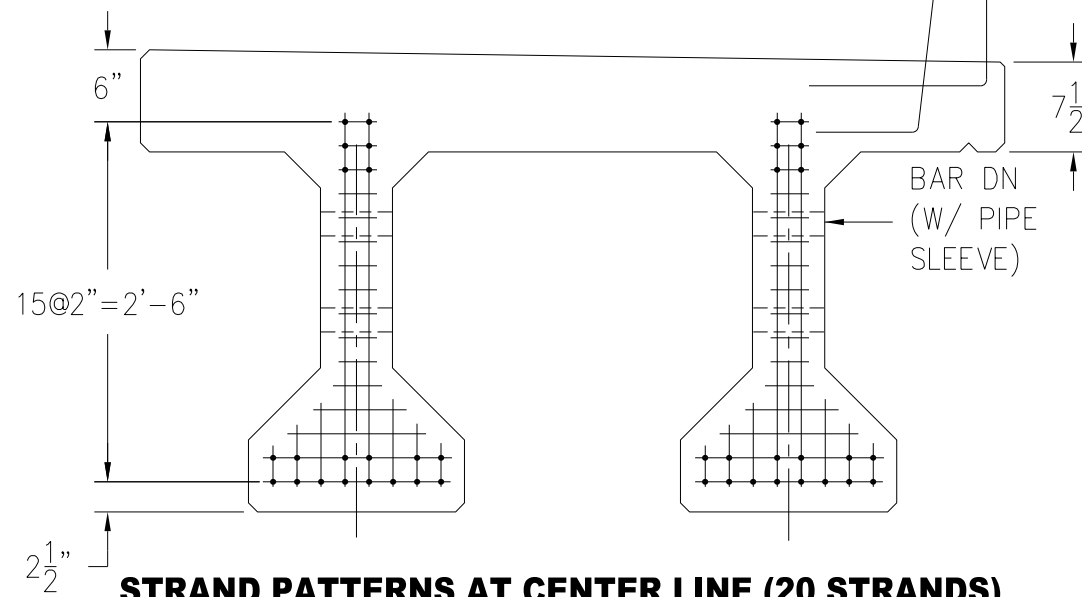
NO SCALE
ESTIMATED WEIGHT = 62 LBS.

P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT : STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)		
TITLE: GIRDER TO CAP CONNECTION CROSS SECTION AND DETAILS		
DESIGNED BY: ARRC	SCALE : AS NOTED	A/E NO.:
DRAWN BY: ARRC	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO. 3 OF 15
APPROVED BY: BAL		



STRAND PATTERNS AT BEARING (20 STRANDS)

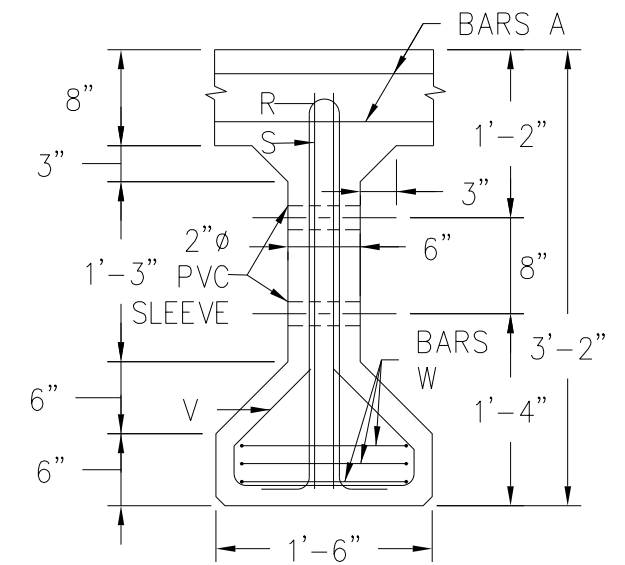
SCALE 3/4" = 1'-0"



STRAND PATTERNS AT CENTER LINE (20 STRANDS)

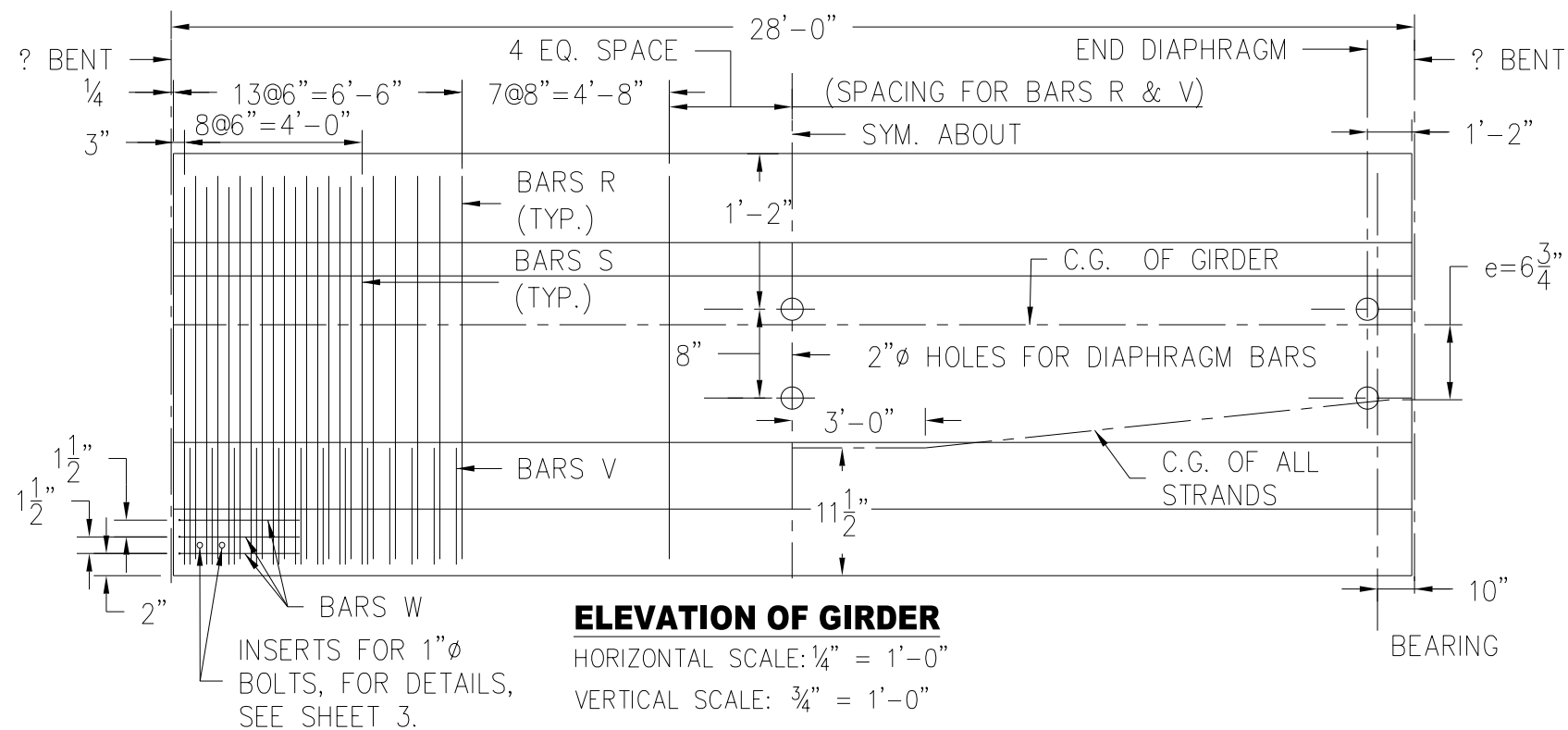
SCALE 3/4" = 1'-0"

ESTIMATED WEIGHT OF GIRDER = 17.1 TONS (8.4 CUBIC YARDS)



GIRDER (AVG. HEIGHT)

SCALE 3/4" = 1'-0"



ELEVATION OF GIRDER

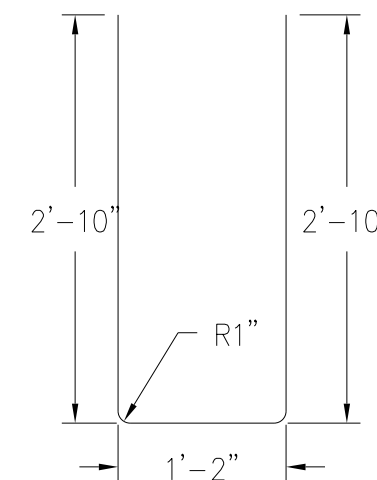
HORIZONTAL SCALE: 1/4" = 1'-0"

VERTICAL SCALE: 3/4" = 1'-0"

INSERTS FOR 1"Ø BOLTS, FOR DETAILS, SEE SHEET 3.

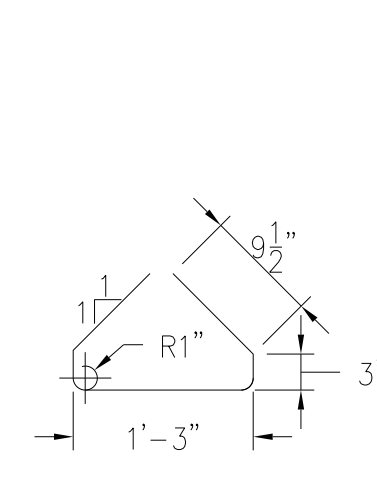
NOTES:

1. DECK REINFORCEMENT NOT SHOWN; SEE SHEETS 5 AND 6.
2. COMPRESSIVE STRENGTH OF THE CAST-IN-PLACE REINFORCED CONCRETE DIAPHRAGM SHALL EXCEED 4,500 PSI AT 28 DAYS.



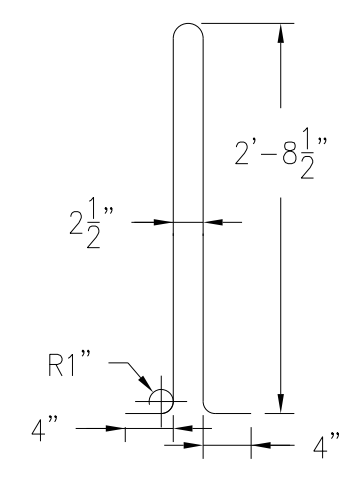
BARS W - #5

SCALE 3/4" = 1'-0"



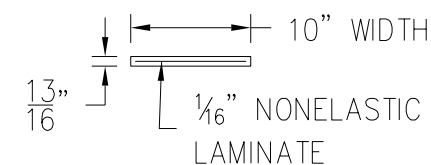
BARS V - #3

SCALE 3/4" = 1'-0"



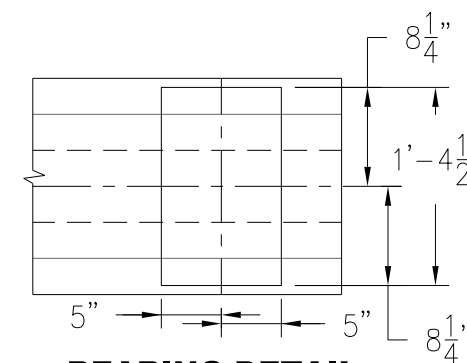
BARS R - #5

SCALE 3/4" = 1'-0"



LAMINATED BEARING

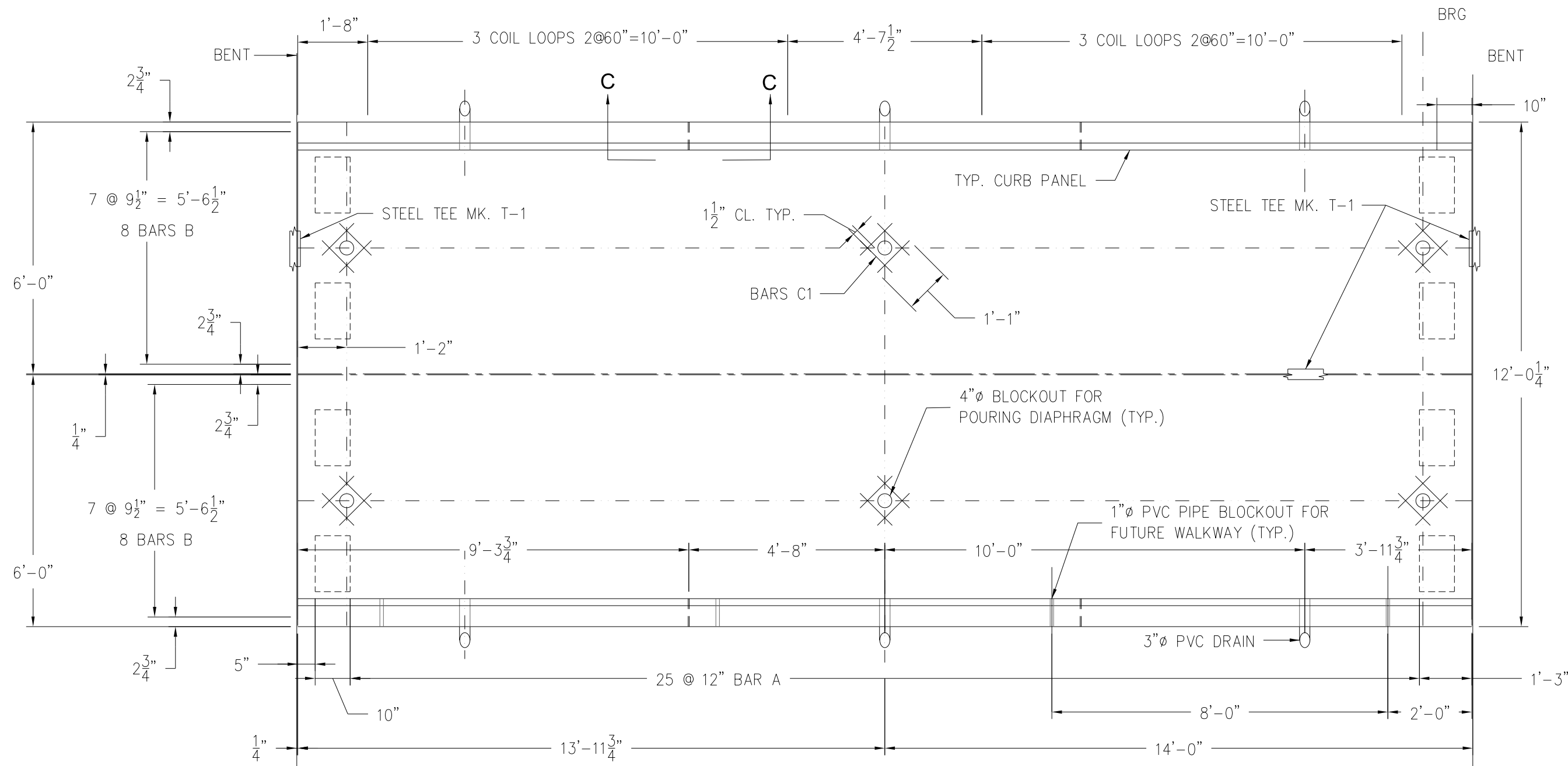
NO SCALE



BEARING DETAIL

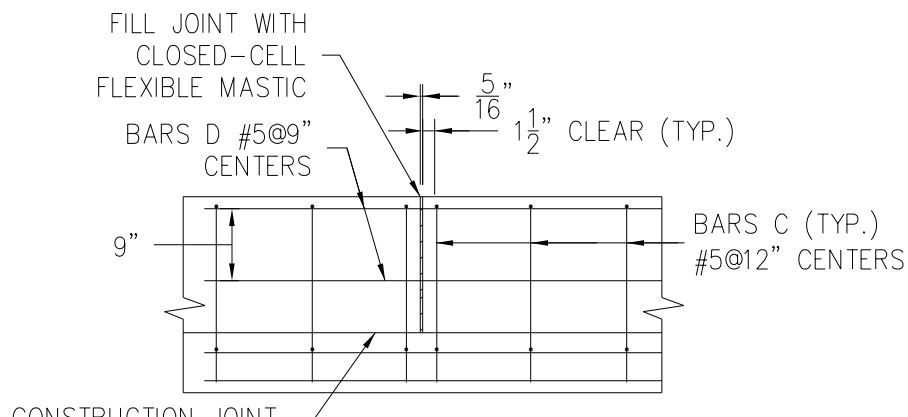
SCALE 3/4" = 1'-0"

P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT : STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)		
TITLE: PRESTRESSED GIRDER ELEVATION, SECTIONS, AND DETAILS		
DESIGNED BY: FC	SCALE : AS NOTED	AFE NO.:
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DECK PLAN

SCALE $\frac{3}{8}$ " = 1'-0"



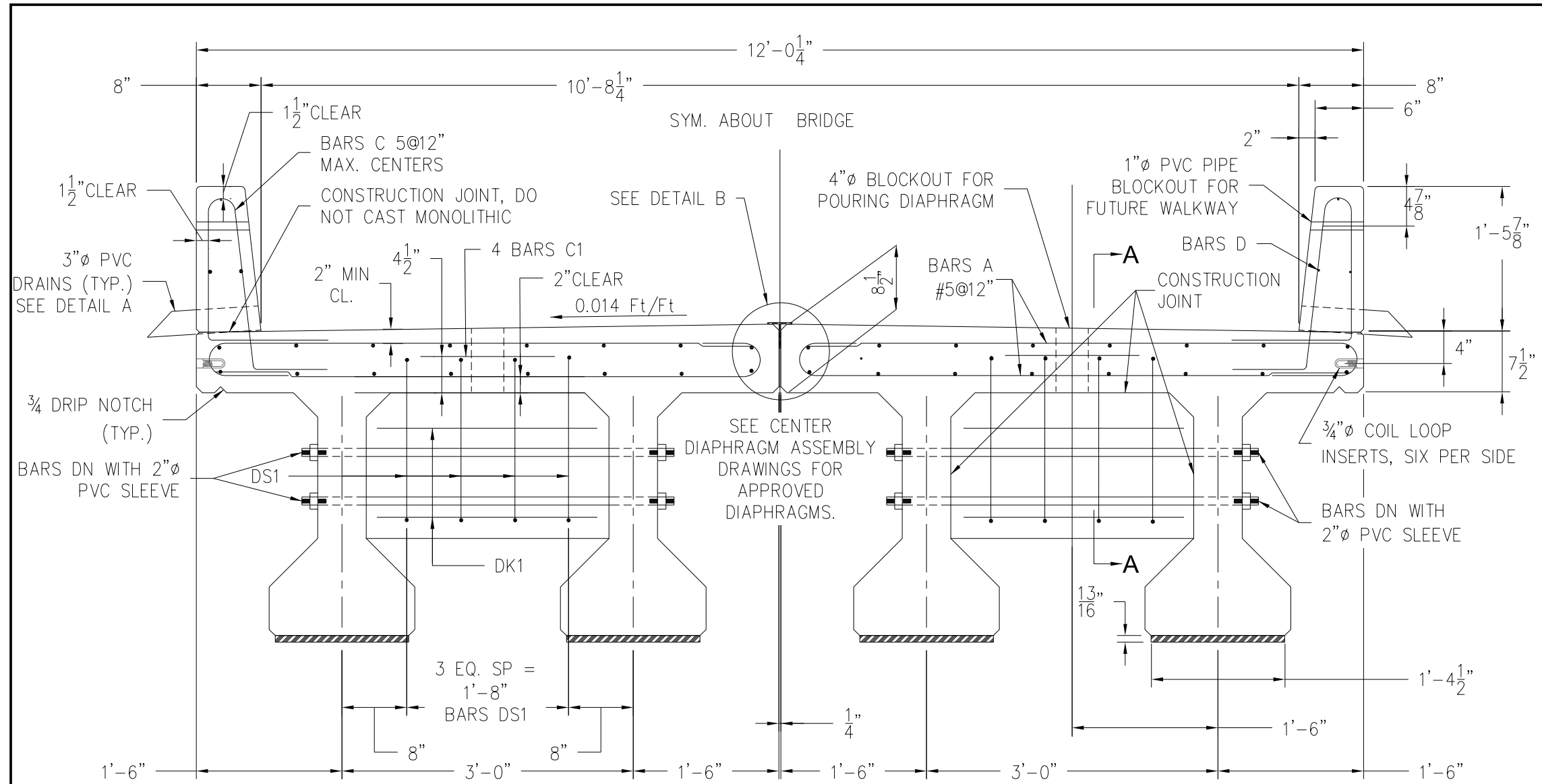
VIEW C - C

SCALE $\frac{1}{2}$ " = 1'-0"

NOTES:

1. COMPRESSIVE STRENGTH OF THE CAST-IN-PLACE REINFORCED CONCRETE CURB AND DIAPHRAGM SHALL EXCEED 4,500 PSI AT 28 DAYS.
2. PLACE SQUARE WASHER PLATES UNDER NUTS FOR BARS DN. ASTM A36 HOT DIP GALVANIZED WASHER $\frac{3}{8}$ "X4"X4" WITH $\frac{1}{8}$ " ϕ HOLE AT CENTER.
3. UTILITY SUPPORTS TYPICAL OF BOTH SIDES.
4. ALASKA RAILROAD STOCK NO. 312969 ($\frac{1}{2}$ SPAN)

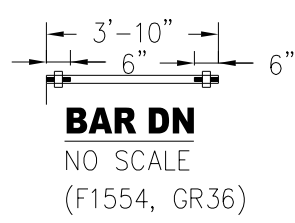
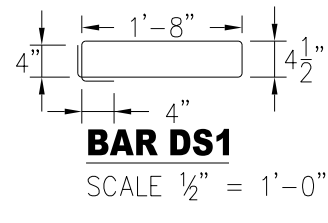
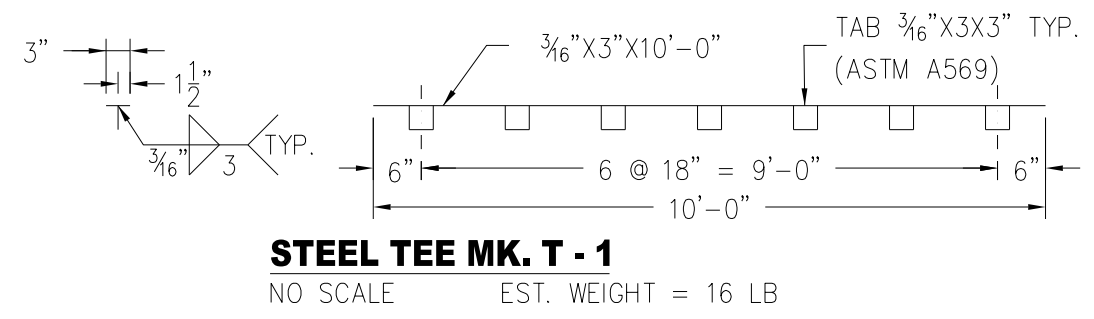
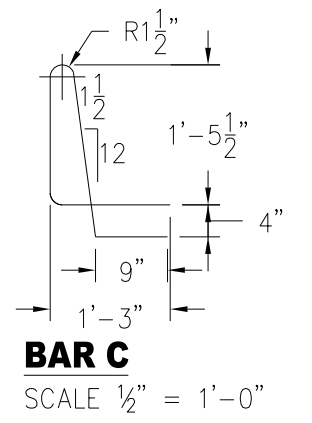
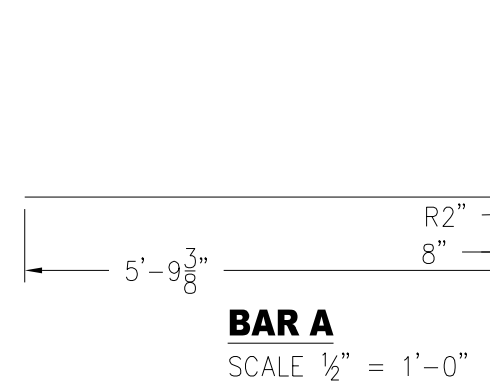
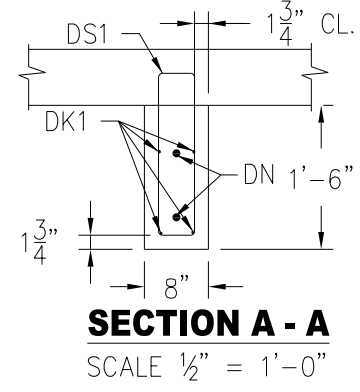
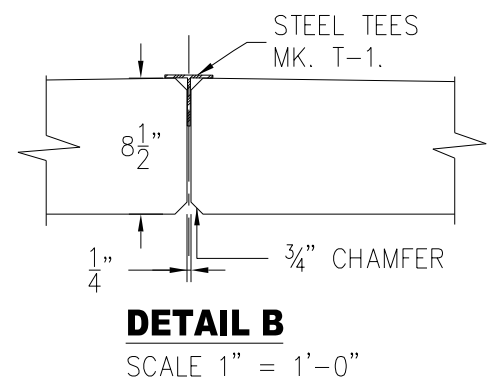
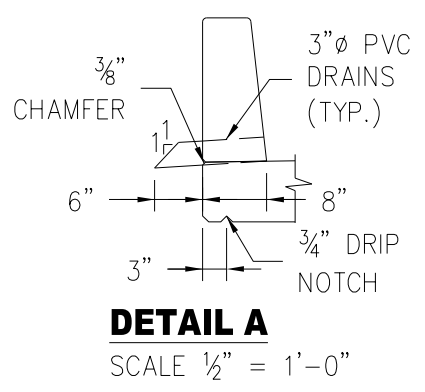
PROJECT : STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)		
TITLE: TYPICAL PRECAST SUPERSTRUCTURE PLAN AND DETAIL		
DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:
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TYPICAL SUPERSTRUCTURE SECTION
 SCALE: 3/4" = 1'-0" FOOTWALK BRACKET DETAIL NOT PROVIDED

REINFORCING SCHEDULE (1 SPAN)					
MARK	NO. REQ.	SIZE	LENGTH	SHAPE	WEIGHT
A	116	#5	6'-9"	BENT	817 lb
B	32	#5	27'-6 1/2"	ST	920 lb
C	60	#5	5'-9"	BENT	360 lb
C1	24	#4	1'-1"	ST	17 lb
D	18	#5	8'-11"	ST	168 lb
DS1	24	#4	4'-9"	BENT	114 lb
DK1	24	#5	2'-2"	ST	54 lb
R	188	#5	6'-3"	BENT	1224 lb
S	72	#5	2'-9"	STR.	208 lb
V	188	#3	3'-4"	BENT	236 lb
W	24	#5	6'-10"	BENT	172 lb
DN	12	1"Ø	3'-10"	ST	162 lb

- NOTES:
1. COMPRESSIVE STRENGTH OF THE CAST-IN-PLACE REINFORCED CONCRETE CURB AND DIAPHRAGM SHALL EXCEED 4,500 PSI AT 28 DAYS.
 2. PLACE SQUARE WASHER PLATES UNDER NUTS FOR BARS DN. ASTM A36 HOT DIP GALVANIZED WASHER 3/8"X4"X4" WITH 1/8"Ø HOLE AT CENTER.
 3. UTILITY SUPPORTS TYPICAL OF BOTH SIDES.
 4. ALASKA RAILROAD STOCK NO. 312969 (1/2 SPAN)

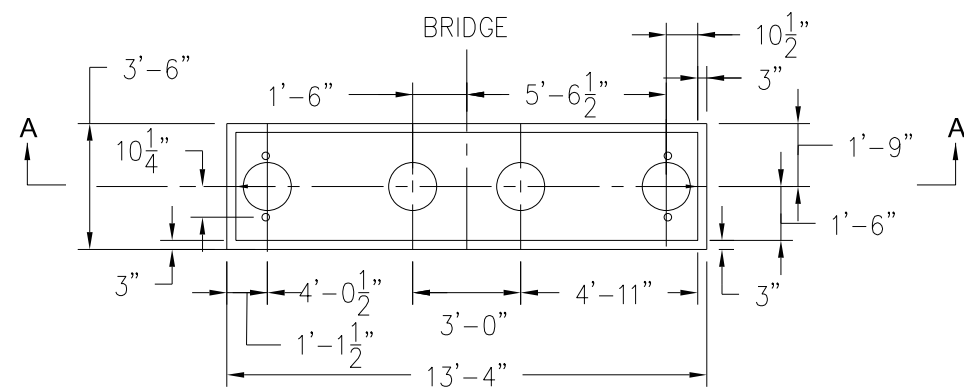


ALASKA RAILROAD CORPORATION
 ENGINEERING SERVICES
 P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT : **STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)**

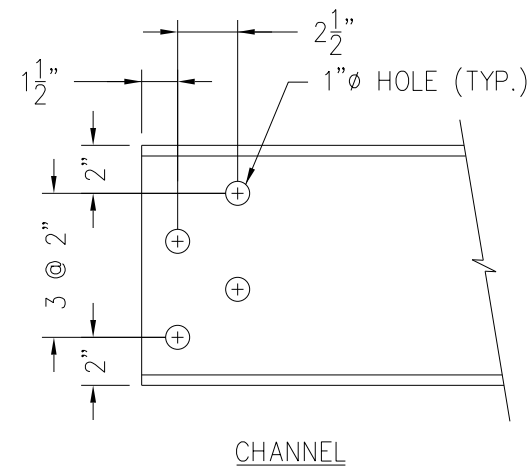
TITLE: **TYPICAL PRECAST SUPERSTRUCTURE SECTION AND DETAILS**

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APPROVED BY: BAL		



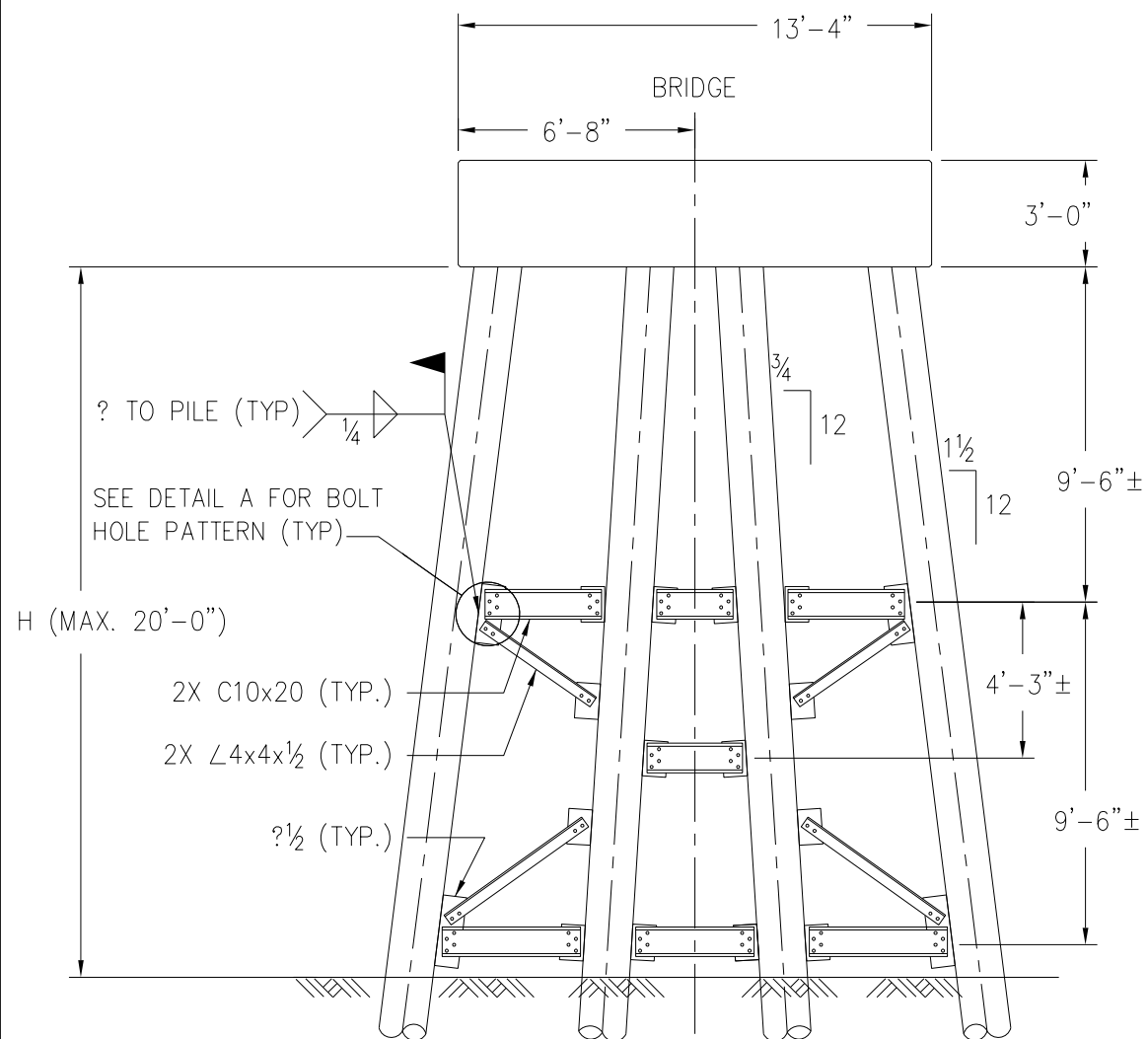
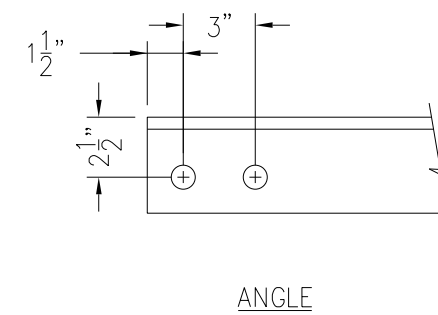
ONE ROW BENT PLAN

SCALE $\frac{3}{16}$ " = 1'-0"



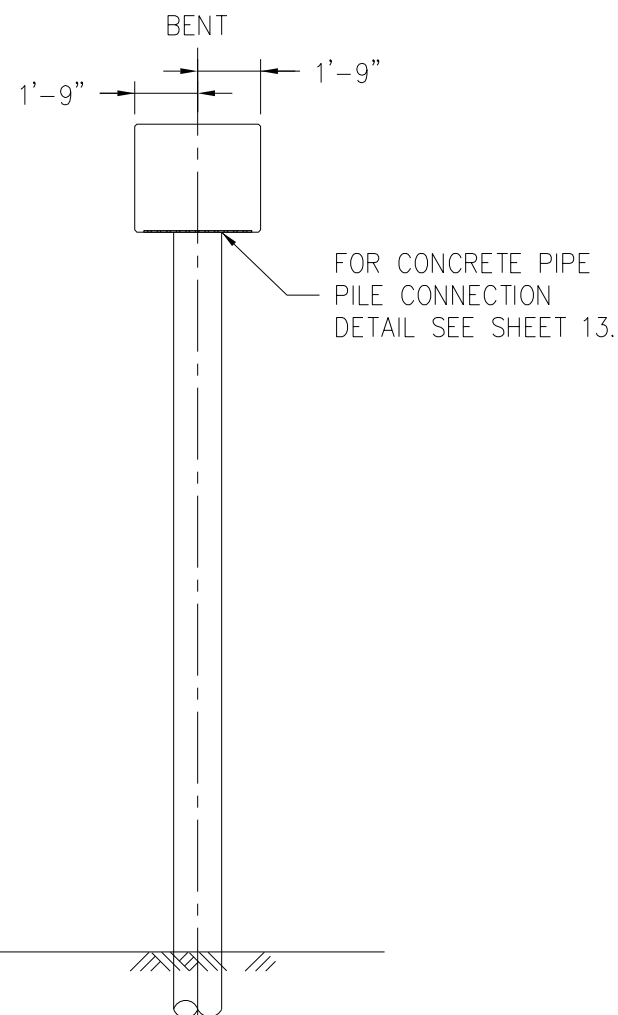
BRACING DETAIL A

SCALE $1\frac{1}{2}$ " = 1'-0"



ONE ROW BENT BRACING

SCALE $\frac{3}{16}$ " = 1'-0"



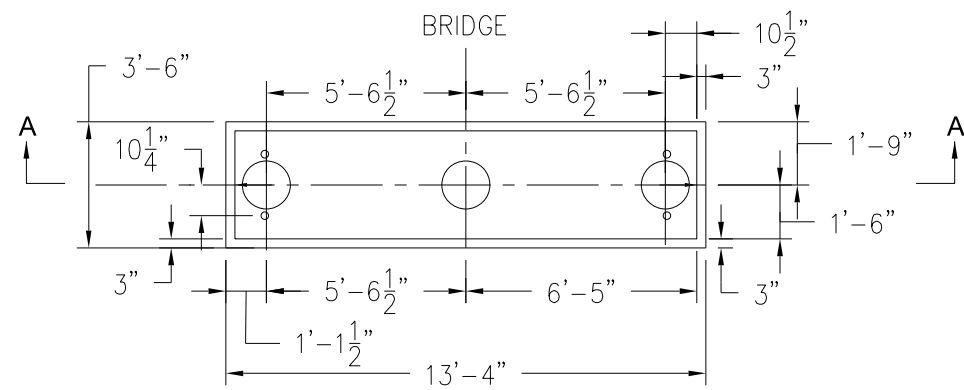
ONE ROW BENT SIDE ELEVATION

SCALE $\frac{3}{16}$ " = 1'-0"

NOTES

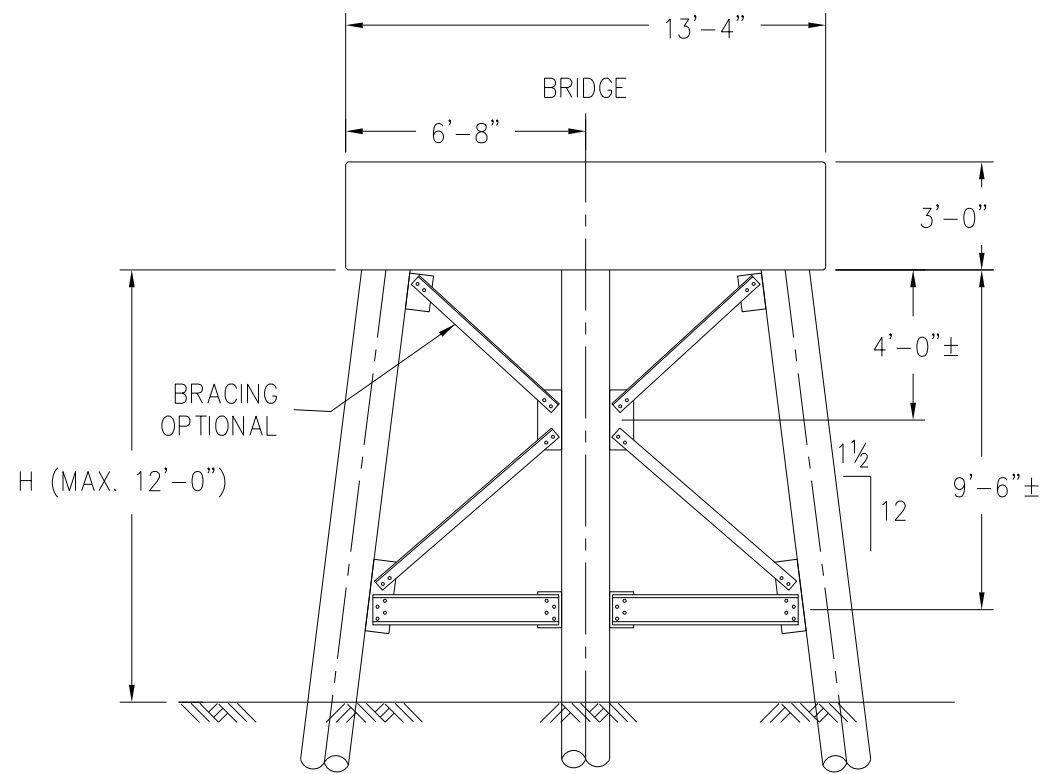
1. PILE DESIGN LOAD SHALL BE 100 TONS PER PILE.
2. ESTIMATED 16"Ø PILE WEIGHT = 83 LB/FT.
3. FOR MISCELLANEOUS PIPE PILE DETAILS, SEE SHEET 13.
4. WELD SHALL BE IN ACCORDANCE WITH CHAPTER 15 OF THE CURRENT AREMA MANUAL AND AWS D1.5-15.

P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT : STANDARD 28 FOOT CONCRETE BALLAST DECK (CBD)		
TITLE: FOUR PILE, SINGLE ROW BENT PLAN, ELEVATION AND DETAILS		
DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:
DRAWN BY: ARRC	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO. 7 OF 15
APPROVED BY: BAL		



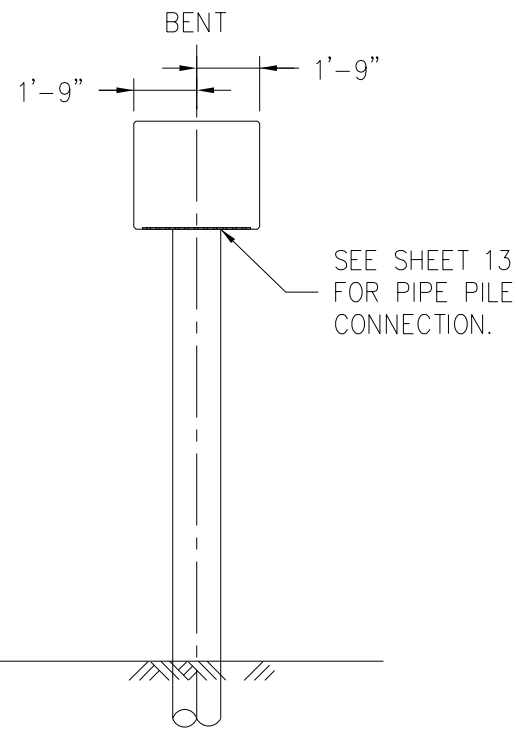
ONE ROW BENT PLAN

SCALE $\frac{3}{16}'' = 1'-0''$



ONE ROW BENT BRACING

SCALE $\frac{3}{16}'' = 1'-0''$




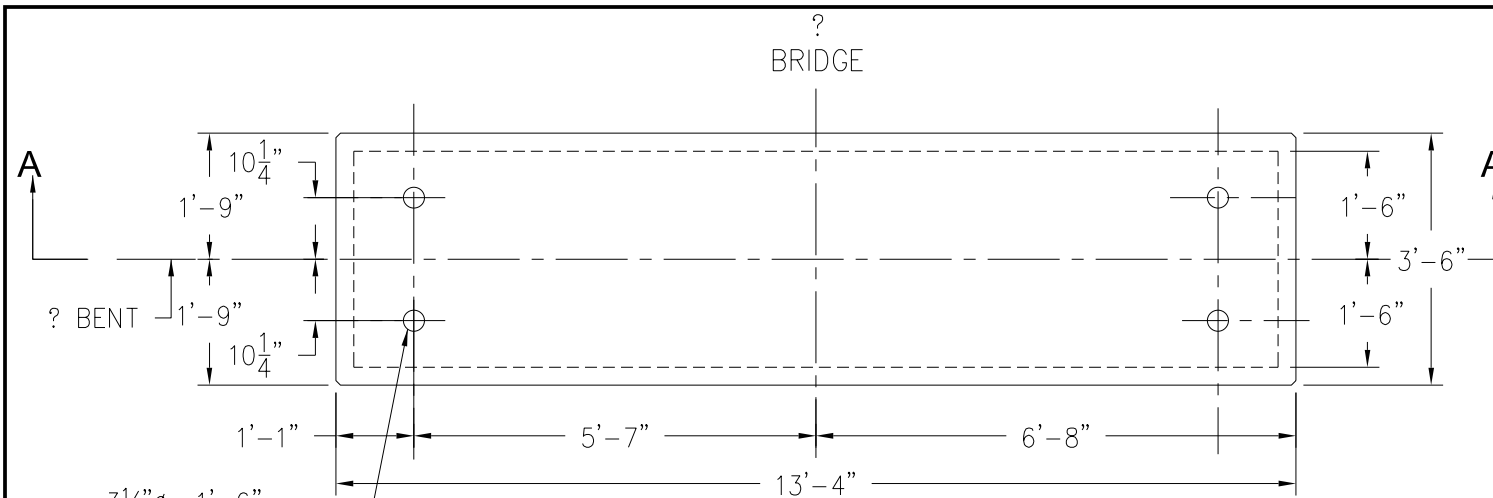
ONE ROW BENT SIDE ELEVATION

SCALE $\frac{3}{16}'' = 1'-0''$

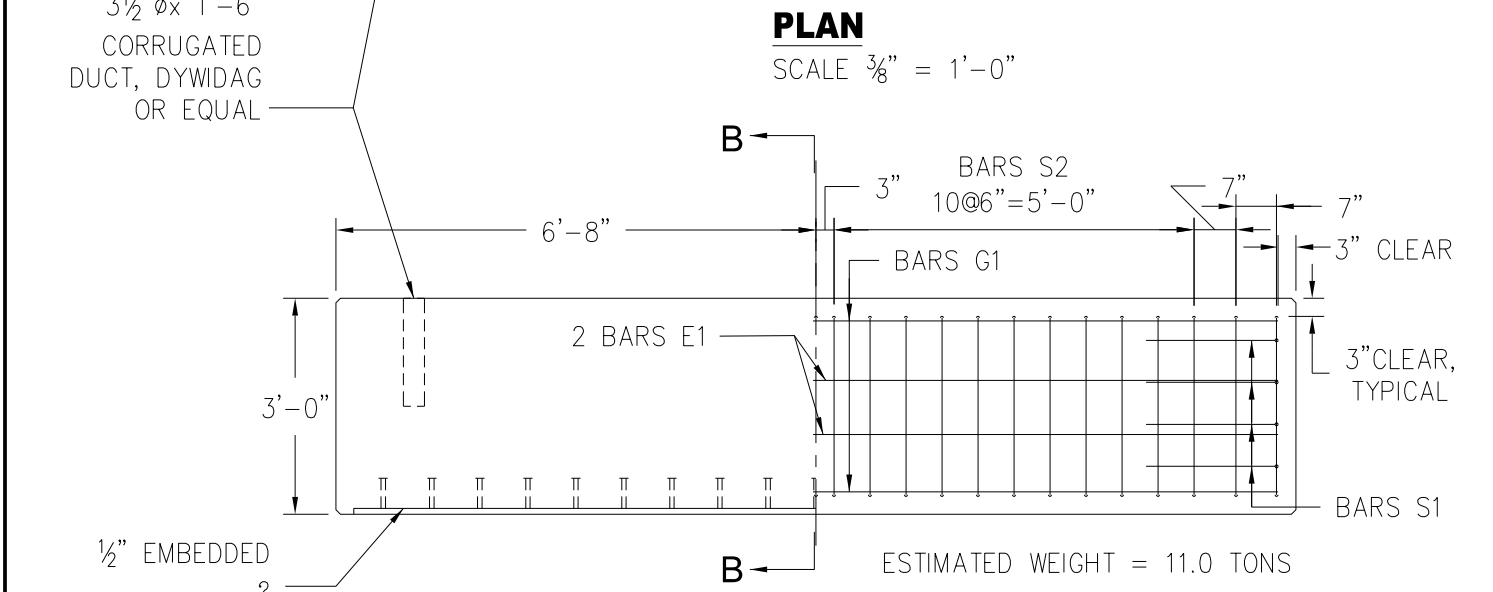
NOTES:

1. PILE DESIGN LOAD SHALL BE 100 TONS PER PILE.
2. ESTIMATED 16"Ø PILE WEIGHT = 83 LB/FT.
3. FOR MISCELLANEOUS PIPE PILE DETAILS, SEE SHEET 13.
4. FOR TYPICAL PILE BRACING DETAILS SEE SHEET 10.
5. WELD SHALL BE IN ACCORDANCE WITH CHAPTER 15 OF THE CURRENT AREMA MANUAL AND AWS D1.5-15.

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT :		
STANDARD 28 FOOT CONCRETE BALLAST DECK (CBD)		
TITLE:		
THREE PILE, SINGLE ROW BENT PLAN, ELEVATION AND DETAILS		
DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:
DRAWN BY: ARRC	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO.
APPROVED BY: BAL		8 OF 15

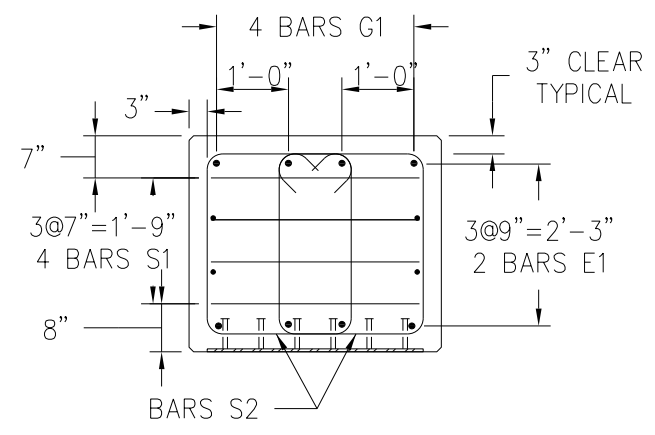


PLAN
SCALE 3/8" = 1'-0"

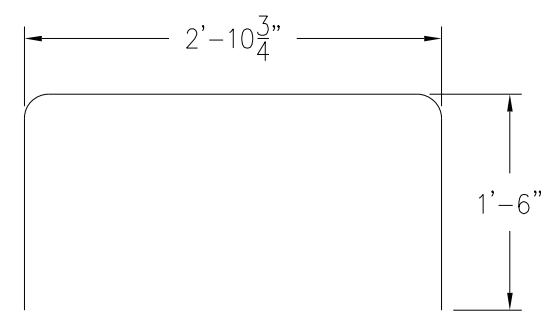


SECTION A - A
SCALE 3/8" = 1'-0"

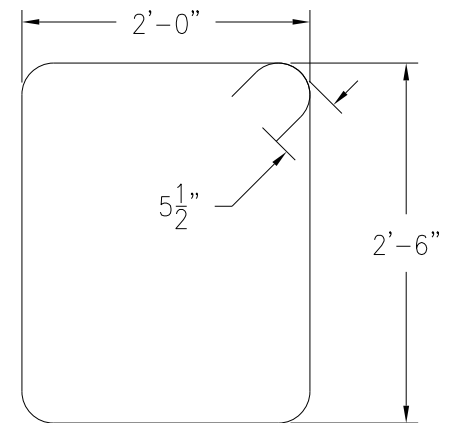
REINFORCING SCHEDULE (1 CAP)					
MARK	REQ. NO	TYPE	SIZE	LENGTH	WEIGHT (LB)
E1	4	STR	#6	12'-10"	78
G1	8	STR	#8	12'-10"	274
S1	8	BENT	#5	5'-10"	49
S2	52	BENT	#5	9'-9"	529



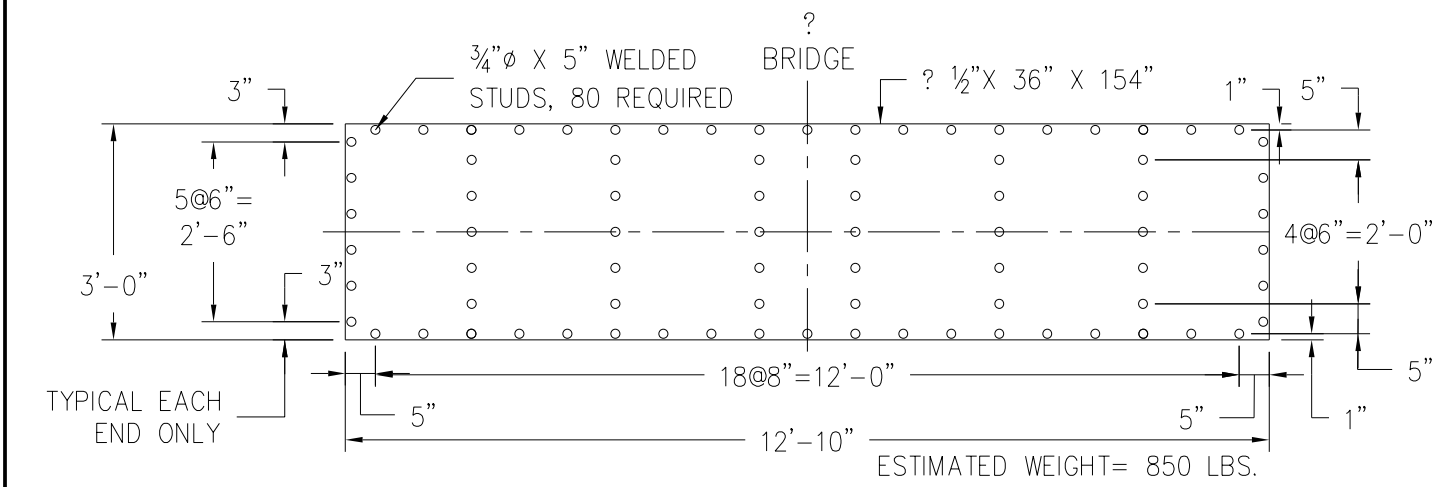
SECTION B - B
SCALE 3/8" = 1'-0"



BARS S1
SCALE 3/4" = 1'-0"



BARS S2
SCALE 3/4" = 1'-0"



EMBEDDED PLATE DETAIL
SCALE 3/8" = 1'-0"

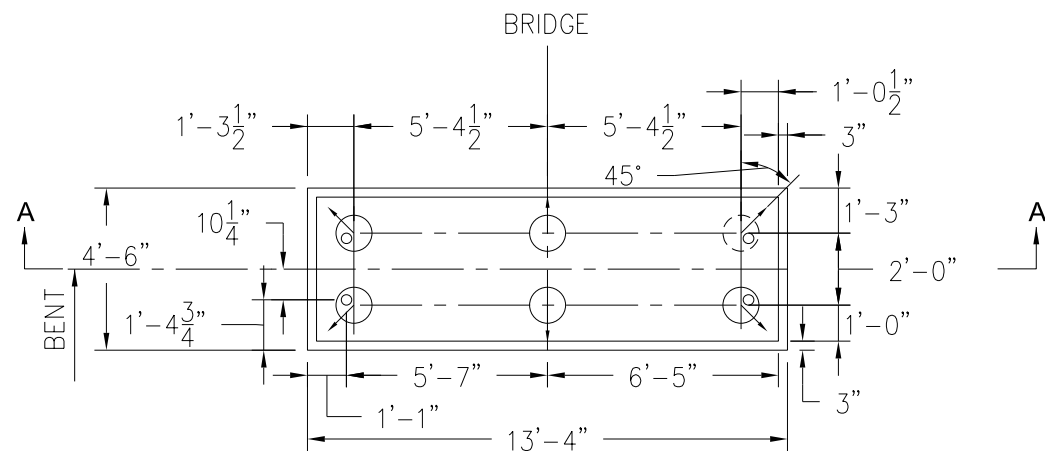
- NOTES:
1. PROVIDE 3/4 INCH CHAMFER FOR ALL CONCRETE CORNERS.
 2. THE CONCRETE BENT CAP MUST BE CONSTRUCTED SO THE TOP AND BOTTOM SURFACES ARE PARALLEL. THE TOP AND BOTTOM SURFACES MUST BE FINISHED FLAT WITH NO VARIANCES TO EXCEED 1/8 INCH UNDER A 10 FOOT LONG STRAIGHT EDGE. ALL VARIATIONS TO THIS REQUIREMENT MUST BE CORRECTED TO THE SATISFACTION OF ALASKA RAILROAD PRIOR TO ACCEPTANCE.
 3. EXTRA ATTENTION SHOULD BE DIRECTED TO PLACEMENT OF THE DYWIDAGS SO THAT THEY ARE CONSISTENT WITH THE DRAWINGS.
 4. ALASKA RAILROAD STOCK NO. 312971

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

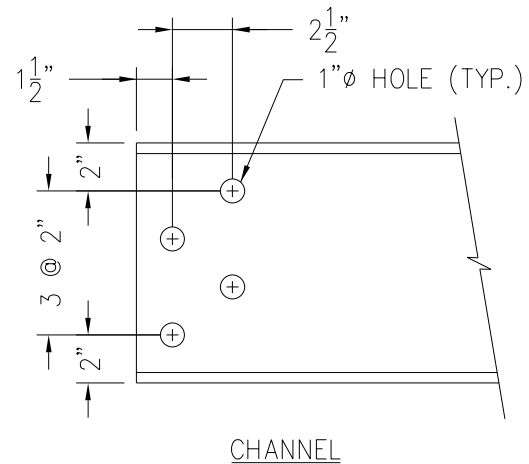
PROJECT : **STANDARD 28 FOOT CONCRETE BALLAST DECK (CBD)**

TITLE: **SINGLE ROW PILE CAP PLAN AND DETAILS**

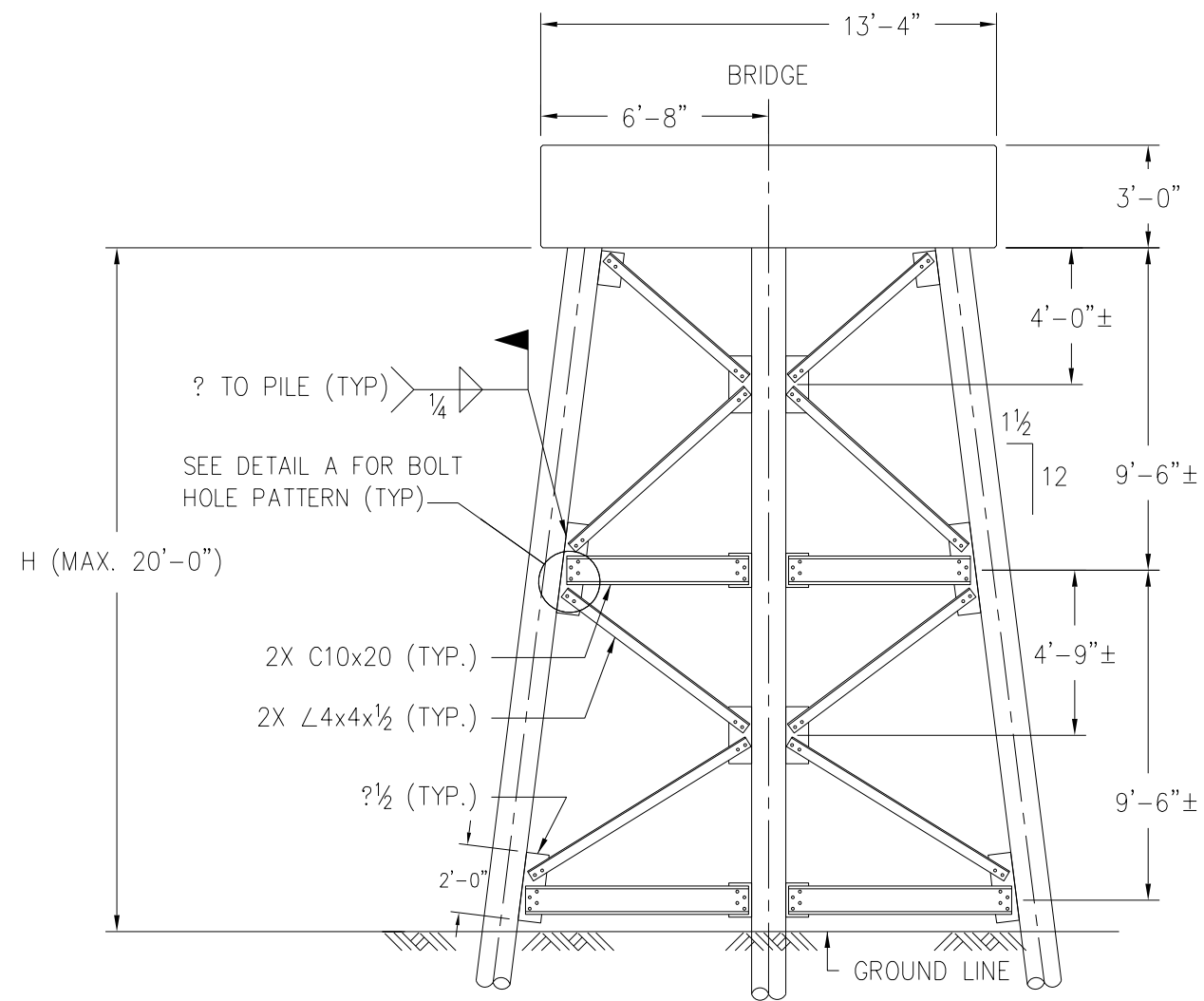
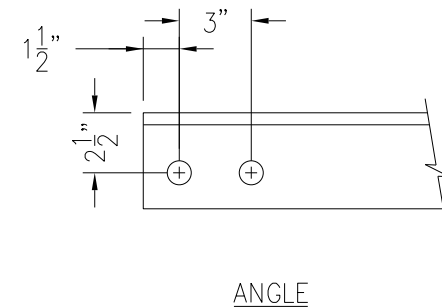
DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:
DRAWN BY: ARRC	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO. 9 OF 15
APPROVED BY: BAL		



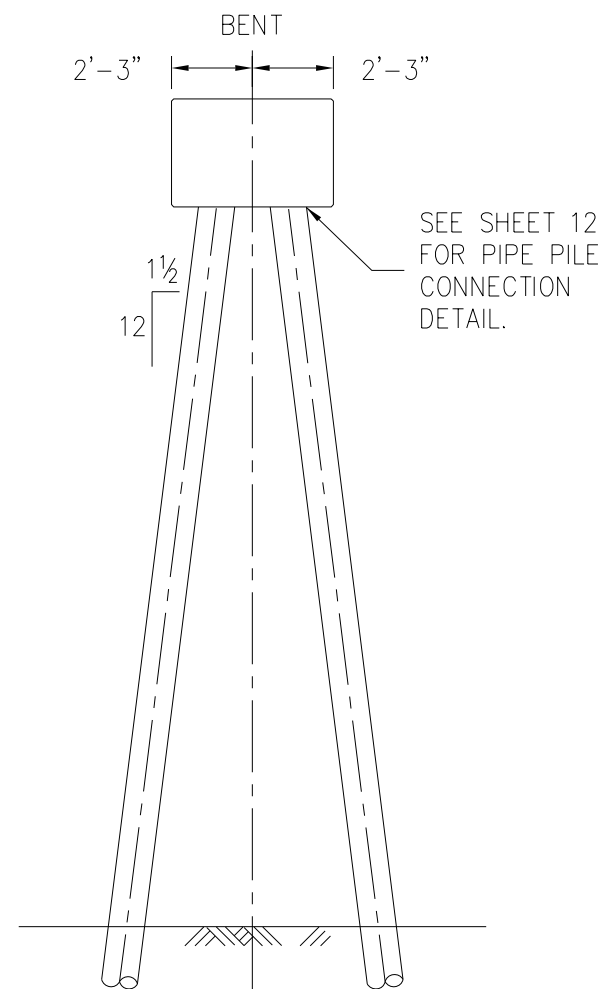
TWO ROW BENT PLAN
SCALE $\frac{3}{16}$ " = 1'-0"



BRACING DETAIL A
SCALE $1\frac{1}{2}$ " = 1'-0"




TWO ROW BENT BRACING
SCALE $\frac{3}{16}$ " = 1'-0"

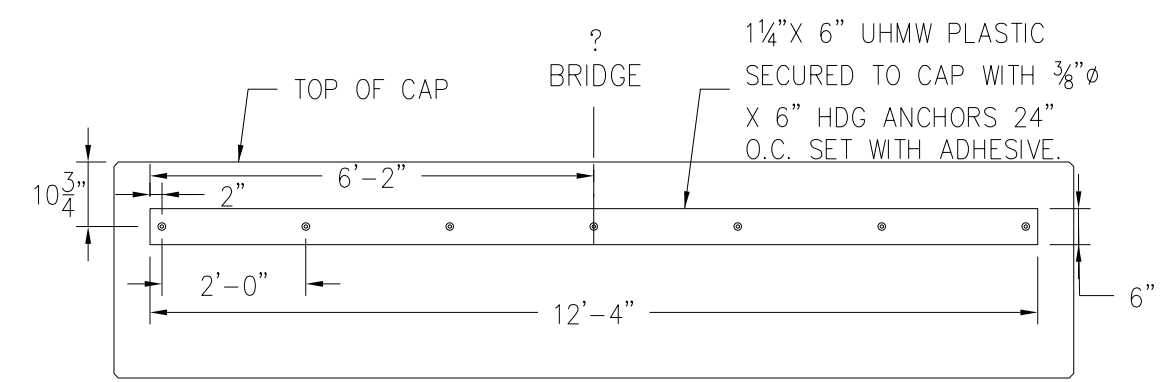
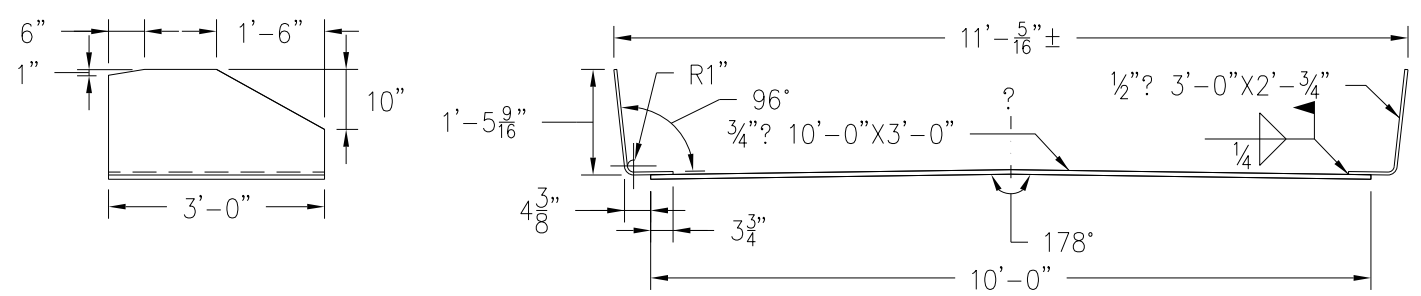
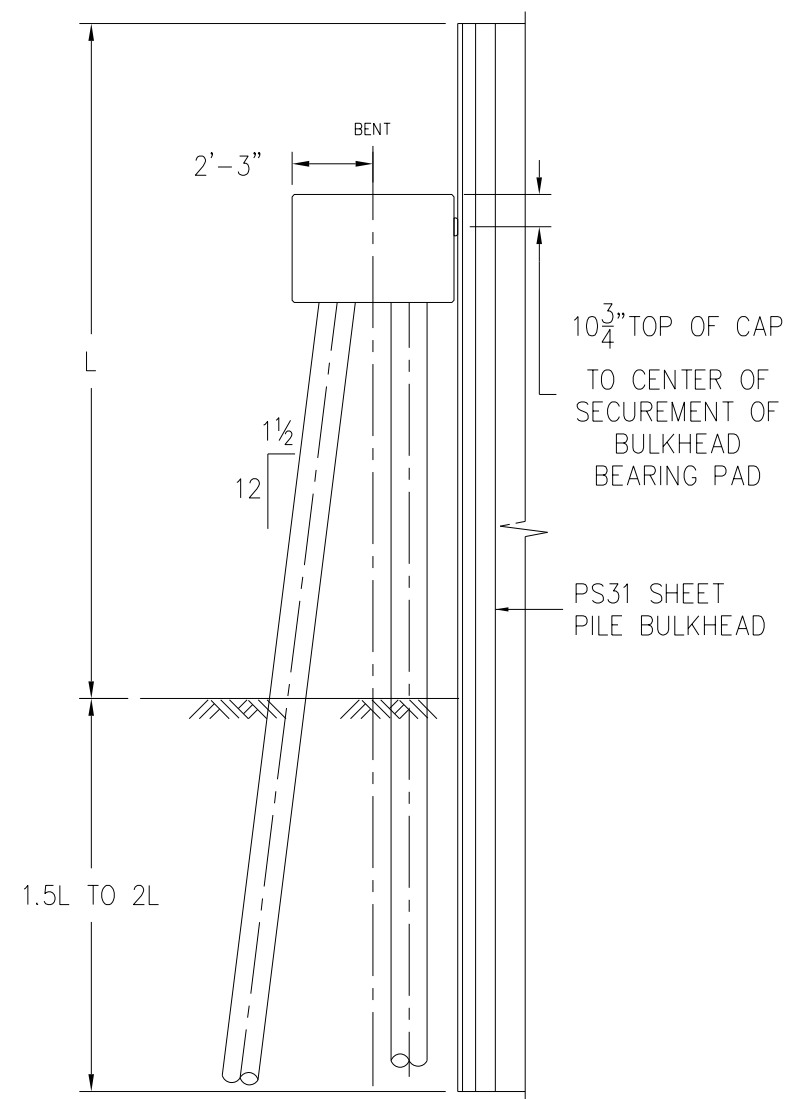
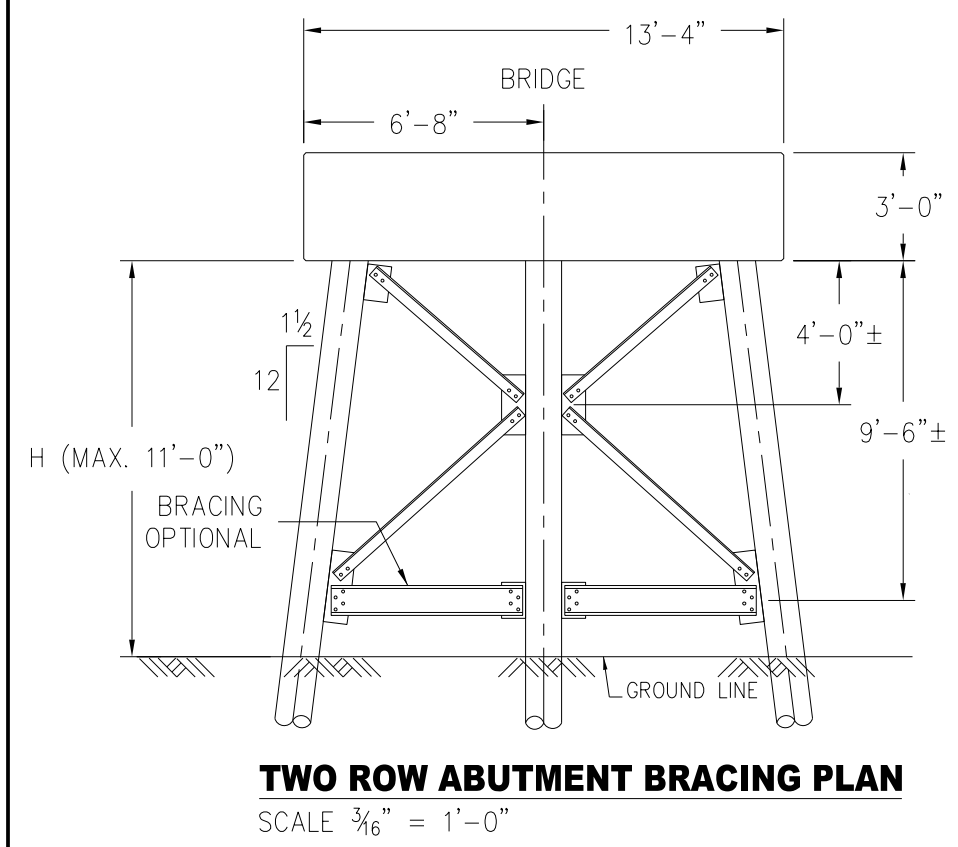
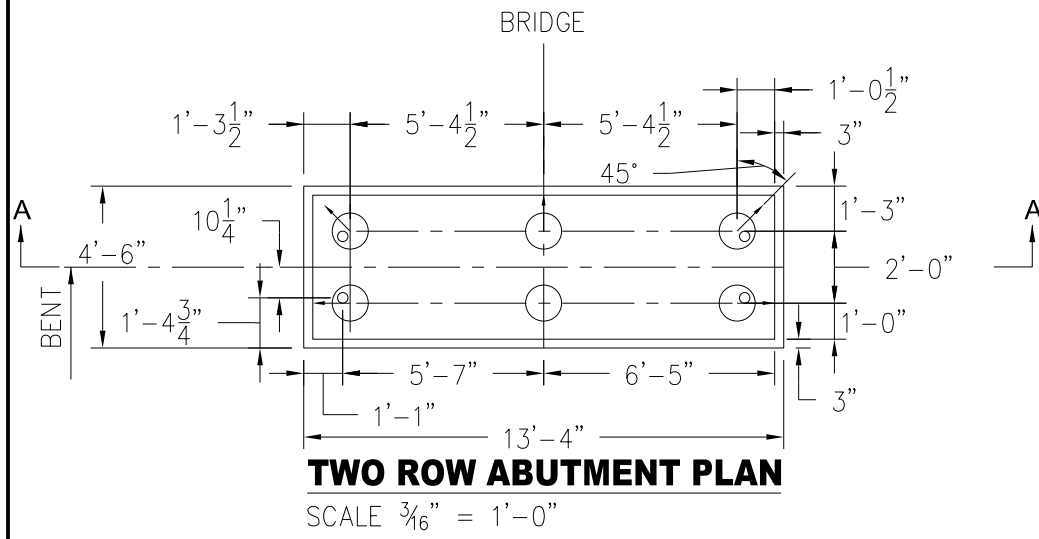


TWO ROW BENT SIDE ELEVATION
SCALE $\frac{3}{16}$ " = 1'-0"

NOTES

1. PILE DESIGN LOAD SHALL BE 100 TONS PER PILE.
2. ESTIMATED 12"Ø PILE WEIGHT = 62 LB/FT.
3. FOR MISCELLANEOUS PIPE PILE DETAILS, SEE SHEET 12.
4. WELD SHALL BE IN ACCORDANCE WITH CHAPTER 15 OF THE CURRENT AREMA MANUAL AND AWS D1.5-15.

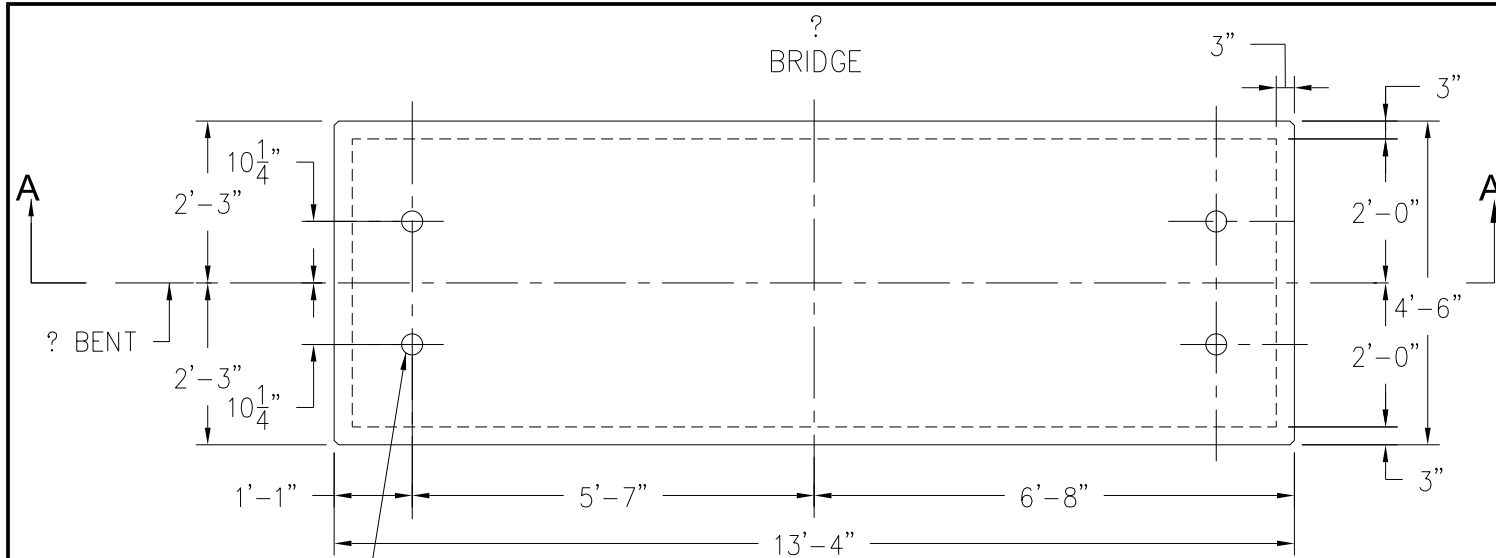
 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT :		
STANDARD 28 FOOT CONCRETE BALLAST DECK (CBD)		
TITLE:		
TWO ROW BENT PLAN, ELEVATION AND DETAILS		
DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:
DRAWN BY: ARRC	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO.
APPROVED BY: BAL		10 OF 15



NOTES:

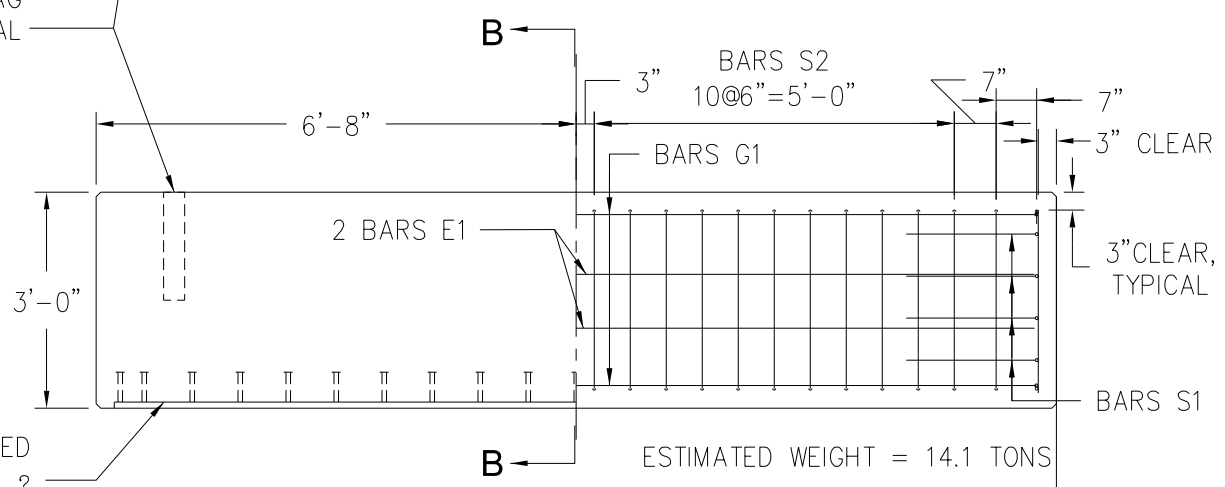
1. PILE DESIGN LOAD SHALL BE 100 TONS PER PILE.
2. ESTIMATED 12"Ø PILE WEIGHT = 65.4 LB/FT.
3. FOR MISCELLANEOUS PIPE PILE DETAILS, SEE SHEET 13.
4. FOR TYPICAL PILE BRACING DETAILS SEE SHEET 10.
5. WELD SHALL BE IN ACCORDANCE WITH CHAPTER 15 OF THE CURRENT AREMA MANUAL AND AWS D1.5-15.
6. INSTALL BULKHEAD CLOSURE PLATE TO SPAN OPENING BETWEEN BRIDGE AND BULKHEAD USING FIELD BORED HOLES TO PLACE BOLT KEEPERS, NOT SHOWN.

ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT :		
STANDARD 28 FOOT CONCRETE BALLAST DECK (CBD)		
TITLE:		
TWO ROW BENT ABUTMENT PLAN, ELEVATION AND DETAILS		
DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:
DRAWN BY: ARRC	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO.
APPROVED BY: BAL		11 OF 15



PLAN
SCALE $\frac{3}{8}$ " = 1'-0"

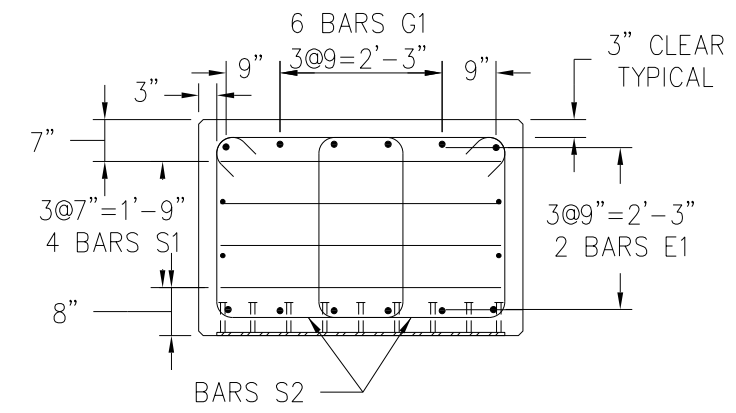
$3\frac{1}{2}$ " ϕ x 1'-6"
CORRUGATED
DUCT, DYWIDAG
OR EQUAL



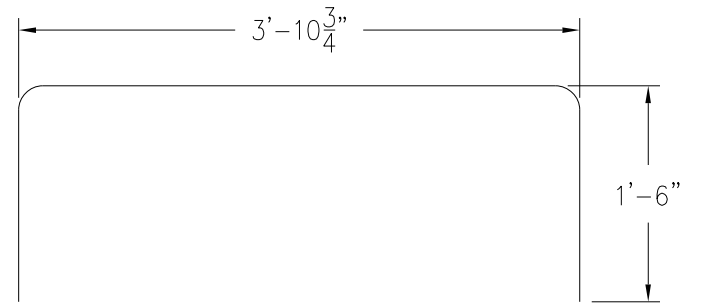
SECTION A - A
SCALE $\frac{3}{8}$ " = 1'-0"

$\frac{1}{2}$ " EMBEDDED
? WITH STUDS

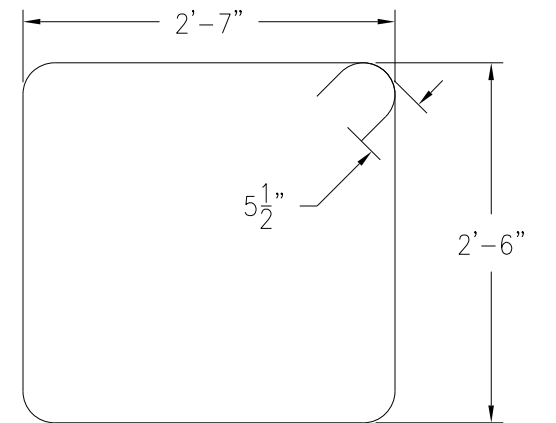
REINFORCING SCHEDULE (1 CAP)					
MARK	REQ. NO	TYPE	SIZE	LENGTH	WEIGHT (LB)
E1	4	STR	#6	12'-10"	78
G1	12	STR	#8	12'-10"	412
S1	8	BENT	#5	6'-10"	57
S2	52	BENT	#5	10'-8"	579



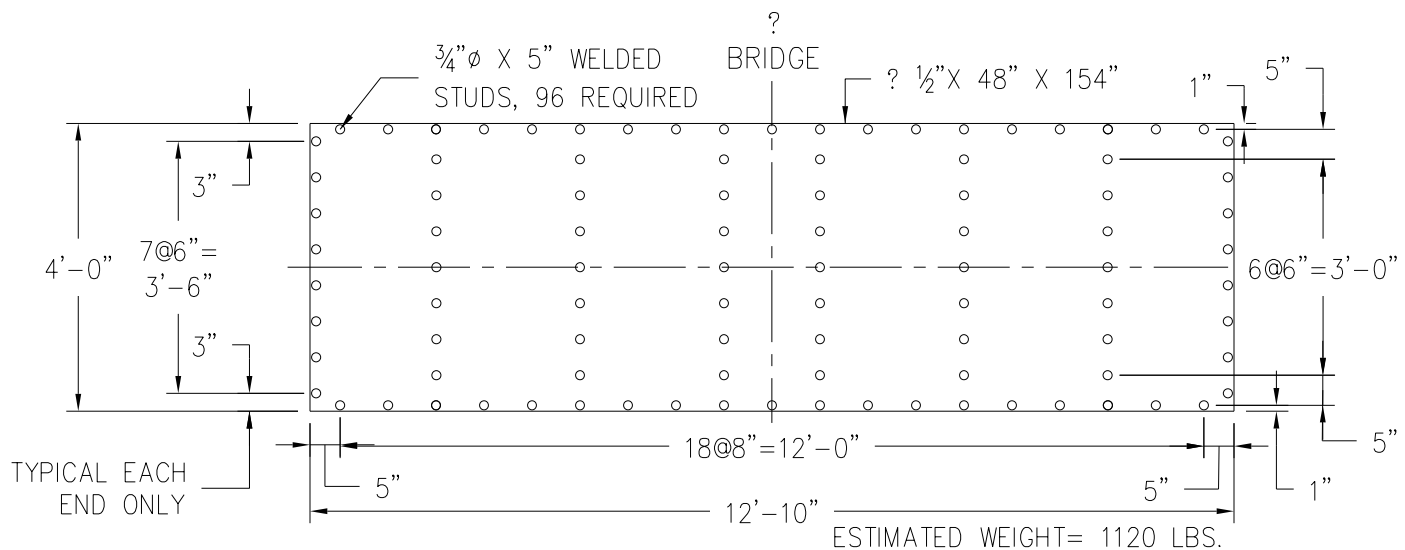
SECTION B - B
SCALE $\frac{3}{8}$ " = 1'-0"



BARS S1
SCALE $\frac{3}{4}$ " = 1'-0"



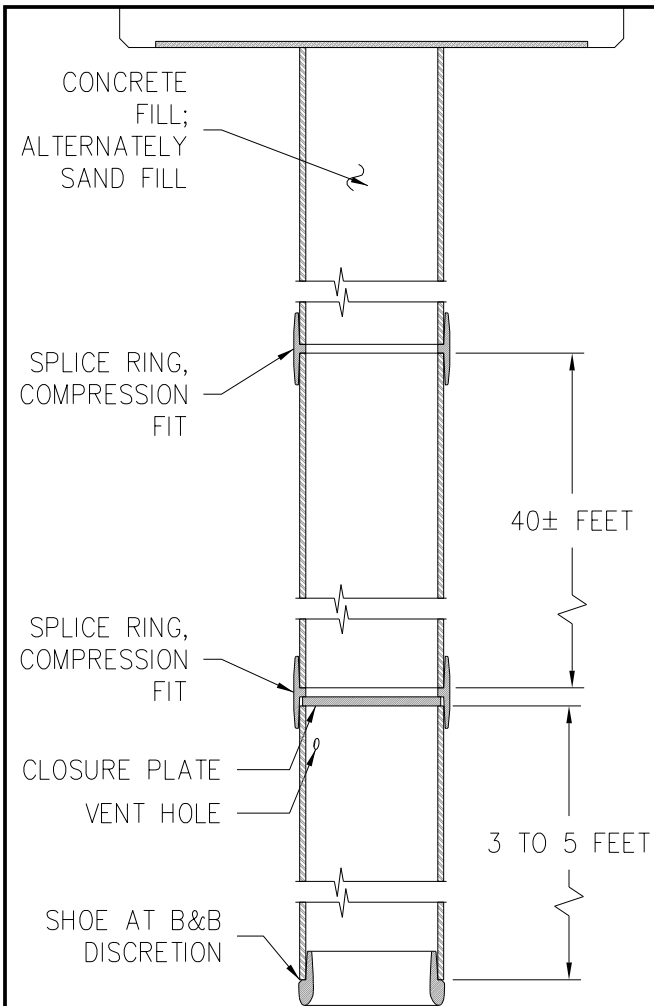
BARS S2
SCALE $\frac{3}{4}$ " = 1'-0"



EMBEDDED PLATE DETAIL
SCALE $\frac{3}{8}$ " = 1'-0"

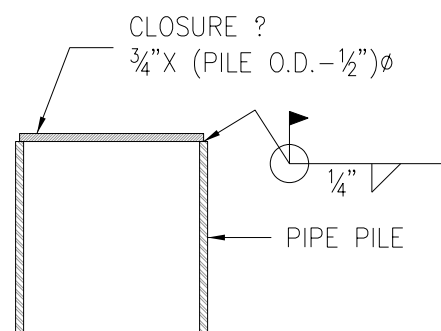
- NOTES:
1. PROVIDE $\frac{3}{4}$ INCH CHAMFER FOR ALL CONCRETE CORNERS.
 2. THE CONCRETE BENT CAP MUST BE CONSTRUCTED SO THE TOP AND BOTTOM SURFACES ARE PARALLEL. THE TOP AND BOTTOM SURFACES MUST BE FINISHED FLAT WITH NO VARIANCES TO EXCEED $\frac{1}{8}$ INCH UNDER A 10 FOOT LONG STRAIGHT EDGE. ALL VARIATIONS TO THIS REQUIREMENT MUST BE CORRECTED TO THE SATISFACTION OF ALASKA RAILROAD PRIOR TO ACCEPTANCE.
 3. EXTRA ATTENTION SHOULD BE DIRECTED TO PLACEMENT OF THE DYWIDAGS SO THAT THEY ARE CONSISTENT WITH THE DRAWINGS.
 4. ALASKA RAILROAD STOCK NO. 312970

ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT :		
STANDARD 28 FOOT CONCRETE BALLAST DECK (CBD)		
TITLE:		
TWO ROW PILE CAP PLAN AND DETAILS		
DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:
DRAWN BY: ARRC	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO.
APPROVED BY: BAL		12 OF 15



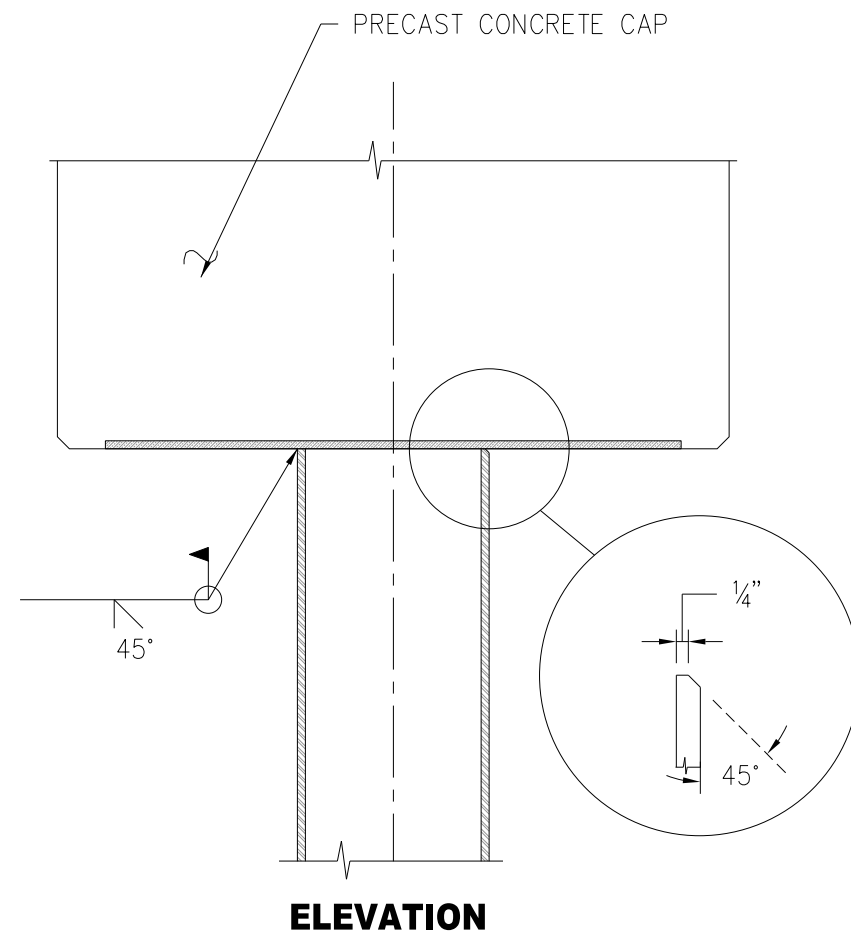
TYPICAL PIPE PILE DETAIL

NO SCALE



CLOSURE PLATE DETAIL

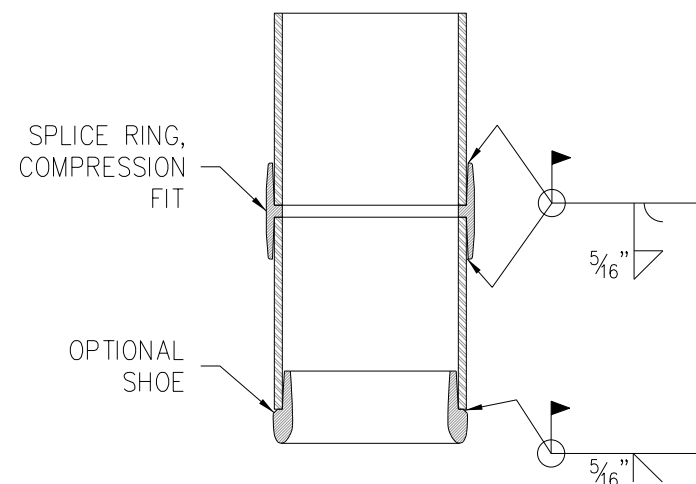
SCALE: 1" = 1'-0"



ELEVATION

PIPE PILE CONNECTION DETAIL

SCALE: 1" = 1'-0"



SPlice AND SHOE DETAIL

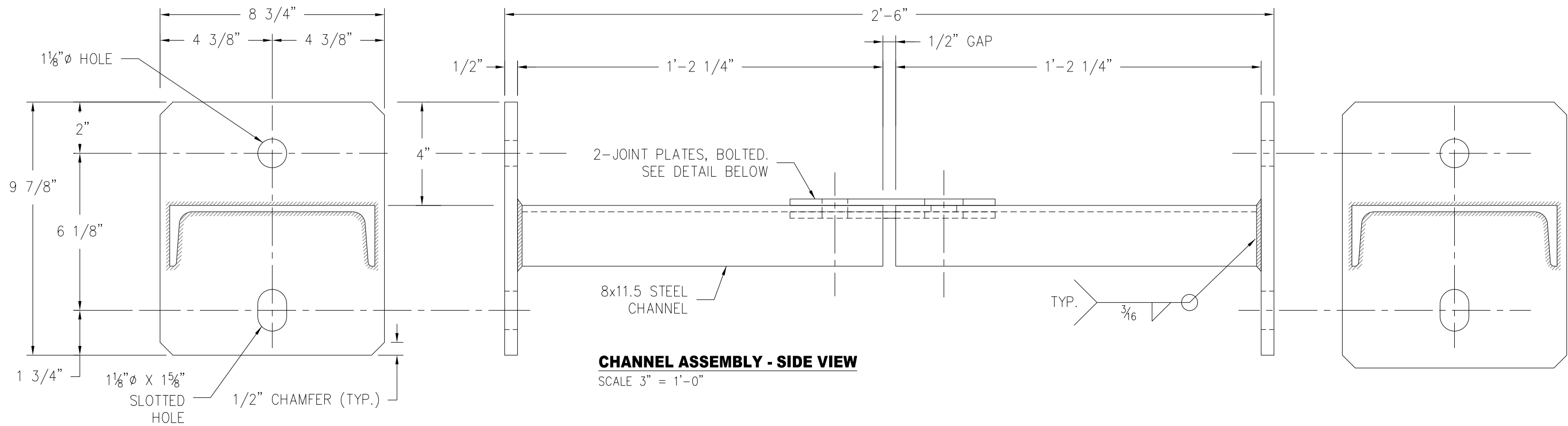
SCALE: 1" = 1'-0"

NOTES:

1. CONSIDER MAKING PIPE TO CAP PERIMETER WELD IN OPPOSING QUADRANTS TO CONTROL HEAT BUILD-UP AND LIMIT RISK OF DAMAGING CAP.
2. PILING SHALL MEET ONE OF THE FOLLOWING SPECIFICATIONS:
 - A. ASTM A 53 GRADE B:
HYDROSTATIC TEST REQUIREMENTS ARE WAIVED.
NONDESTRUCTIVE ELECTRIC TEST REQUIREMENTS ARE WAIVED.
 - B. ASTM A 252 GRADE 2:
CHEMICAL COMPOSITION MUST MEET THE REQUIREMENTS OF ASTM A53, GRADE B, OR API SPECIFICATION 5L, PRODUCT SPECIFICATION LEVEL 1, GRADE X52,

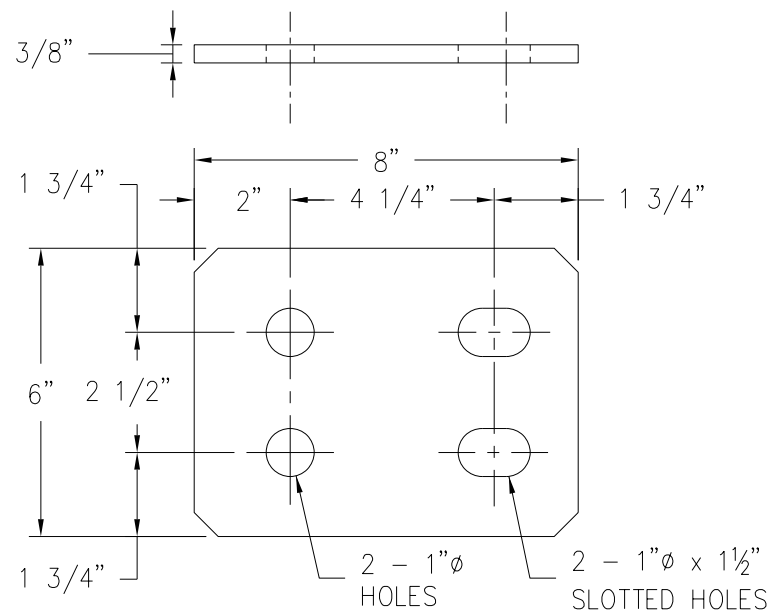
OR,
BIDDERS MUST ESTABLISH WELDING PROCEDURES BY QUALIFICATION IN ACCORDANCE WITH AWS D1.1. WELDING PROCEDURES SHALL INCLUDE FULL PENETRATION WELDS FOR FIELD AND SHOP PILE SPLICES. PROCEDURES SHALL BE FURNISHED WITHIN 15 DAYS OF THE BID DUE DATE.
 - C. ANSI/API SPECIFICATION 5L, PSL 1, GRADE X52;
 - D. ANSI/API SPECIFICATION 2B, FABRICATED STRUCTURAL STEEL PIPE;
2. PIPE MUST BE FABRICATED FROM A LISTED BASE METAL PLATE FOUND IN D1.1 UNDER TUBULAR STRUCTURES.
3. MILL CERTIFICATION DOCUMENTATION IS REQUIRED. IN ADDITION, CHEMICAL COMPOSITION DOCUMENTATION IS REQUIRED FOR PILING SUPPLIED UNDER THE SPECIFICATION FOR ASTM A252 GRADE 2.
4. PILING SHALL HAVE SQUARE OR BEVEL ENDS.
5. SPlice RINGS ARE COMPRESSION FIT MECHANICAL SPlicER TO MATCH PILE DIAMETER AND COATING WHERE PROVIDED.
6. DRIVE SHOE ARE INSIDE FLANGE AND OPEN ENDED MATCHING PILE DIAMETER WITH MILL FINISH.
7. GALVANIZING, WHEN SPECIFIED, SHALL BE IN ACCORDANCE WITH ASTM A 123.
8. INDIVIDUAL PIPE LENGTHS MUST BE DELIVERED WITHIN A TOLERANCE OF PLUS OR MINUS 12 INCHES FROM THE LENGTH SPECIFIED. THE TOTAL LENGTH FURNISHED OF EACH SHALL NOT BE LESS THAN THE SUMMATION OF THE NOMINAL SPECIFIED LENGTH TIMES THE NUMBER REQUIRED.

ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT :		
STANDARD 28 FOOT CONCRETE BALLAST DECK (CBD)		
TITLE:		
PIPE PILE BENTS MISCELLANEOUS DETAILS		
DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:
DRAWN BY: ARRC	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO.
APPROVED BY: BAL		13 OF 15

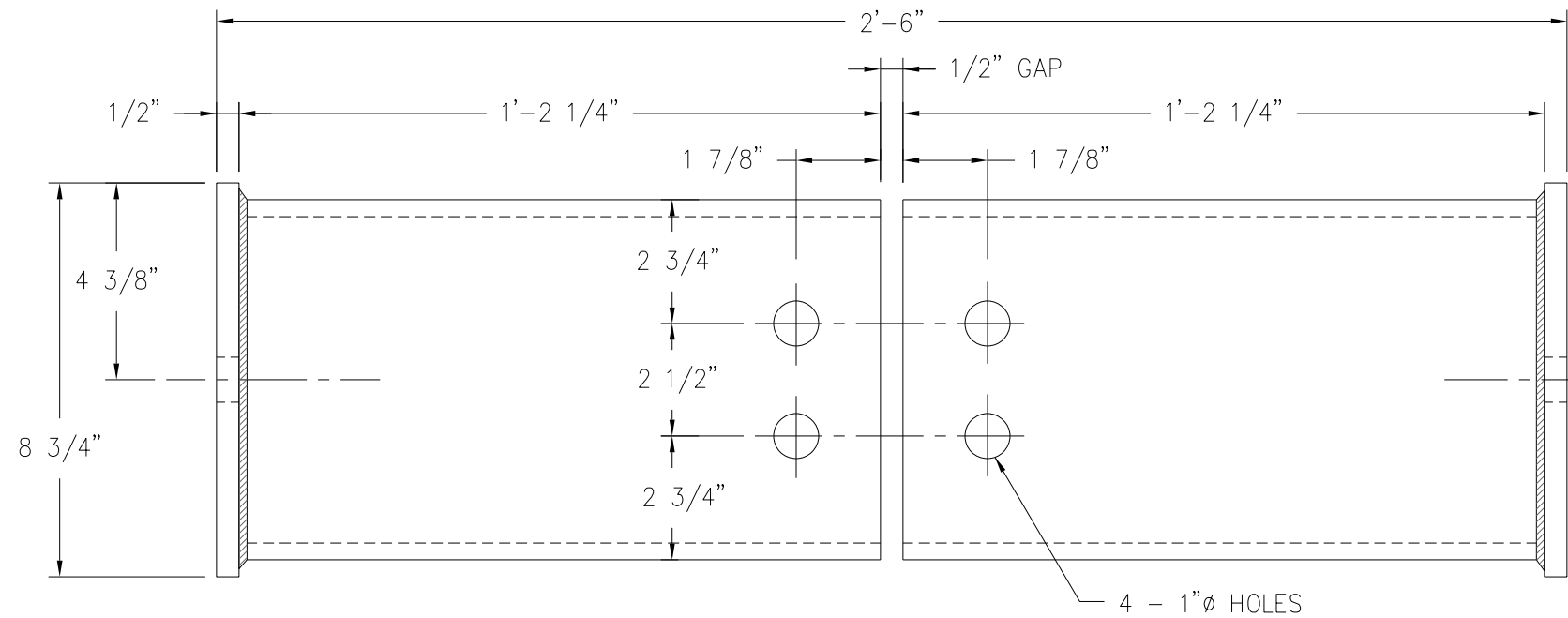


CHANNEL ASSEMBLY - SIDE VIEW
SCALE 3" = 1'-0"

BASE PLATE PLAN
SCALE 3" = 1'-0"




JOINT PLATE DETAIL
SCALE 3" = 1'-0"
NOTE: 2 REQUIRED PER ASSEMBLY

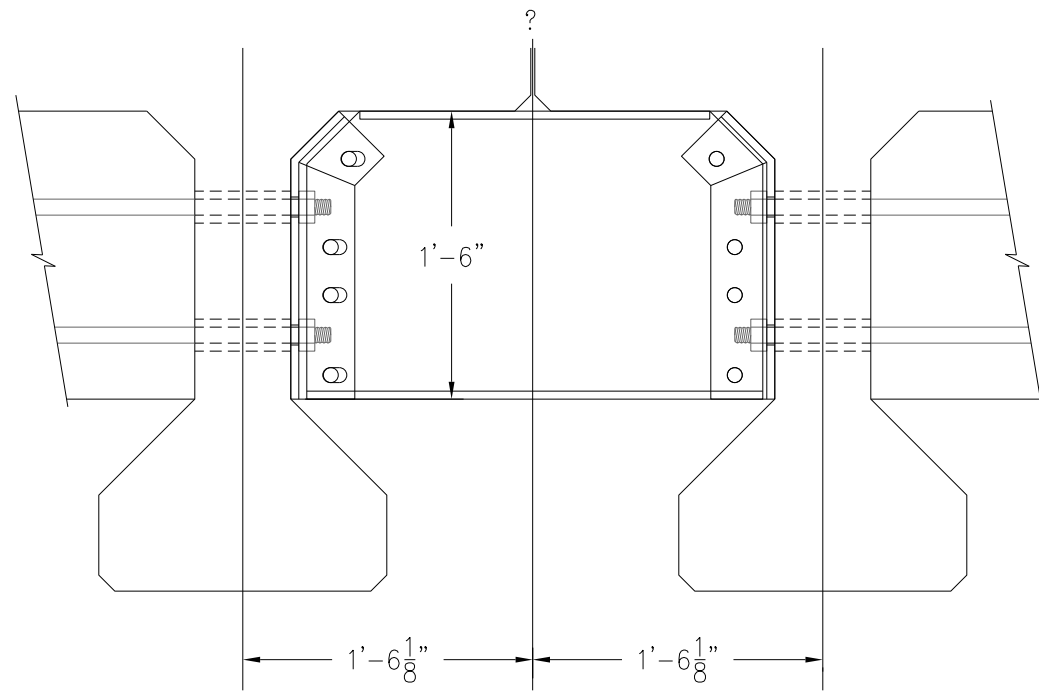


CHANNEL ASSEMBLY - PLAN VIEW
SCALE 3" = 1'-0"

NOTES:

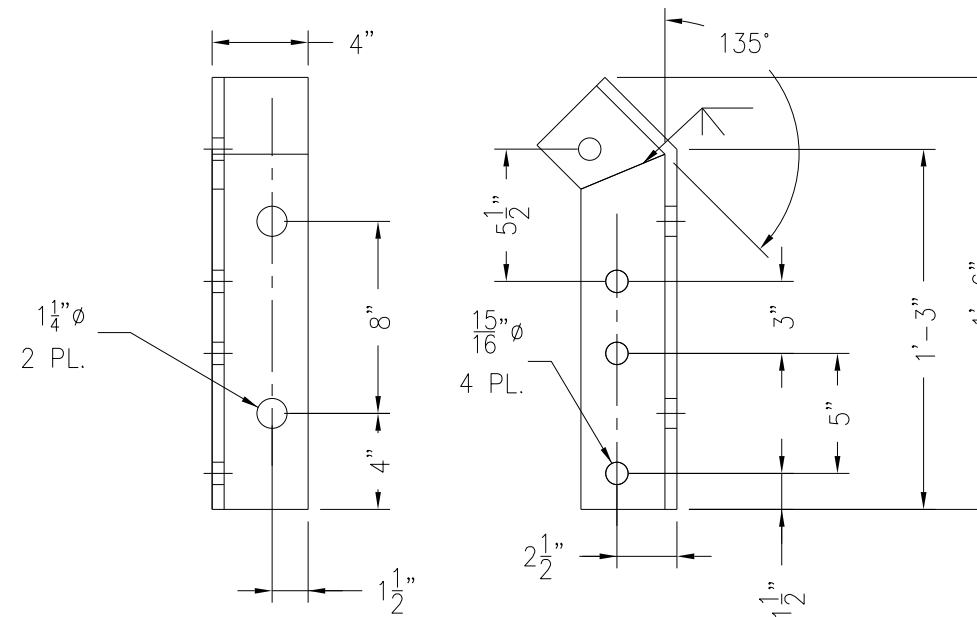
1. MATERIAL ASTM A36, SIZE AS SPECIFIED.
2. SPRAY METALIZED OR HOT DIP GALVANIZED.
3. THREE (3) ASSEMBLIES PER SPAN.

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT :		
STANDARD 28 FOOT CONCRETE BALLAST DECK (CBD)		
TITLE:		
BRIDGE IN TANGENT DIAPHRAGM DETAIL		
DESIGNED BY: RJT	SCALE : AS NOTED	AFE NO.:
DRAWN BY: DxD	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO. 14 OF 15
APPROVED BY: BAL		



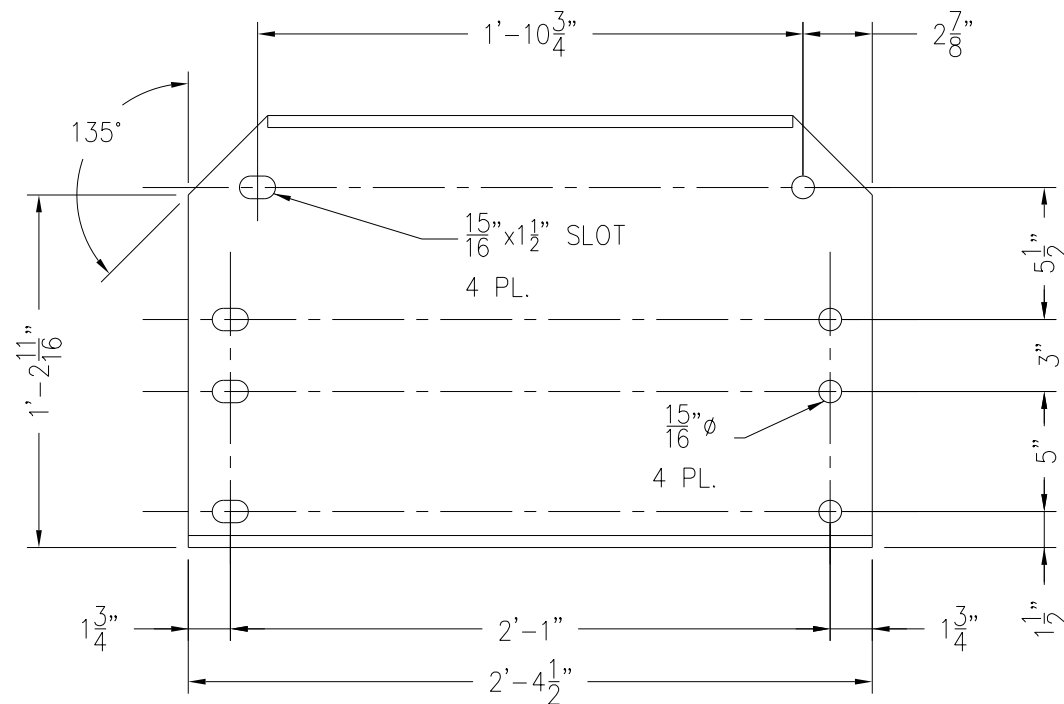
BRIDGE DIAPHRAGM

SCALE 1" = 1'



4x4x1/2 DETAIL

SCALE 1 1/2" = 1'-0"




MC18x45.8 DETAIL

SCALE 1 1/2" = 1'-0"

NOTES:

1. MATERIAL ASTM A36, SIZE AS SPECIFIED, SPRAY METALIZED OR HOT DIP GALVANIZED.
2. THREE (3) ASSEMBLIES PER SPAN:
 1 EA. MC18x45.8 C-CHANNEL AS SHOWN
 1 EA. L4x4x1/2 ANGLE AS SHOWN
 1 EA. L4x4x1/2 ANGLE OPPOSITE-HAND AS SHOWN
3. BENT-PLATE EQUIVALENT MAY BE SUBSTITUTED FOR MC18x45.8 C-CHANNEL ON ARRC APPROVAL.

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT :		
STANDARD 28 FOOT CONCRETE BALLAST DECK (CBD)		
TITLE:		
BRIDGE IN CURVE DIAPHRAGM DETAIL		
DESIGNED BY: RJT	SCALE : AS NOTED	AFE NO.:
DRAWN BY: DxD	DATE : FEB 2019	ACAD FILE:
CHECKED BY: CDR		DWG NO. 15 OF 15
APPROVED BY: BAL		