

DRAWING LOCATION: P:\ENGINEERING\BRIDGES\00 - BRIDGE STANDARD PLANS\28' STANDARD CBD BRIDGE REPLACEMENT\CBD STANDARDS 2024.DWG
 DATE: 11/7/2025 4:57 PM
 SCALE: AS NOTED
 PUBLISHED CTB: ARRC_CTB_2023.CTB

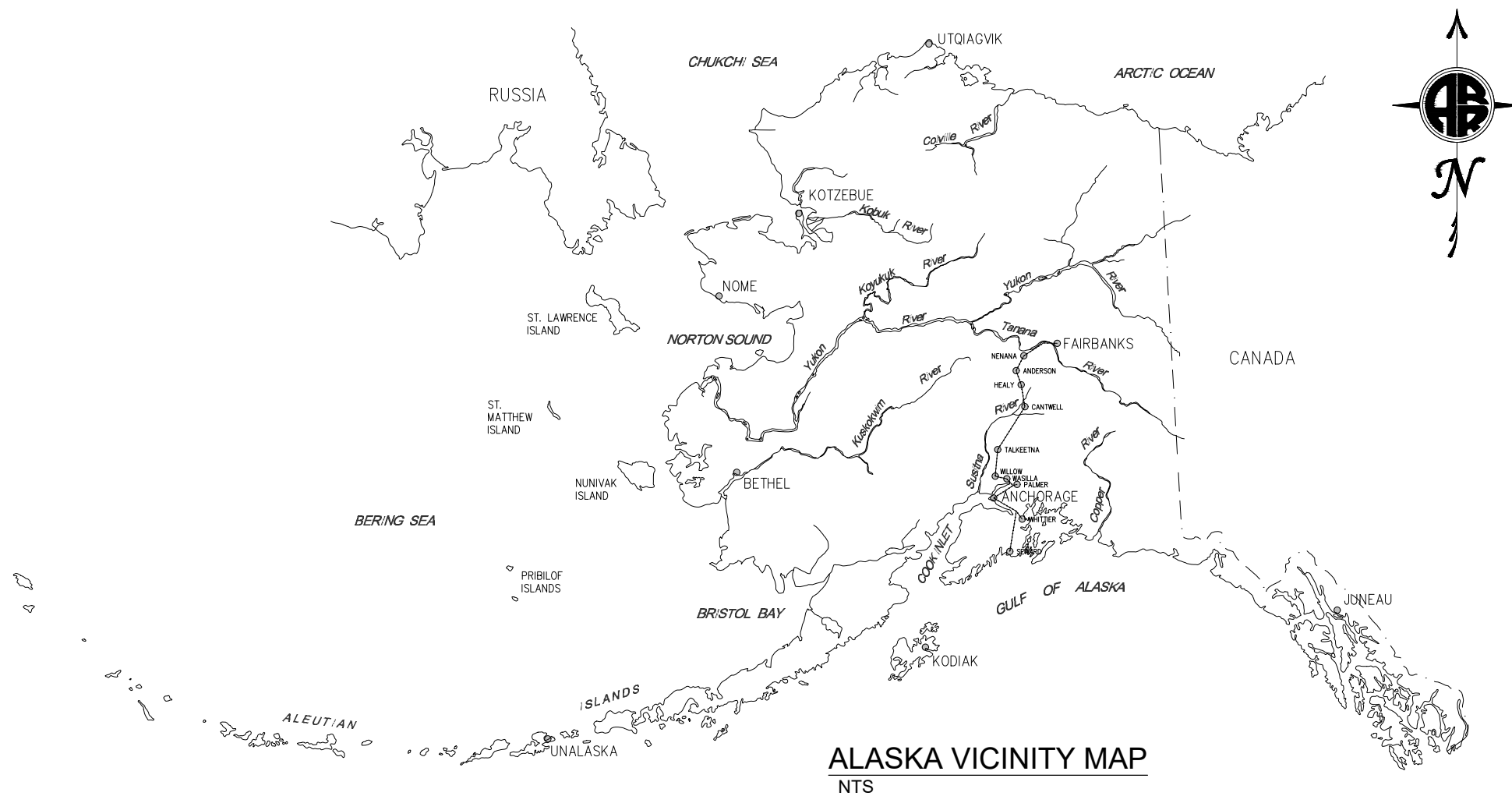
ALASKA RAILROAD CORPORATION

ENGINEERING SERVICES

P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

CONCRETE BALLAST DECK (CBD) STANDARD DRAWINGS PRELIMINARY PLAN SET

MAY 2025



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DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
<small>ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300</small>	
<small>KEY MAP</small> 	
<small>ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500</small>	<small>PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD) SHEET TITLE: COVER SHEET</small>
AFE NO.	TBD
YEAR	2025
SHEET	01 of 19

**PRELIMINARY
NOT FOR CONSTRUCTION**

DRAWING LOCATION: P:\ENGINEERING\BRIDGES\00 - BRIDGE STANDARD PLANS\28' STANDARD CBD BRIDGE REPLACEMENT\CBD STANDARDS 2024.DWG
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GENERAL NOTES

- 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 ARRC SSC Section 309, "Railroad Ballast".
- Bridge drainage system pipe shall be 3" MAX Dia., schedule 80, PVC.
- All dimensions shown on the plans are true horizontal and true vertical at 68° F normal temperature.

DESIGN NOTES

- This Standard has been designed in accordance with the 2025 edition of the ARRC Standard Specifications For Construction (SSC).
- Two Row Bent is required every 140' of bridge length for longitudinal load (max spacing of 140').
- The loads described as follows are combined as required by AREMA Service Load Design:
D = Dead Load of complete structure with 30" maximum ballast depth.
L = Live Load, Cooper E-80 with maximum offset between the centerline of track and center of the longitudinal joint between beams of 3"(tangent) or 6"(curve). E-80 Alternate Live Load is not considered.
I = Impact based on AREMA Chapter 8.
W = Wind of 30 psf on loaded bridge and 50 psf on unloaded bridge.
WL = Wind on Live Load of plf.
LF = Longitudinal Force from Live Load.
E = Earth pressure force.
EQ = Earthquake Load based on AREMA Chapter 9, with an acceleration coefficient of 0.25, return period of 100 years and soil profile type I or II.
ICE = Ice pressure of 200 psi with a thickness of 1.25'.

PILE DRIVING NOTES

MANUFACTURE

- Pipe must be fabricated from a listed base metal plate found in SSC Section 715, Steel For Piles.
- Mill certification documentation is required (SSC 715-2.03-.04). In addition, chemical composition documentation is required for piling supplied under the specification for ASTM A252 Grade 2.
- Piling shall have square or bevel ends.
- Splice rings are compression fit mechanical splicer to match pile diameter and coating where provided.
- Drive shoe are inside flange and open ended matching pile diameter with mill finish.
- 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.
- Delivery: Piling and associated materials shall be delivered, FOB, to:
Alaska Railroad Corporation
485 Ocean Dock Road
Anchorage, Alaska 99501

STEEL

- Piles - ASTM A252, Grade 3, split seam welded, upon approval, split seam welded pipe conforming to ASTM A53 Grade B, API Specifications 2B, or API Specification 5L X52 PSL2 may be used.
- Pile splices - ASTM A572 Grade 36.
- Backing rings - provided by manufacturer or an approved alternate equal to a minimum thickness of ¼" and a width of 4".

DESIGN

- All piles shall be driven to capacity given in Design Tables per the Plan Set.
- Depth of piles to be determined by project engineer in accordance with plan design loads.
- Estimated capacity of driven piles shall be calculated using the Modified ENR formula, with Factor of Safety of 5. Pile driving records and estimated capacity shall be submitted to the engineer. Alternate methods such as Gates or PDA testing may also be considered at the Railroad's discretion.
- Mark every pile with dimension indicating the pile depth from cutoff to point of pile. The dimension shall be rounded to the nearest foot. The mark shall be welded on the outside face, low mile post side on the pile flange, approximately 1'-0" below the bottom of the cap, and in numbers of approximately 3" in height. If a pile is not exposed, no mark is required.

GALVANIZED PIPE PILE

- Where specified, galvanized coating for pipe piles shall conform to ASTM A123. Pickle per SSPC No. 8 and Hot-Dipped Galv. per current ASTM A123. Coating weight 2.3 oz. per sq. ft. (Grade 100).
- Provide 3" Mask on each end of Pile.

SPLICES

- Splices shall be made a sufficient distance above the ground or water (not less than one foot) so that the splice can be observed during driving. The number of splices shall be kept to a minimum. Splicing cut-offs or short pieces to make a main bearing pile is not permitted. The pile shall be driven so that the upper splice is at least 10 feet below the ground surface.

TYPICAL INSTALLATION:

- STAGE MATERIALS AND EQUIPMENT.
- LAYOUT BENT CENTERS AND PILE LOCATIONS.
- RELOCATE AND PROTECT FIBER OPTIC CABLE(S) AND TRAY(S).
- DRIVE PILES FOR ABUTMENTS AND INTERMEDIATE BENTS.
- MARK AND CUT OFF PILING AT MINUS 7'-6" FROM TOP OF TIE.
- FILL PILING WITH CONCRETE.
- SET AND WELD CAPS.
- STAGE CBD SECTIONS ALONGSIDE TRACK NEAR INSTALLATION ON DUNNAGE.
- REPLACE BRIDGE TIES WITH MAINLINE TIES ON TRESTLE.
- JACK AND SUPPORT TRACK NORTH AND SOUTH OF FIRST NEW SPAN LOCATION.

TOLERANCE

- Variations greater than ¼" per foot from from vertical or batter line shall not be allowed. The deviation of the top of the piles in a bent shall not exceed one inch from the plan location. Piles not meeting tolerance requirements or out of line as to impair usefulness, or piles that are damaged in driving as to impair structural capacity, shall be pulled and re-driven or an additional pile shall be driven to provide added support.

MISCELLANEOUS STEEL SPECIFICATIONS:

- Design and Workmanship - Per current ARRC Standard Specifications For Construction (SSC).
- Miscellaneous Steel - Per current ASTM A36 Specification, unless otherwise noted.
- Steel Coating - Unless otherwise noted, pickle per SSPC No. 8 and Hot-Dipped Galv. per current ASTM A123 (Grade100). Coating weight 2.3 oz. per sq. ft. Bolts and nuts to be zinc plated per ASTM A153.
- Welding - Arc Process per current ARRC SSC 504-3.01(7), Welding.
- High-Strength bolts (including nuts and washers) unless otherwise noted shall be ASTM F3125 Grade A325, Type 1. Nuts shall conform to ASTM A563. All bolts shall be 7/8" diameter unless noted otherwise. Diameter of bolt holes shall be 1/16" larger than nominal bolt diameter, unless noted otherwise. All bolts shall have one hardened steel washer conforming to ASTM F436 per bolt under the element to be turned.

PRECAST CONCRETE NOTES

CONCRETE

- All concrete materials, placement and workmanship shall be in accordance with Section 501: Concrete For Structures of the ARRC SSC.
- Minimum compression strength at 28 days shall be 4000 psi.
- Exposed surfaces shall be formed in a manner which shall produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90° or less are to be chamfered 3/4" x 3/4". Top surface to have a smooth finish, free of all float or trowel marks.
- Concrete shall be proportioned such that the water - cement ratio (by weight) does not exceed 0.45. Concrete shall contain a minimum of 6 1/2 sacks of cement per cubic yard of concrete.
- Cement shall be Type I or Type II Portland Cement, blended hydraulic cement, fly ash, ground granulated blast-furnace slag, or silica fume in accordance with ASTM C150 specifications.
- Aggregates shall be graded in accordance with ASTM C33 Specifications.
- Air content shall be between 5.5% and 6.5% (by volume).
- Admixtures shall not be used without approval by the Railroad.
- Curing shall be accomplished by wet curing or application of a Type 2 membrane.
- The Fabricator shall stencil the Fabricator's name, date of fabrication, lifting weight, bridge number and piece mark at location shown in drawings.
- Production procedures for the manufacture of precast members shall be in accordance with ARRC SSC Section 501-3.13, Precast Concrete Members.
- Dimensional tolerance governing the manufacture of precast members shall conform to ARRC SSC Section 501-3.10, Tolerances. Tolerance for location of lifting devices shall be ± 1/2".
- The Fabricator shall be responsible for loading and properly securing all precast concrete members for shipment. All concrete components shall be made available for inspection by Railroad at the Fabricator's plant prior to shipment, at the Railroad's discretion.

REINFORCING STEEL

- Reinforcing steel shall be deformed, new billet bars per ASTM A615 specifications and meet Grade 60 requirements.
- Fabrication of reinforcing steel shall be per Section 503 of the ARRC SSC. Dimensions of bending details are out to out of bar.
- Reinforcing steel shall be blocked and tied to proper location and securely wired against displacement. Tie wires shall be installed at every other bar intersection so that at least 50% of the intersections are tied. Tack welding of reinforcing is prohibited. Minimum concrete cover on reinforcing not otherwise noted shall meet ARRC SSC Section 503-3.04, Placing and Fastening.

STRUCTURAL STEEL

- Steel plates shall conform to ASTM A36 or A709-Grade 36 specifications.
- Studs shall be C1015, C1017 or C1020 cold drawn steel which conforms to ASTM A108 specifications. Shear studs are welded to embed plates as shown on pile cap drawings.
- Where galvanizing is not indicated, material shall be plain.

LIFTING ANCHORS

- Swift lift anchors shall be Dayton Richmond P-52 anchors or approved alternative with a safe working load sufficient for the weight of the precast element including form removal. The safe working load shall provide a minimum safety factor of 4.

PRESTRESSED CONCRETE NOTES

CONCRETE

- All concrete materials, placement and workmanship shall be in accordance with Section 502, Prestressing Concrete of ARRC SSC.
- Minimum compression strength at the transfer of the prestressing force shall be 4500 psi and at 28 days shall be 6000 psi (ASTM A416). Minimum compression strength at diaphragm shall be 4500 psi (Class A-A per AKDOT Subsection 501-1.01 and 501-2.02).
- Exposed surfaces shall be formed in a manner which shall produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90° or less are to be chamfered 3/4" x 3/4". Top surface to have a smooth finish, free of all float or trowel marks.
- Concrete shall be proportioned such that the water - cement ratio (by weight) conforms to Table 502-2.01 of ARRC SSC for each type of concrete.
- Cement shall be Type I or Type II Portland Cement, blended hydraulic cement, fly ash, ground granulated blast-furnace slag, or silica fume in accordance with ASTM C150 specifications.
- Aggregates shall be graded in accordance with ASTM C33 for each type of concrete.
- Air content (by volume) shall be in accordance with ASTM C26 for each type of concrete..
- Admixtures shall not be used without approval by the Railroad.
- Curing shall be accomplished by wet curing or application of a Type 2 membrane per ASTM C309.
- The Fabricator shall stencil the Fabricator's name, date of fabrication, lifting weight, bridge number and piece mark at location shown in drawings.
- Dimensional tolerance governing the manufacture of precast members shall conform to Section 502-3.04 of the ARRC SSC. Tolerance for location of lifting devices shall be ± 1/2".
- The Fabricator shall be responsible for loading and properly securing all precast concrete members for shipment. All concrete components shall be made available for inspection by Railroad at the Fabricator's plant prior to shipment, at the Railroad's discretion.
- The area around all lifting loops or devices shall be recessed so that the loops can be removed to a depth of 1" and grouted.
- Ends of the strands shall be burned off and recessed to a depth of 1". Such recession 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 30 days prior to fabrication.
- Copies of the concrete mix design shall be submitted to Alaska Railroad for approval by the chief engineer 30 days prior to the start of the casting operation.

PRESTRESSING STRAND

- All prestressing strands shall be 1/2" diameter, seven wire, uncoated, low relaxation with a minimum f's=270 ksi and meet the requirements of ASTM A416 specifications. Initial prestress shall be 0.75 f's=30,983 lbs per strand.
- Strand shall be tested in accordance with PCI recommendations (Maustafa Method) and certified by the fabricator according to ARRC SSC 721-2.04, as having adequate band characteristics to satisfy the prediction equation for transfer and development length given in AREMA.

REINFORCING STEEL

- Reinforcing steel shall be deformed, new billet bars per ASTM A615 specifications and meet Grade 60 requirements.
- Fabrication of reinforcing steel shall be per Section 503-3.03 of ARRC SSC. Dimensions of bending details are out to out of bar.
- Reinforcing steel shall be blocked and tied to proper location and securely wired against displacement. Tie wires shall be installed at every other bar intersection so that at least 50% of the intersections are tied. Tack welding of reinforcing is prohibited. Minimum concrete cover on reinforcing not otherwise noted shall meet ARRC SSC Section 503-3.04, Placing And Fastening.

LIFTING ANCHORS

- Swift lift anchors shall be Dayton Richmond P-52 anchors or approved alternative with a safe working load sufficient for the weight of the precast element including form removal. The safe working load shall provide a minimum safety factor of 4.

BEARING NOTES

- Bearing pad material shall be laminated elastomer made of natural rubber having a 60 durometer hardness. Conforming to Grade 5 of the current ARRC SSC Section 720-2.01 specifications.

CAST-IN-PLACE CONCRETE NOTES

CONCRETE

- All concrete materials, placement and workmanship shall be in accordance with Section 501, Concrete For Structures of ARRC SSC. This section of notes applies to all concrete work except for drilled shafts.
- Formwork tolerances shall be in accordance with ARRC SSC Section 501-3.12, Forms and Falsework.
- Minimum compression strength at 28 days shall be 4000 psi.
- Concrete shall be proportioned such that the water - cement ratio (by weight) does not exceed 0.45.
- Cement shall be Type I or Type II Portland Cement, blended hydraulic cement, fly ash, ground granulated blast-furnace slag, or silica fume in accordance with ASTM C156 specifications.
- Aggregates shall be graded in accordance with ASTM C33 Specifications.
- Air content shall be between 5.5% and 6.5% (by volume).
- Admixtures shall not be used without approval by the Railroad.
- Curing shall be accomplished by wet curing or application of a Type 2 membrane per ASTM C309.
- Concrete work shall conform to all requirements of Section 501-3.09, Protection Of Concrete. Contractor shall submit detailed procedures for the production, transportation, placement, protection, curing, and temperature monitoring of concrete during cold weather to the Railroad for approval.

REINFORCING STEEL

- Reinforcing steel shall be deformed, new billet bars per ASTM A615 specifications and meet Grade 60 requirements. Bars shall be non-coated.
- Fabrication of reinforcing steel shall be per Section 503-3.03 of ARRC SSC. Dimensions of bending details are out to out of bar.
- Reinforcing steel shall be blocked and tied to proper location and securely wired against displacement. Tie wires shall be installed at every other bar intersection so that at least 50% of the intersections are tied. Tack welding of reinforcing is prohibited. Minimum concrete cover on reinforcing not otherwise noted shall meet ARRC SSC Section 503-3.04, Placing And Fastening.

FIELD WELDING NOTES

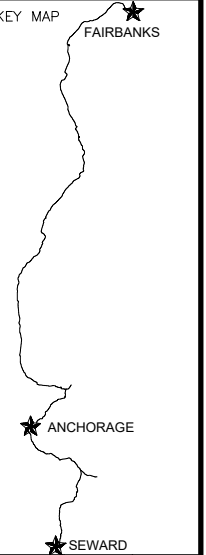
- Welding shall be accomplished with SMAW or FCAW Process.
- Welding shall be in compliance with the requirements specified in ARRC SSC Section 504, Steel Structures, except 3/16" fillet welds may be made with a single pass.
- Welding electrodes shall be E7018 for SMAW or E71T-7 for FCAW.
- Welders shall possess valid qualifications, which shall be furnished to the Railroad.
- Consider making pipe to cap perimeter weld in opposing quadrants to control heat build-up and limit risk of damaging cap.

RIPRAP SPECIFICATIONS:

- Riprap shall be placed to thickness, height and length shown on plans. Individual stones are to be keyed into each other to reduce void space in the finished product.
- Riprap subgrade shall be prepared to achieve the lines and grades shown on the plans prior to riprap placement. Any fill required in the subgrade shall be compacted to a density consistent with surrounding undisturbed material.

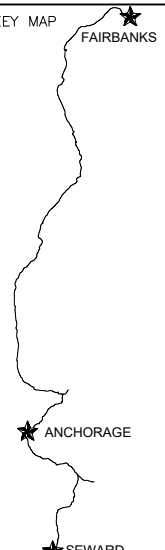
WOVEN FILTER FABRIC SPECIFICATIONS:

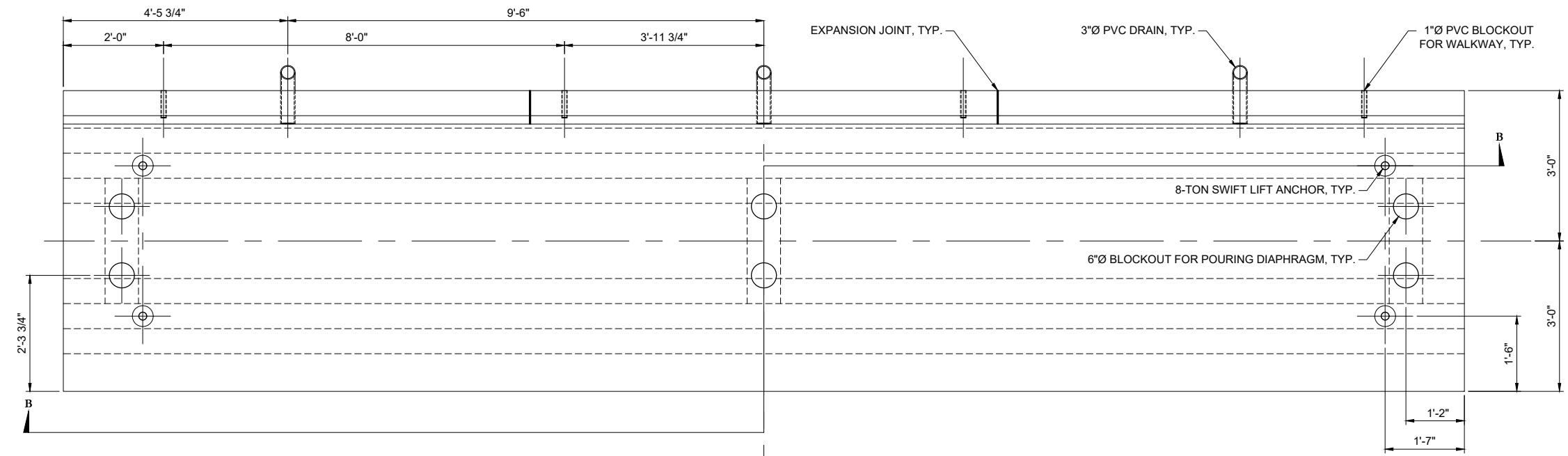
- Woven filtration fabric shall be installed between all riprap and underlying soil. Fabric material shall meet ARRC SSC Section 631, Geotextile For Subsurface Drainage And Erosion Control.
- Site preparation shall include removing vegetation, large stones, limbs, brush, roots, and other debris.
- Sheets placed in the improved bank and channel shall be oriented with the longer dimension parallel with the embankment.
- Upper sheets shall overlap the lower sheets with a minimum 18" overlap between individual fabric sheets.
- Include folds in fabric to minimize tension and stretching during settlement.
- Secure fabric with pins and washers at 2 to 5 foot spacing along the overlaps.
- Do not drop stones from height greater than 2 feet when placing riprap on filter fabric.

DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP	
ENGINEERING DEPARTMENT	P. O. BOX 107500 ANCHORAGE, ALASKA 99510-7500
PROJECT:	STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)
SHEET TITLE:	NOTES AND SPECIFICATIONS
AFE NO.	TBD
YEAR	2025
SHEET	02 of 19

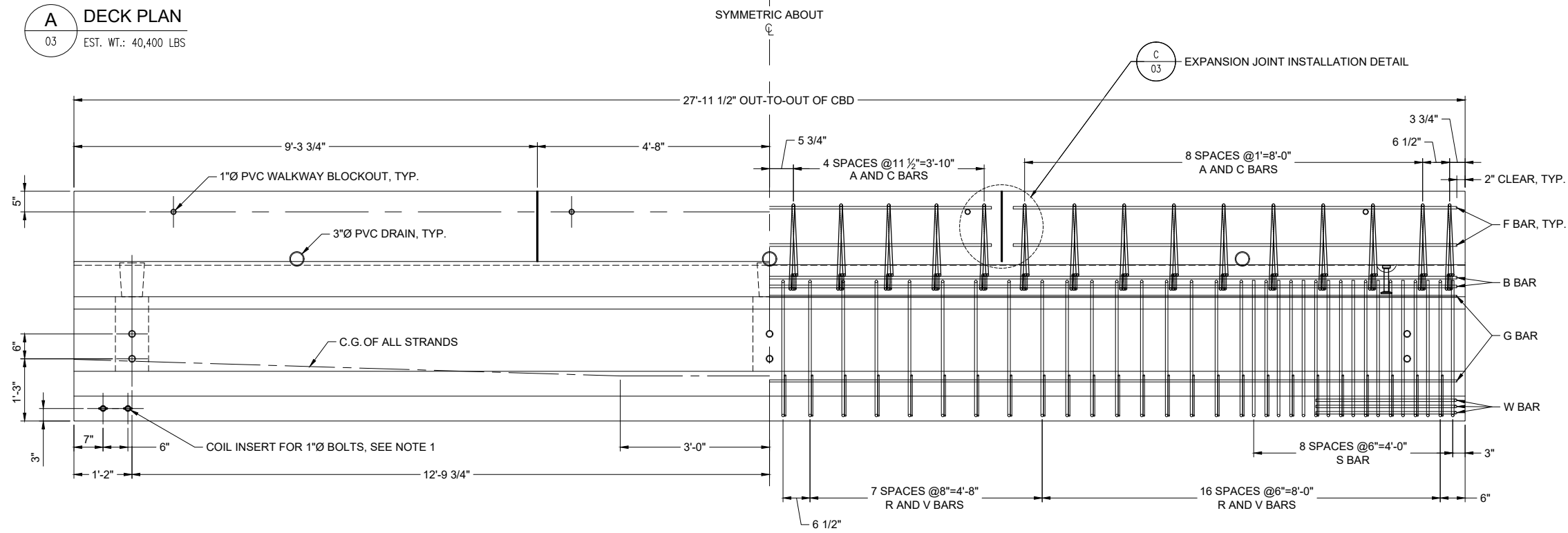
PRELIMINARY
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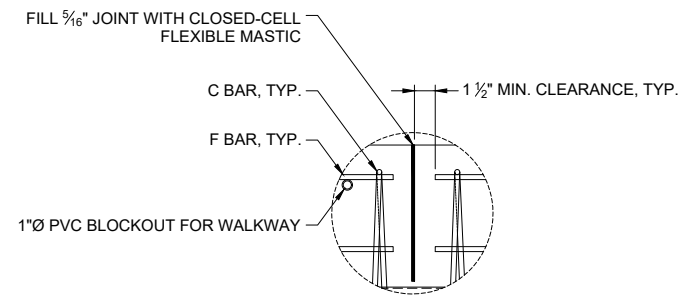
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ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP 	
ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD) SHEET TITLE: PRESTRESSED GIRDER PLAN, ELEVATION, AND DETAILS
AFE NO.	TBD
YEAR	2025
SHEET	03 of 19



A DECK PLAN
03 EST. WT.: 40,400 LBS



B-B ELEVATION SECTION
03

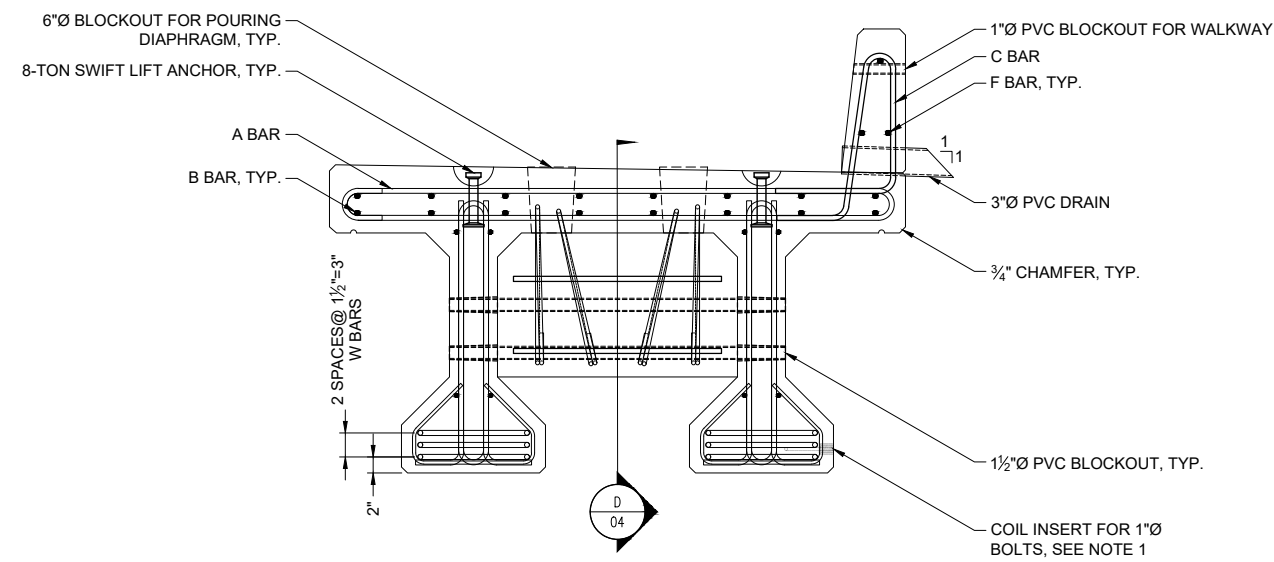


C EXPANSION JOINT DETAIL
03

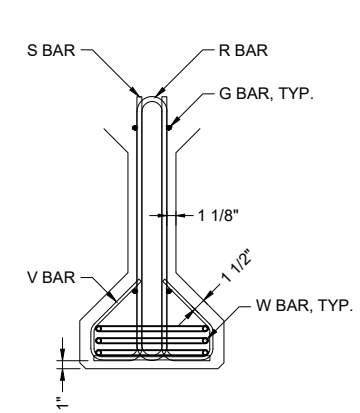
NOTES

1. COIL INSERTS ON CURB SIDE ONLY.
2. PRIOR TO POURING DIAPHRAGM AND CURB, ENSURE GIRDERS ARE RESTING LEVEL AND SQUARE.
3. COMPRESSIVE STRENGTH OF THE CAST-IN-PLACE REINFORCED CONCRETE CURB AND DIAPHRAGM SHALL EXCEED 4,500 PSI AT 28 DAYS.
4. ENSURE OUTER CURB FACE IS PLUMB WITH OUTER DECK FACE.
5. BUSH AND CLEAN CONSTRUCTION JOINTS PRIOR TO POURING.

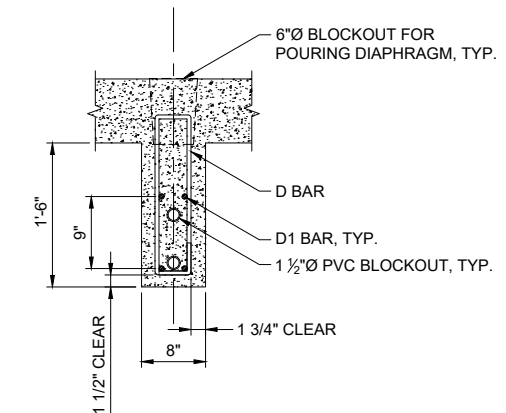
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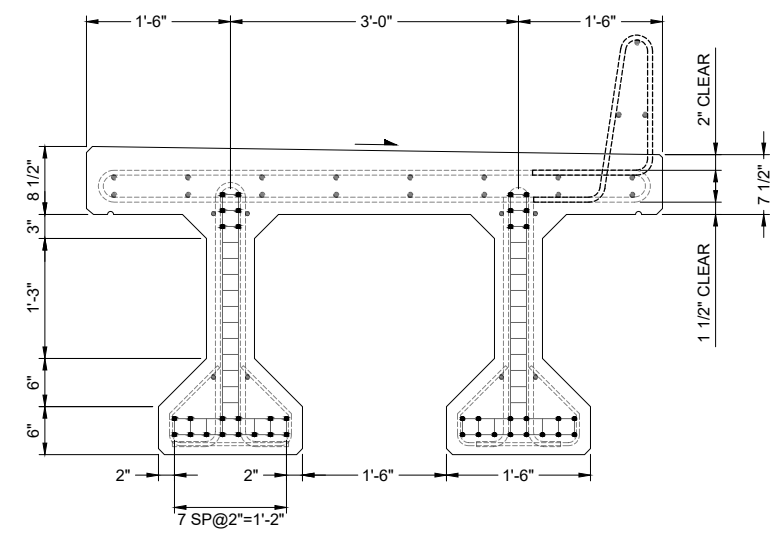
A SUPERSTRUCTURE SECTION
04



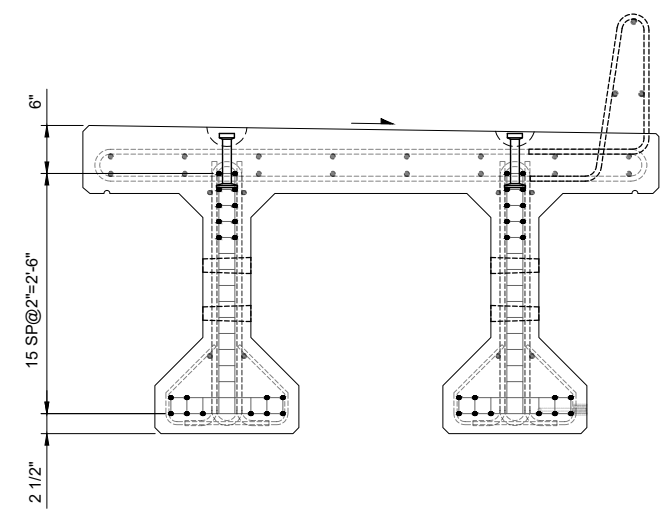
B GIRDER SECTION
04



D DIAPHRAGM SECTION
04 SEE NOTE 3

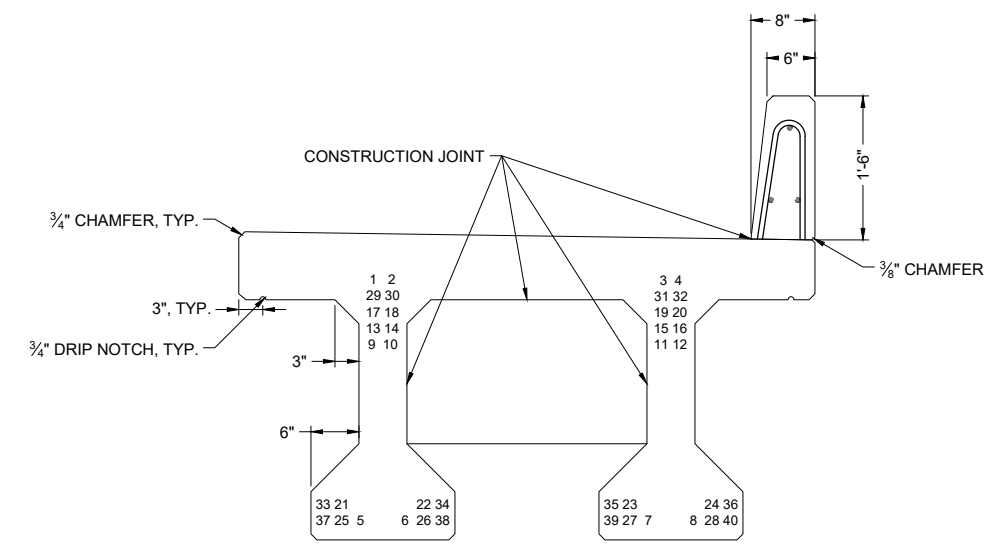
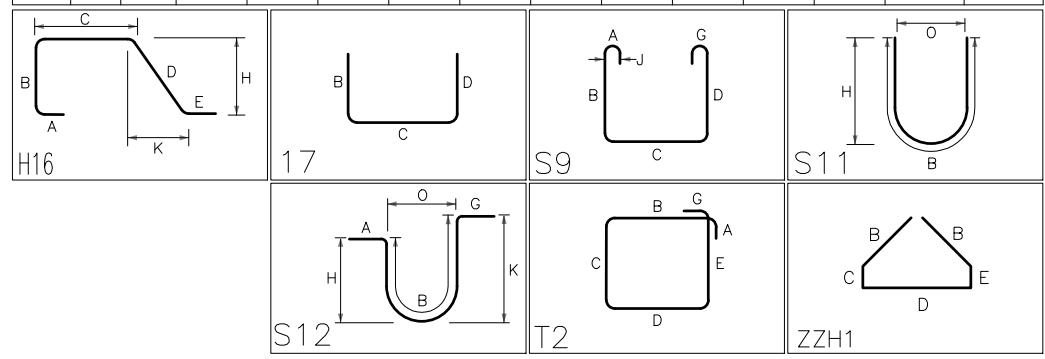


C STRAND PATTERN AT CENTERLINE
04 (20 STRANDS PER GIRDER)



C STRAND PATTERN AT BEARING
04 (20 STRANDS PER GIRDER)

28' CBD REINFORCING SCHEDULE														
BAR NAME	SIZE	TYPE	A	B	C	D	E	G	H	J	K	O	LENGTH	# PER SPAN
A	#5	S9	0'-8"	5'-9"	0'-4"	5'-9"	--	0'-9"	--	0'-4"	--	--	12'-9"	60
B	#5	STR.	--	--	--	--	--	--	--	--	--	--	27'-7 1/2"	32
C	#5	H16	1'-3"	1'-5 1/2"	0'-4"	1'-10"	0'-7"	--	1'-9 7/8"	--	0'-3"	--	5'-1"	60
D	#4	T2	0'-4 1/2"	1'-8"	0'-4 1/2"	1'-8"	0'-4 1/2"	0'-4 1/2"	--	--	--	--	4'-4 7/8"	24
D1	#5	STR.	--	--	--	--	--	--	--	--	--	--	2'-2"	24
F	#5	STR.	--	--	--	--	--	--	--	--	--	--	8'-11"	18
G	#3	STR.	--	--	--	--	--	--	--	--	--	--	27'-6"	16
R	#5	S12	0'-6"	5'-6 1/4"	--	--	--	0'-6"	2'-9"	--	--	0'-2 1/2"	6'-4 3/4"	200
S	#5	S11	--	5'-6 1/4"	--	--	--	--	2'-9"	--	--	0'-2 1/2"	5'-6 1/4"	72
V	#3	ZZH1	--	0'-8 1/2"	0'-3 1/2"	1'-3 1/4"	0'-3 1/2"	--	--	--	--	--	3'-2"	200
W	#5	17	--	2'-10"	1'-2"	2'-10"	--	--	--	--	--	--	6'-7 5/8"	24



F STRAND CUTTING PATTERN DETAIL
04 SEE NOTES 2 THRU 5

NOTES

1. COIL INSERTS ON CURB SIDE ONLY.
2. AFTER CONCRETE HAS REACHED COMPRESSIVE STRENGTH REQUIRED FOR TRANSFER OF PRESTRESSING FORCE, CUT THE PRESTRESSING STRANDS IN THE ORDER SHOWN.
3. PRIOR TO POURING DIAPHRAGM AND CURB, ENSURE GIRDERS ARE RESTING LEVEL AND SQUARE.
4. ENSURE OUTER CURB FACE IS PLUMB WITH OUTER DECK FACE.
5. BUSH AND CLEAN CONSTRUCTION JOINTS PRIOR TO POURING.
6. COMPRESSIVE STRENGTH OF THE CAST-IN-PLACE REINFORCED CONCRETE CURB AND DIAPHRAGM SHALL EXCEED 4,500 PSI AT 28 DAYS.

PRELIMINARY
NOT FOR CONSTRUCTION

DESIGNED BY: _____
 CHECKED BY: _____
 DRAFTED BY: MCG

ALASKA RAILROAD CORPORATION
 PO BOX 107500, ANCHORAGE, AK 99510-7500
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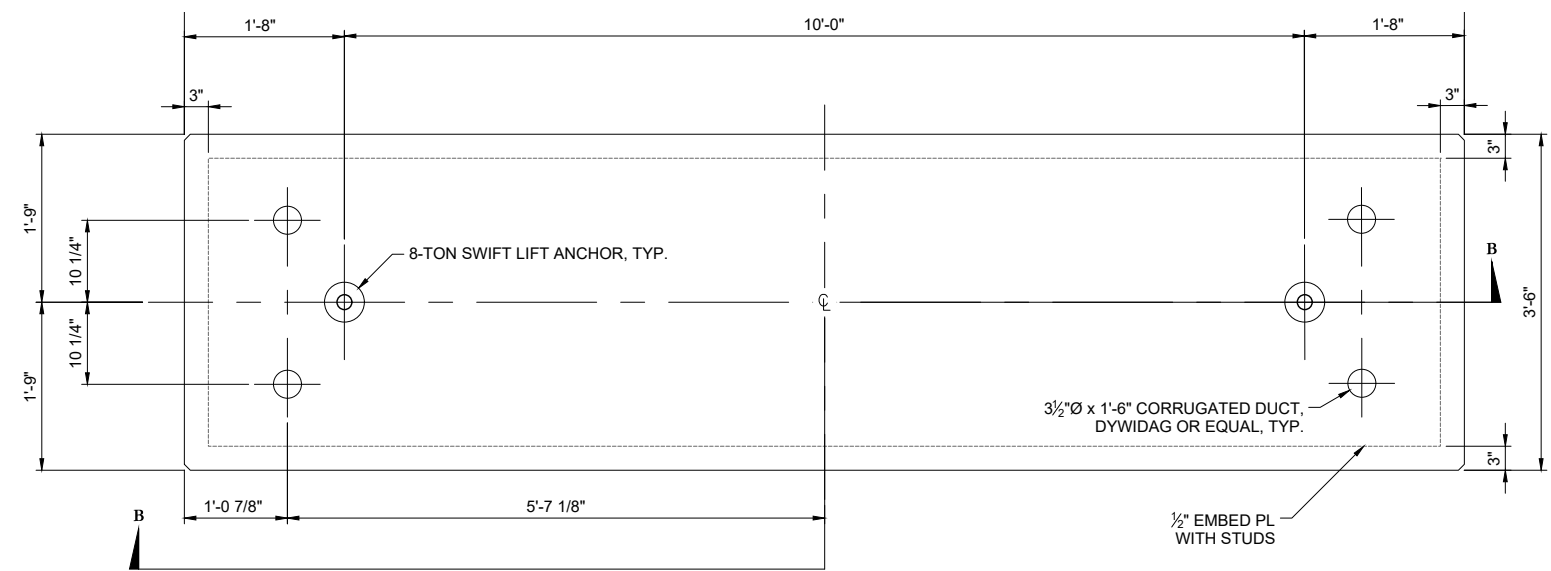
KEY MAP: FAIRBANKS, ANCHORAGE, SEWARD

ENGINEERING DEPARTMENT
 P.O. BOX 107500
 ANCHORAGE, ALASKA 99510-7500

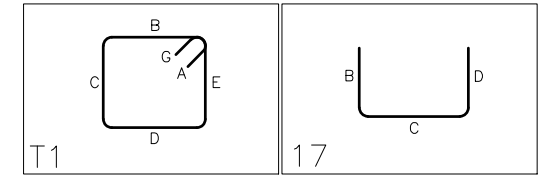
PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)
 SHEET TITLE: PRESTRESSED GIRDER SECTIONS AND DETAILS

AFE NO. TBD
 YEAR 2025
 SHEET 04 of 19

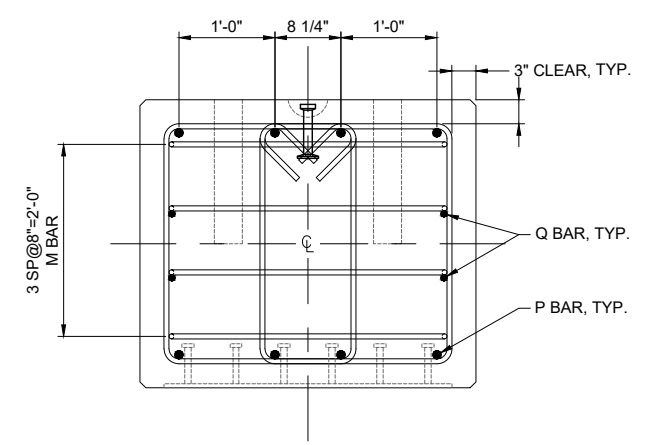
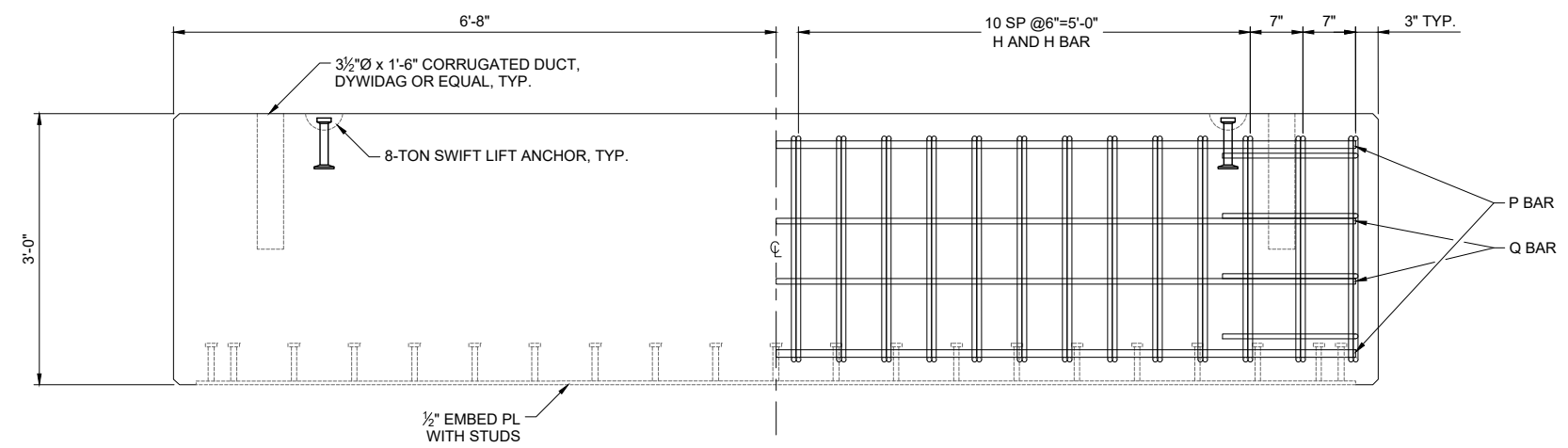
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 DATE: 11/7/2025 4:57 PM
 TIME: 4:57 PM
 SCALE: AS NOTED
 PUBLISHED: CTB
 ARRC_CTB_2023.CTB



SINGLE ROW PILE CAP REINFORCING SCHEDULE										
BAR NAME	SIZE	TYPE	A	B	C	D	E	G	LENGTH	# PER CAP
P	#8	STR.	--	--	--	--	--	--	12'-10"	8
Q	#6	STR.	--	--	--	--	--	--	12'-10"	4
H	#5	T1	0'-5 1/2"	2'-6"	2'-0"	2'-6"	2'-0"	0'-5 1/2"	9'-11"	52
M	#5	17	--	1'-6"	2'-10 3/4"	1'-6"	--	--	5'-10 3/4"	8

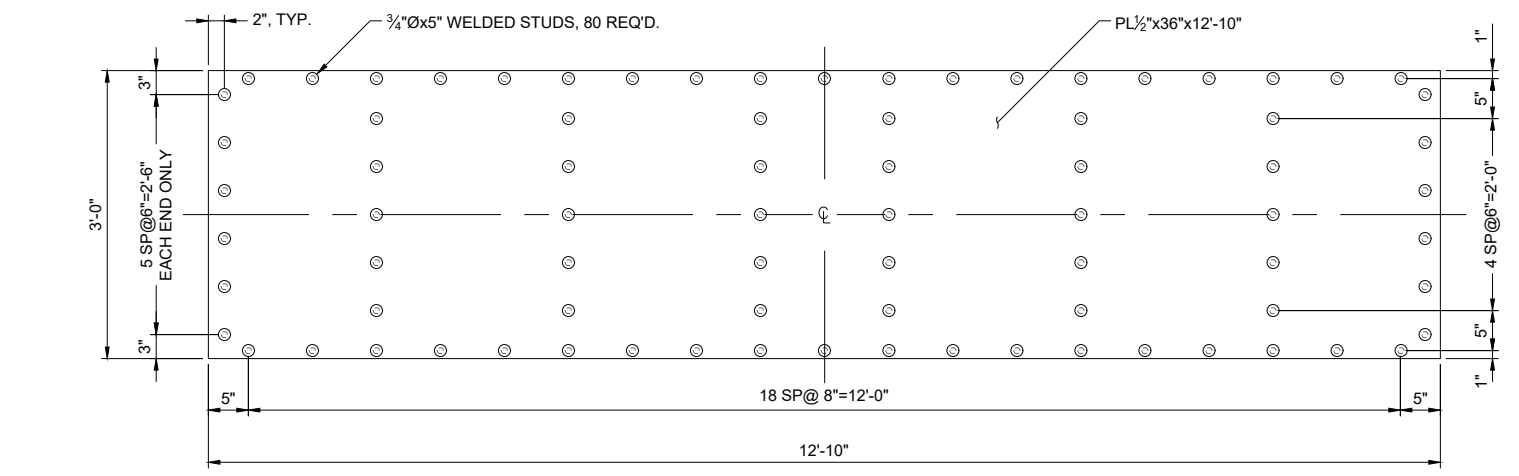


A SINGLE ROW PILE CAP PLAN
05



B-B SINGLE ROW PILE CAP SECTION
05 EST. WT.: 22,045 LBS

C SINGLE ROW PILE CAP ELEVATION
05



D SINGLE ROW PILE CAP EMBEDDED PLATE DETAIL
05

- NOTES**
- PROVIDE 3/4" CHAMFER FOR ALL CONCRETE CORNERS.
 - THE TOP AND BOTTOM SURFACES MUST BE PARALLEL AND FINISHED FLAT WITH NO VARIANCES TO EXCEED 1/8" UNDER A 10' LONG STRAIGHT EDGE.
 - EXTRA ATTENTION SHOULD BE DIRECTED TO PLACEMENT OF THE DYWIDAGS SO THAT THEY ARE CONSISTENT WITH DRAWINGS.

**PRELIMINARY
NOT FOR CONSTRUCTION**

DESIGNED BY: _____
 CHECKED BY: _____
 DRAFTED BY: MCG

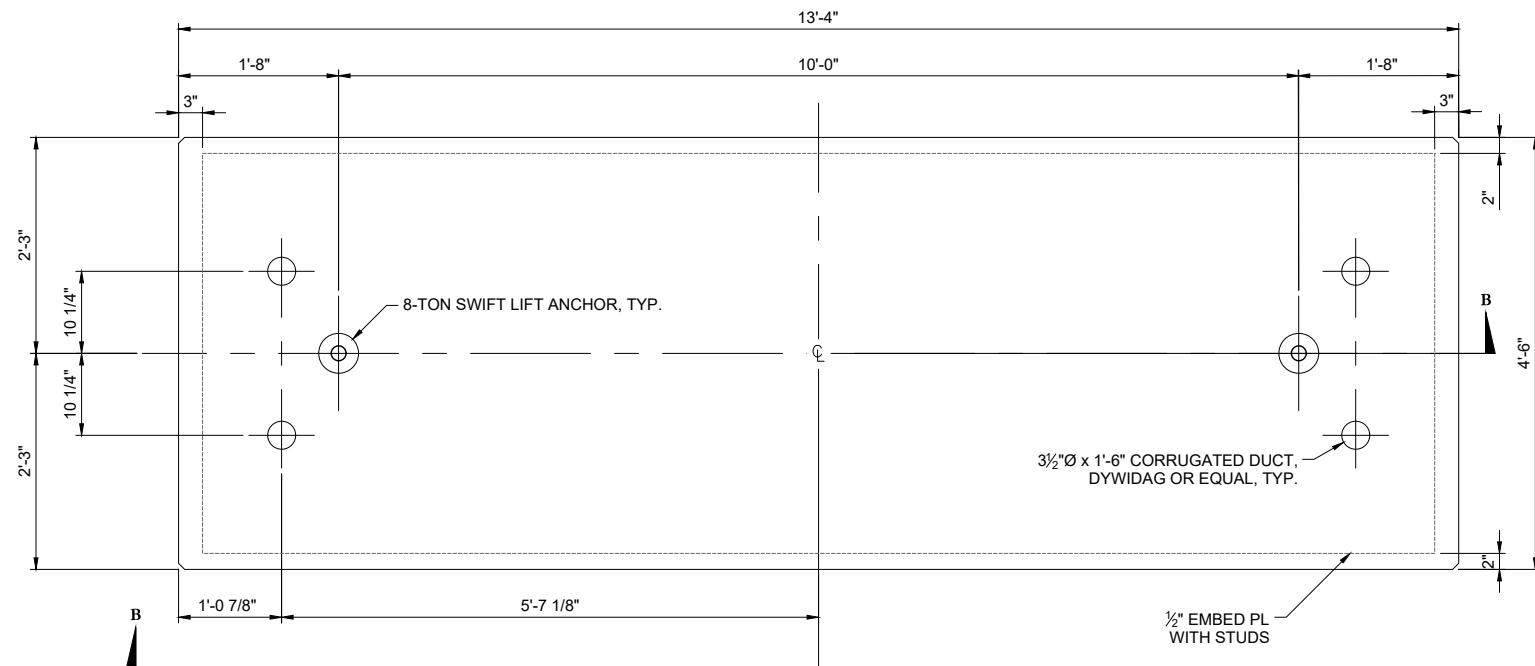
ALASKA RAILROAD CORPORATION
 PO BOX 107500, ANCHORAGE, AK 99510-7500
 327 W SHIP CREEK AVE
 ANCHORAGE, AK 99501
 (907) 265-2300

KEY MAP: FAIRBANKS, ANCHORAGE, SEWARD

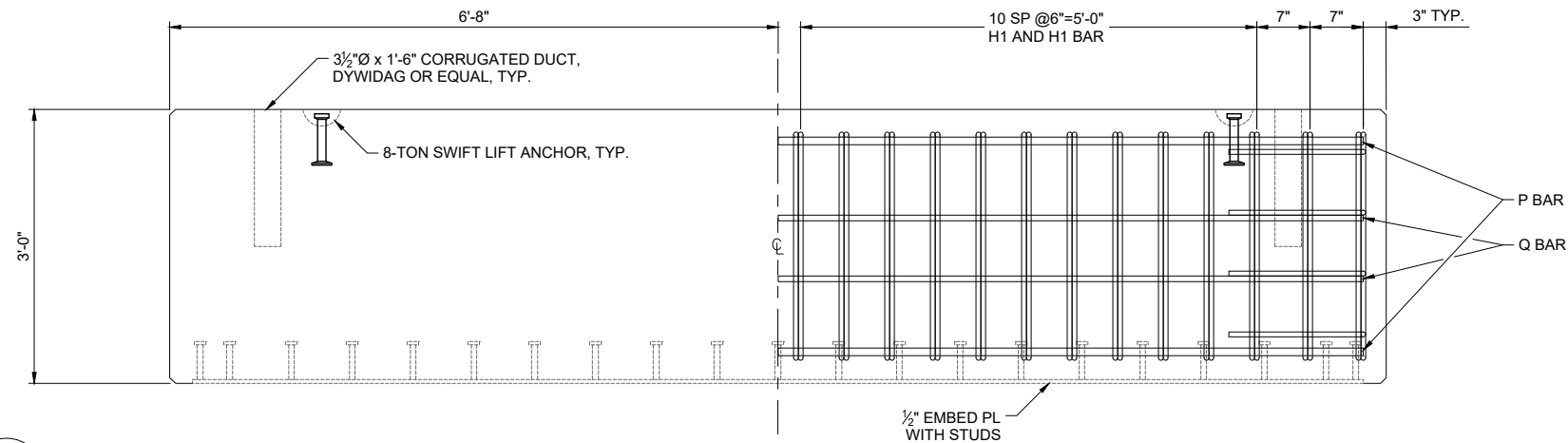
ENGINEERING DEPARTMENT
 P.O. BOX 107500
 ANCHORAGE, ALASKA 99510-7500

PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)
 SHEET TITLE: SINGLE ROW PILE CAP PLAN AND DETAILS

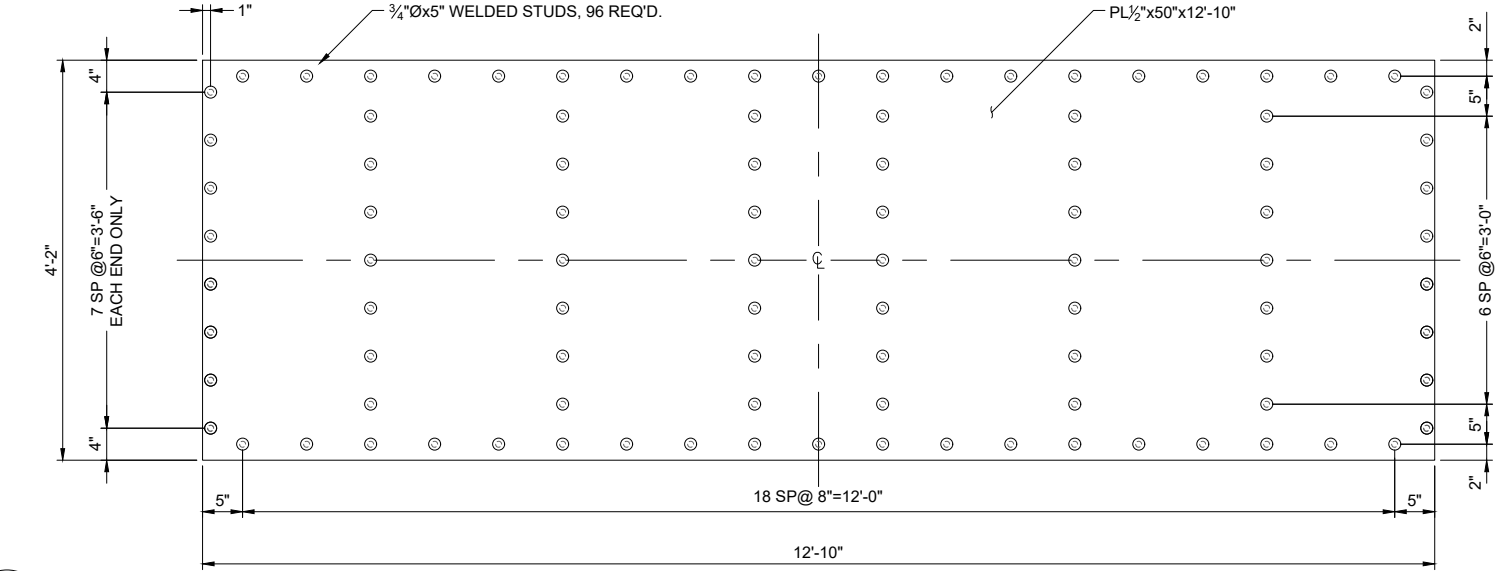
AFE NO. TBD
 YEAR 2025
 SHEET 05 OF 19



A DOUBLE ROW PILE CAP PLAN
06

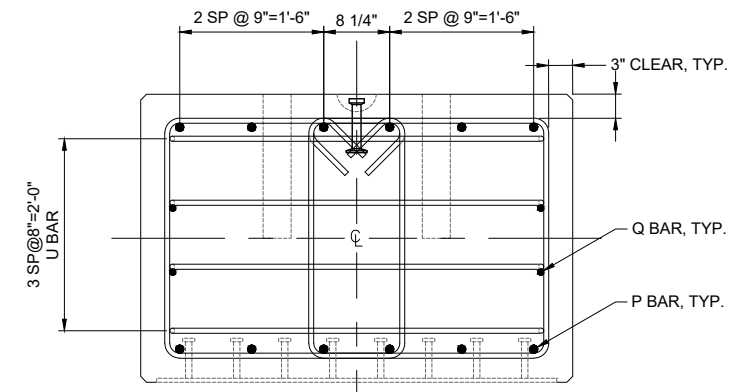
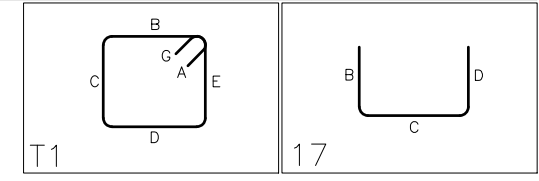


B-B DOUBLE ROW PILE CAP SECTION
06 EST. WT.: 28,200 LBS



D DOUBLE ROW PILE CAP EMBEDDED PLATE DETAIL
06

DOUBLE ROW PILE CAP REINFORCING SCHEDULE										
BAR NAME	SIZE	TYPE	A	B	C	D	E	G	LENGTH	# PER CAP
P	#8	STR.	--	--	--	--	--	--	12'-10"	12
Q	#6	STR.	--	--	--	--	--	--	12'-10"	4
H1	#5	T1	0'-5 1/2"	2'-6"	2'-0"	2'-6"	2'-0"	0'-5 1/2"	9'-11"	52
U	#5	17	--	1'-6"	3'-10 3/4"	1'-6"	--	--	6'-10 3/4"	8



C DOUBLE ROW PILE CAP ELEVATION
06

NOTES

1. PROVIDE 3/4" CHAMFER FOR ALL CONCRETE CORNERS.
2. THE TOP AND BOTTOM SURFACES MUST BE PARALLEL AND FINISHED FLAT WITH NO VARIANCES TO EXCEED 1/8" UNDER A 10' LONG STRAIGHT EDGE.
3. EXTRA ATTENTION SHOULD BE DIRECTED TO PLACEMENT OF THE DYWIDAGS SO THAT THEY ARE CONSISTENT WITH DRAWINGS.

**PRELIMINARY
NOT FOR CONSTRUCTION**

DESIGNED BY: _____
 CHECKED BY: _____
 DRAFTED BY: MCG

ALASKA RAILROAD CORPORATION
 PO BOX 107500, ANCHORAGE, AK 99510-7500
 327 W SHIP CREEK AVE
 ANCHORAGE, AK 99501
 (907) 265-2300

KEY MAP: FAIRBANKS, ANCHORAGE, SEWARD

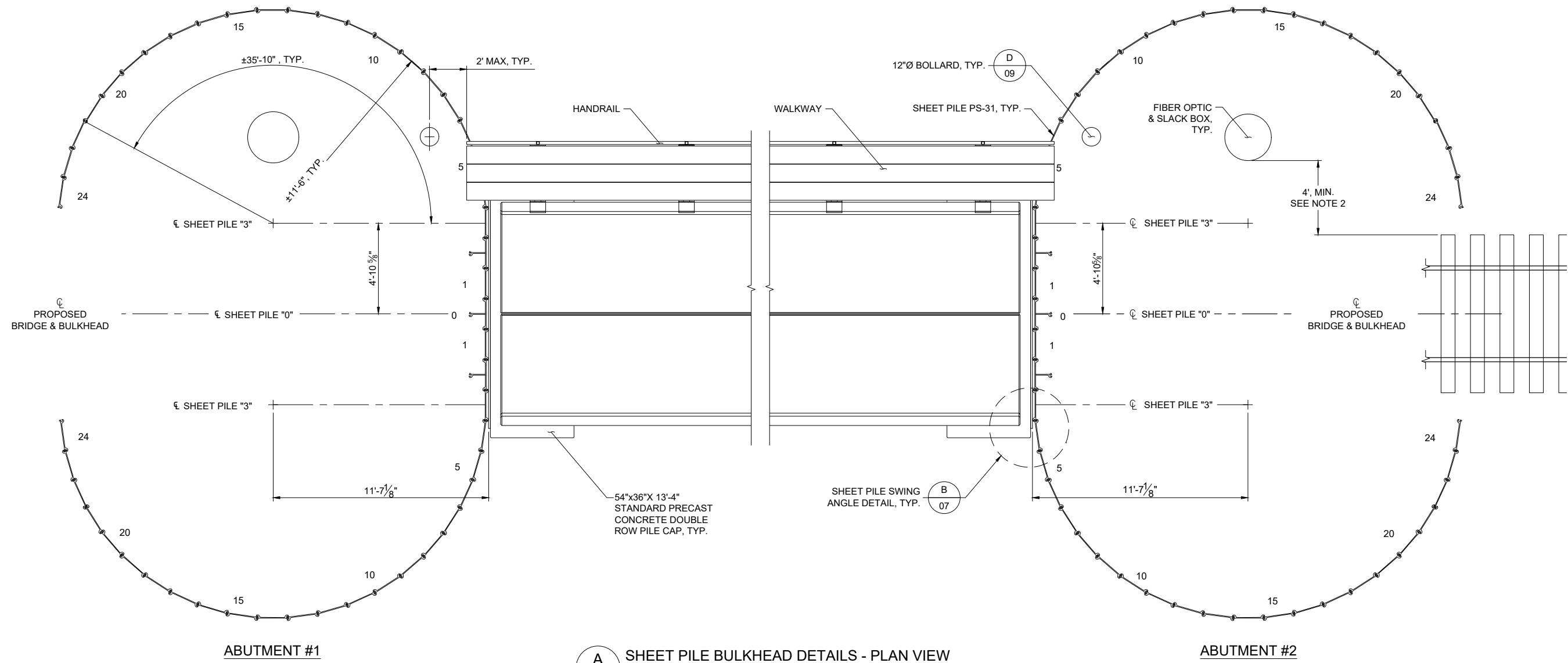
ENGINEERING DEPARTMENT
 P.O. BOX 107500
 ANCHORAGE, ALASKA 99510-7500

PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)
 SHEET TITLE: DOUBLE ROW PILE CAP PLAN AND DETAILS

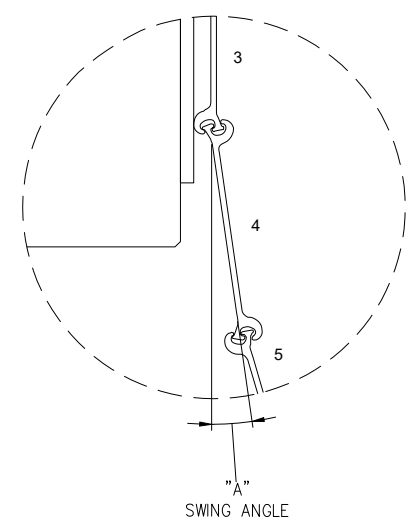
AFE NO. TBD
 YEAR 2025
 SHEET 06 OF 19

DRAWING LOCATION: P:\ENGINEERING\BRIDGES\00 - BRIDGE STANDARD PLANS\28' STANDARD CBD BRIDGE REPLACEMENT\CBD STANDARDS 2024.DWG
 DATE: 11/7/2025 4:57 PM
 SCALE: AS NOTED
 PUBLISHED CTB: ARRC_CTB_2023.CTB

DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP:	
ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD) SHEET TITLE: MULTI SPAN - SHEET PILE BULKHEAD DETAILS - PLAN VIEW
AFE NO.	TBD
YEAR	2025
SHEET	07 of 19



A SHEET PILE BULKHEAD DETAILS - PLAN VIEW



B SHEET PILE SWING ANGLE

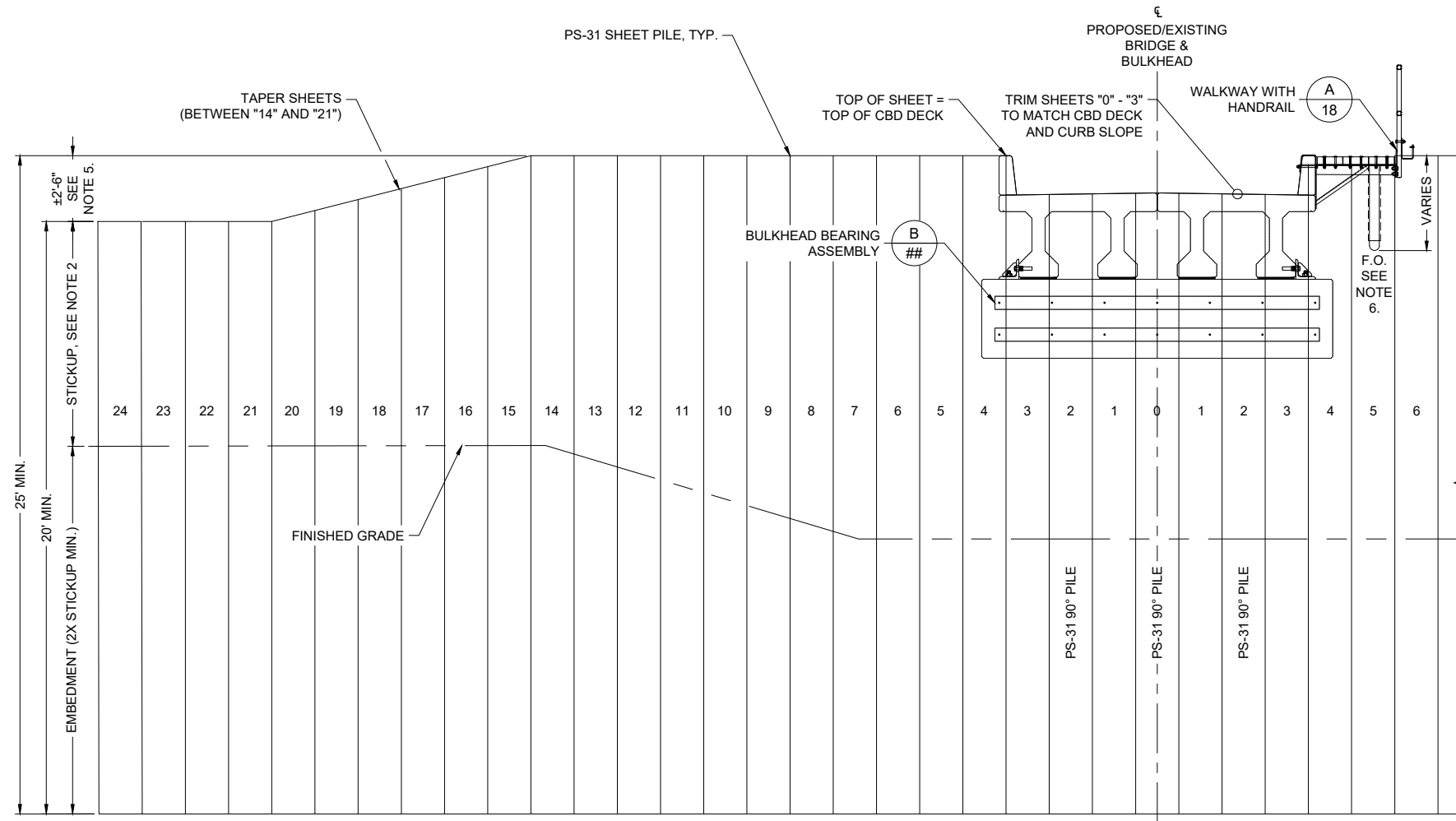
SHEET PILE SWING ANGLE TABLE

BENT #1		BENT #3	
SHEET PILES	ANGLE "A"	SHEET PILES	ANGLE "A"
0 - 3	0.0°	0 - 3	0.0°
4 - 24	8.2°	4 - 24	8.2°

NOTES

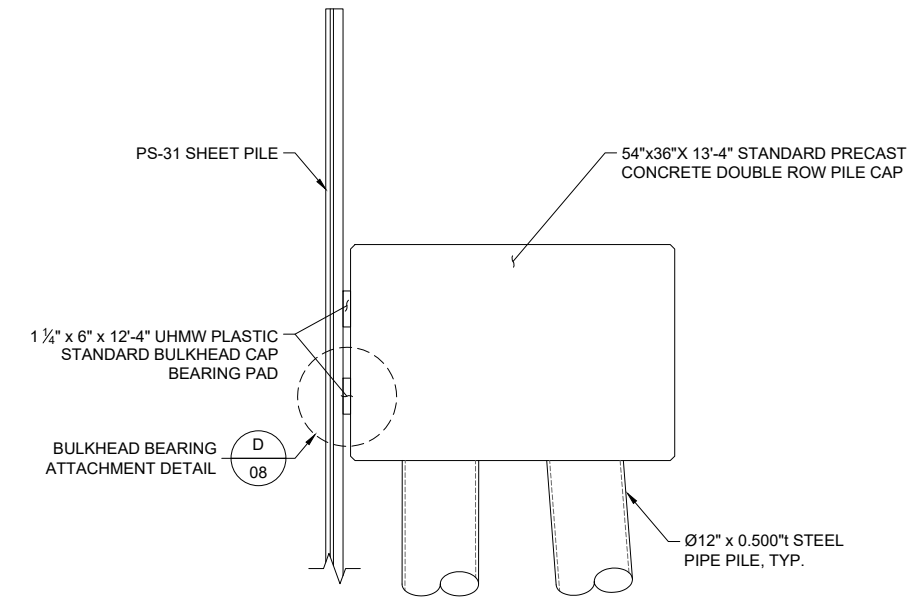
1. DECK PLATES DP-E AND T-20 NOT SHOWN FOR CLARITY.
2. UTILITY SLACK BOX TO BE INSTALLED BY OTHERS WITH 4 FEET MINIMUM DISTANCE FROM END OF TIE AND MINIMUM DEPTH OF 2 FEET.

PRELIMINARY
 NOT FOR CONSTRUCTION

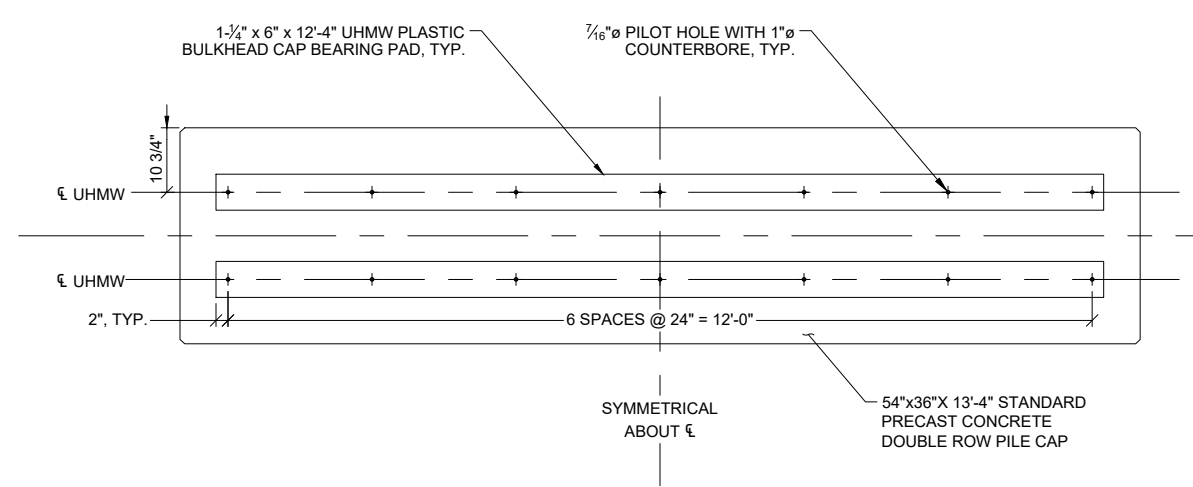


A SHEET PILE BULKHEAD DETAILS - ELEVATION VIEW
08

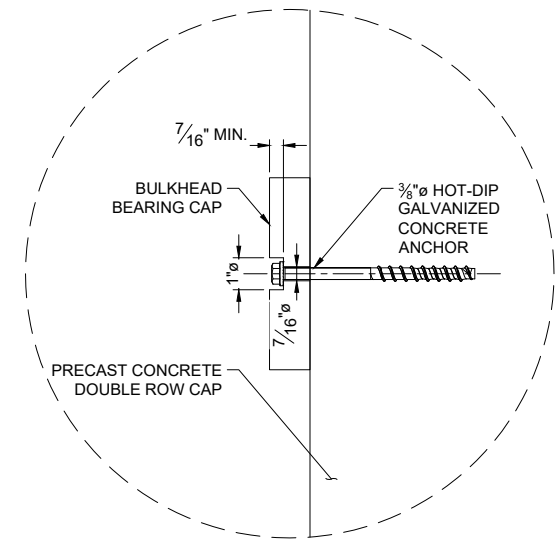
- NOTES**
1. SHEET PILES "0" AND "2" SHALL BE PS-31 90° T-PILES.
 2. SHEET PILE EMBEDMENT TO BE TWICE THE STICKUP MEASURED FROM FINISHED GRADE.
 3. FIELD CUT SHEET PILES WITHIN 0.25' OF THE BOTTOM OF THE SAFETY GRATING, WITHIN 1.0' OF THE OUTSIDE FACE OF THE HANDRAIL, AND A MINIMUM OF 0.5' OF THE OUTSIDE FACE OF THE CBD CURB.
 4. ALL SHEETS TO BE DRIVEN TO AN ELEVATION NO MORE THAN 1'-0" ABOVE THE TOP OF THE CBD CURB ELEVATION. FIELD CUT DRIVEN SHEETS TO THEIR FINAL ELEVATION.
 5. TOP OF SHEETS "21" THROUGH "24" ARE TO BE FIELD CUT A MINIMUM OF 0'-6" BELOW THE ELEVATION AT THE TOP OF THE CBD'S DECK (1'-0" BELOW BOTTOM OF TIE).
 6. WHERE APPLICABLE, CONTRACTOR TO COORDINATE WITH UTILITY OWNER FOR SIZE AND PLACEMENT OF SLOT. SLOT TO BE CUT IN WEB OF SHEET PILE NO CLOSER THAN 0.25" FROM KNUCKLE. CLOSURE PLATE TO BE A MINIMUM OF 0.500" THICK WITH 0.25" OVERLAP. WELD CLOSURE PLATE WITH $\frac{3}{16}$ " CONTINUOUS FILLET WELD ON BOTH EDGES OF EXTERIOR FACE AFTER FIBER OPTIC TRAY HAS BEEN INSTALLED.
 7. UPON SIGN OFF THE COMPLETED BULKHEAD, THE CONTRACTOR SHALL FIELD DRILL 1" DIAMETER DRAIN HOLES IN THE SHEET PILES 1'-0" ABOVE THE OUTER FINISHED GROUND SURFACE OF THE SHEET PILES. DRAIN HOLES SHALL BE A MAXIMUM OF 5'-0" SPACING LONGITUDINALLY AROUND THE CONSTRUCTED BULKHEAD.
 8. INCREASE THE DEPTH OF THE COUNTERBORE AS NEEDED TO ENSURE THAT THE BOLT HEAD IS NOT PROUD OF THE UHMW PLASTIC BULKHEAD BEARING PAD.



C BULKHEAD BEARING ASSEMBLY DETAIL - SECTION
08



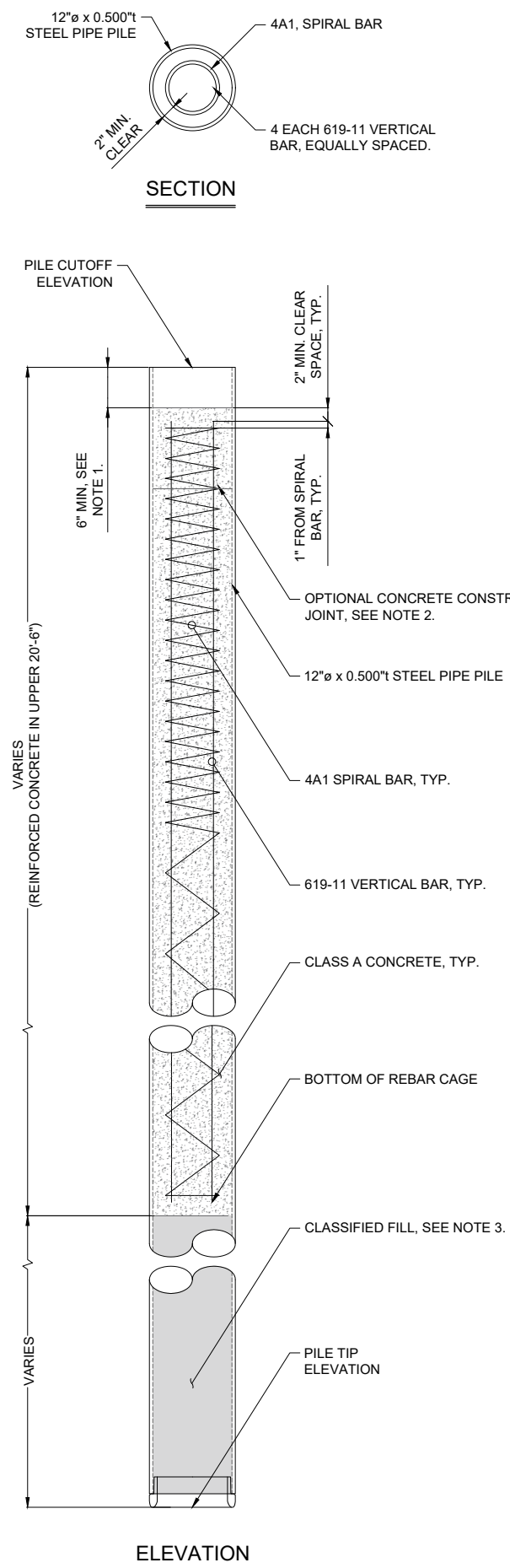
B BULKHEAD BEARING ASSEMBLY DETAIL - ELEVATION
08



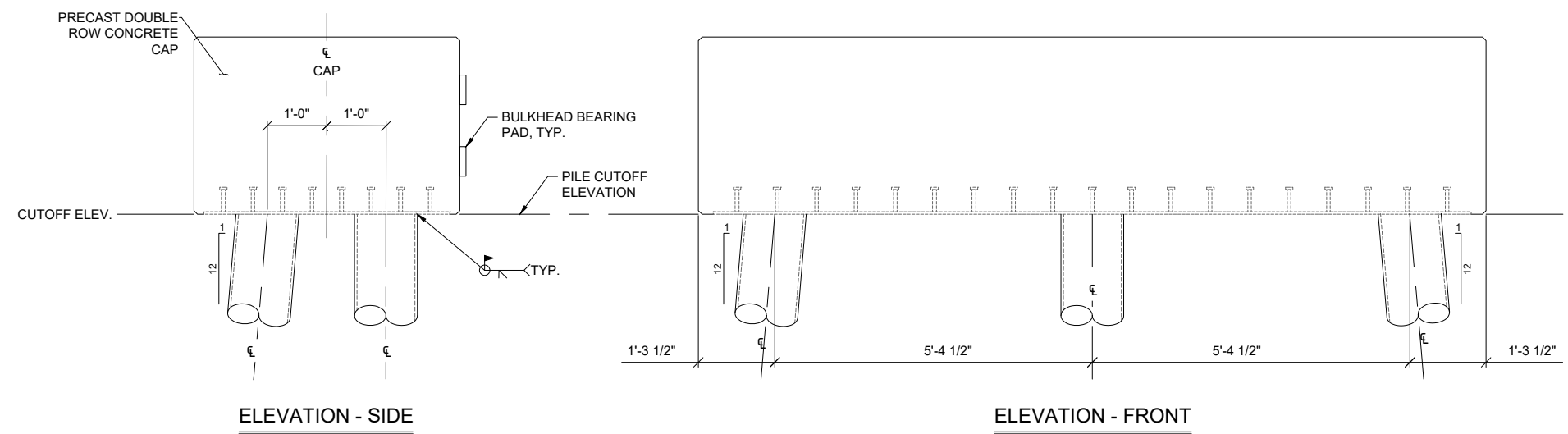
D BULKHEAD BEARING ATTACHMENT DETAIL
08

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NOT FOR CONSTRUCTION**

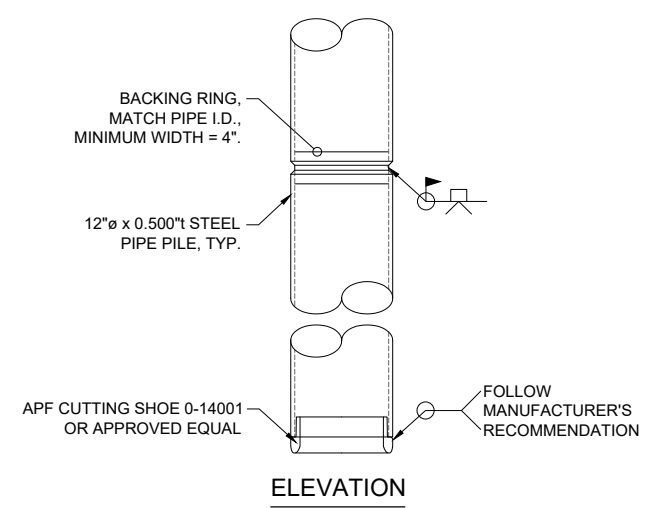
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 PUBLISHED CTB: ARRC_CTB_2023.CTB
 SCALE: AS NOTED
 DATE: 11/7/2025 4:57 PM
 TIME: 4:57 PM



A Ø12" x 0.500"t PILE REINFORCEMENT DETAIL



B PILE TO CAP CONNECTION DETAILS



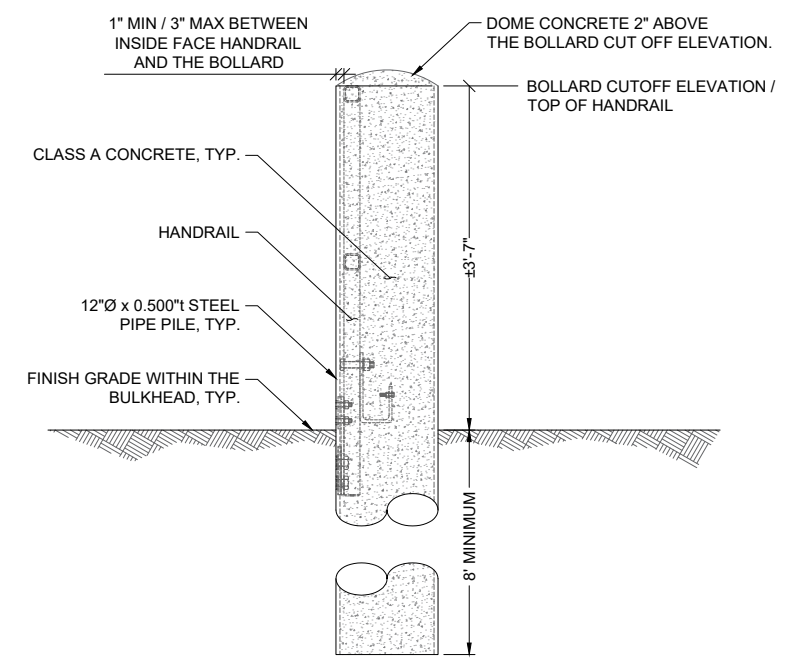
C PILE WELD DETAILS

REINFORCING SCHEDULE						
NAME	SIZE	TYPE	A	B	LENGTH	PER PILE
619-11	#6	STR.	-	-	19'-11"	4
4A1	#4	A	6.75"	19'-9"	73'-8"	1

BENDING DIAGRAM	
* PITCH NOTE:	
PITCH = 3" FOR TOP 5'-0"	
THEN 12" PITCH FOR REMAINING 14'-9"	

DIMENSIONS ARE OUT TO OUT OF BARS

ESTIMATED WEIGHT OF REINFORCING STEEL PER PIPE PILE = 170 LB.



D Ø12" BOLLARD DETAILS

- NOTES**
- MEASUREMENTS TAKEN ABOUT THE LOW END OF THE BATTERED PILES.
 - A SINGLE CONSTRUCTION JOINT IN THE CONCRETE IS ALLOWED A MINIMUM OF 1.5' BELOW THE CUTOFF ELEVATION OF THE PILE.
 - WHEN REQUIRED; CLASSIFIED FILL MAY CONSIST OF CONCRETE, CONTROLLED LOW-STRENGTH MATERIAL (CLSM), OR PROCESSED AGGREGATES. THE USE OF IN-SITU MATERIAL IS NOT ALLOWED WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE OWNER.
 - IF A PLUG IS REQUIRED, IT SHALL BE INSTALLED NO LESS THAN 20' 9" FROM THE DESIGNED PILE CUTOFF ELEVATION.

DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG

ALASKA RAILROAD CORPORATION
 PO BOX 107500, ANCHORAGE, AK 99510-7500
 327 W SHIP CREEK AVE
 ANCHORAGE, AK 99501
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KEY MAP: FAIRBANKS, ANCHORAGE, SEWARD

ENGINEERING DEPARTMENT
 P.O. BOX 107500
 ANCHORAGE, ALASKA 99510-7500

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

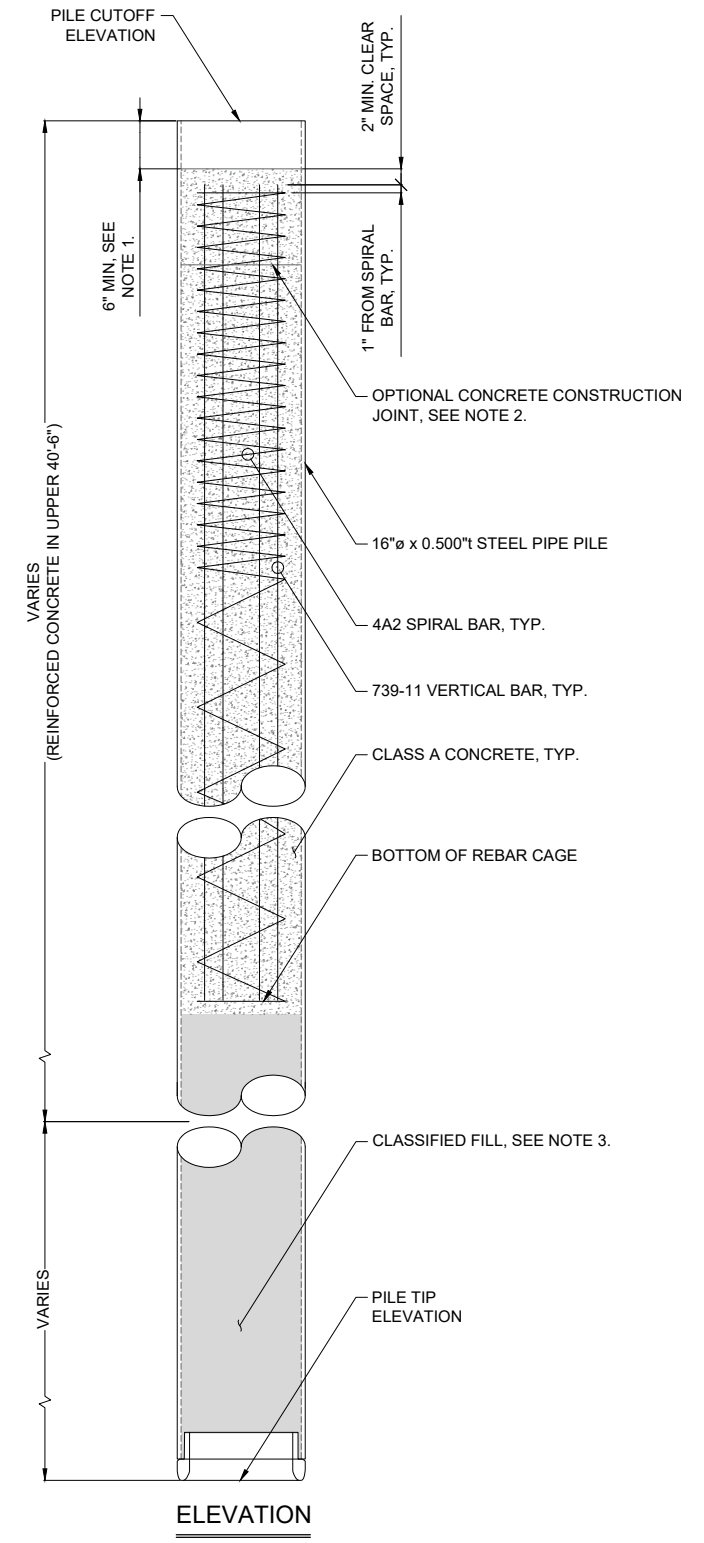
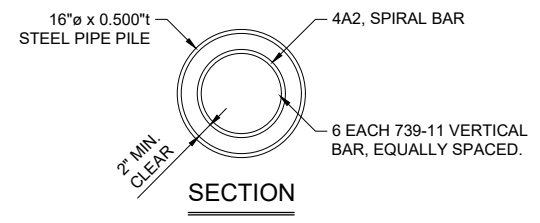
SHEET TITLE: 12" Ø PIPE PILE DETAILS

AFE NO. TBD

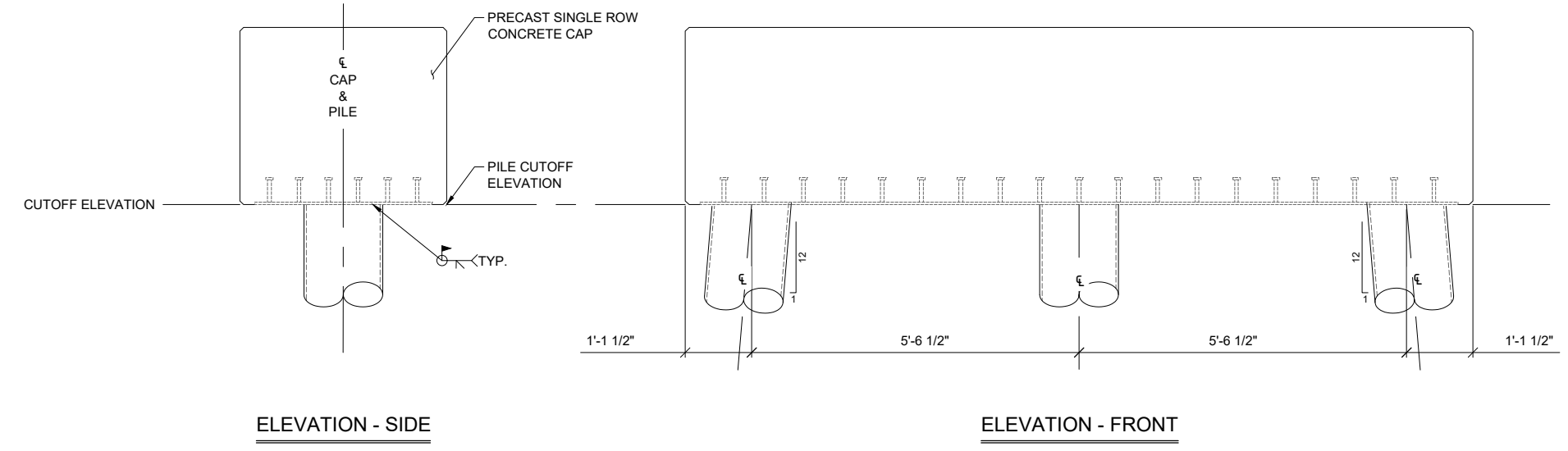
YEAR 2025

SHEET 09 OF 19

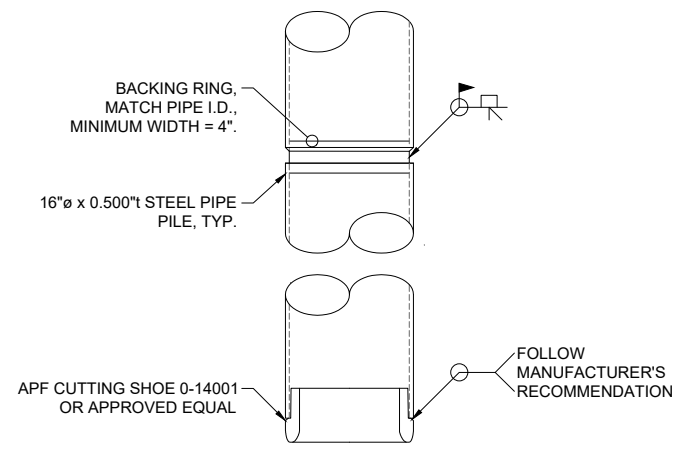
**PRELIMINARY
NOT FOR CONSTRUCTION**



A 16" x 0.500"t PILE REINFORCEMENT DETAIL

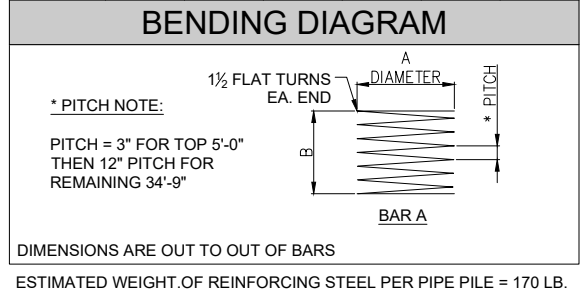


B PILE TO CAP CONNECTION DETAILS



C PILE WELD DETAILS

REINFORCING SCHEDULE						
NAME	SIZE	TYPE	A	B	LENGTH	PER PILE
739-11	#7	STR.	-	-	39'-11"	6
4A2	#4	A	10.75"	39'-9"	172'-8"	1



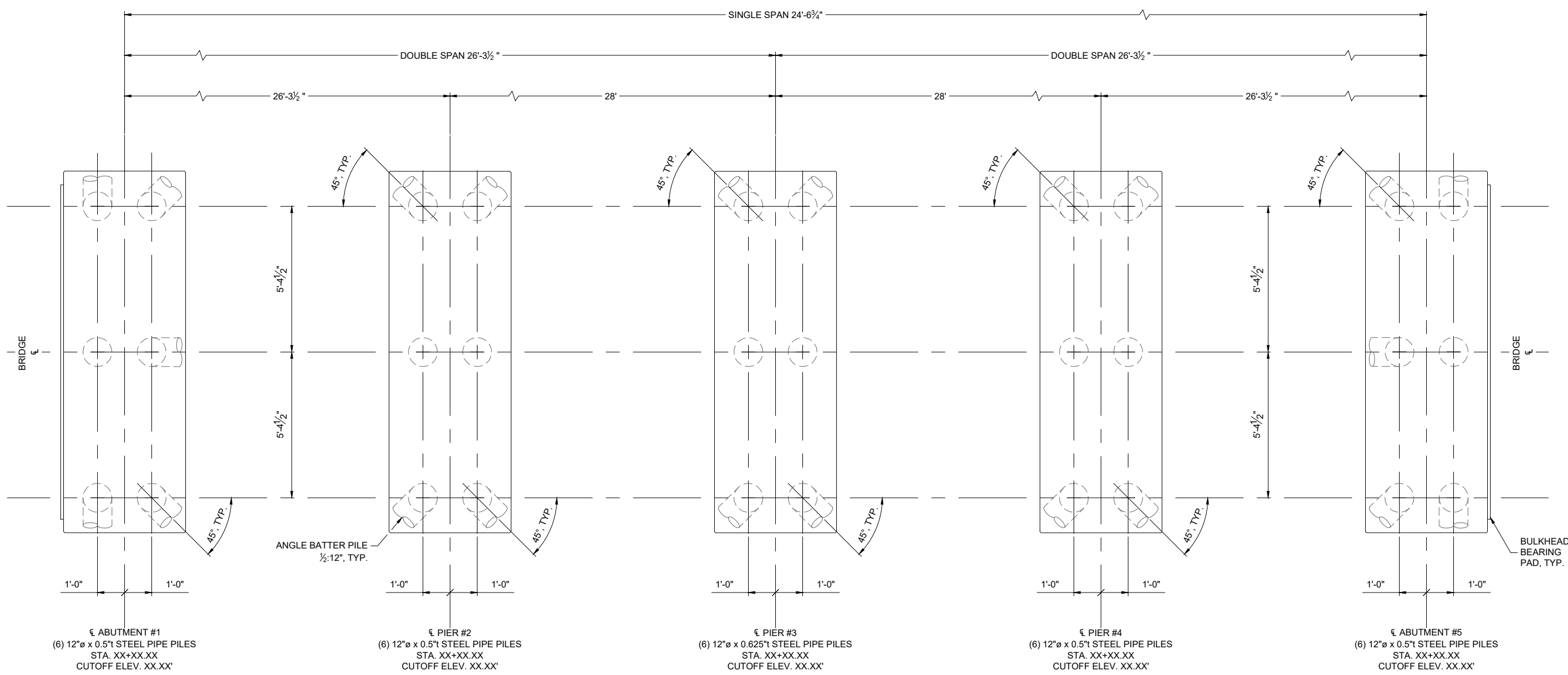
DIMENSIONS ARE OUT TO OUT OF BARS
 ESTIMATED WEIGHT OF REINFORCING STEEL PER PIPE PILE = 170 LB.

NOTES

- MEASUREMENTS TAKEN ABOUT THE LOW END OF THE BATTERED PILES.
- A SINGLE CONSTRUCTION JOINT IN THE CONCRETE IS ALLOWED A MINIMUM OF 1.5' BELOW THE CUTOFF ELEVATION OF THE PILE.
- WHEN REQUIRED; CLASSIFIED FILL MAY CONSIST OF CONCRETE, CONTROLLED LOW-STRENGTH MATERIAL (CLSM), OR PROCESSED AGGREGATES. THE USE OF IN-SITU MATERIAL IS NOT ALLOWED WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE OWNER.
- IF A PLUG IS REQUIRED, IT SHALL BE INSTALLED NO LESS THAN 40' 9" FROM THE DESIGNED PILE CUTOFF ELEVATION.

**PRELIMINARY
 NOT FOR CONSTRUCTION**

DESIGNED BY:	BAO
CHECKED BY:	DJS
DRAFTED BY:	BAO
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP:	
ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD) SHEET TITLE: 16" Ø PIPE PILE DETAILS
AFE NO.	TBD
YEAR	2025
SHEET	10 OF 19



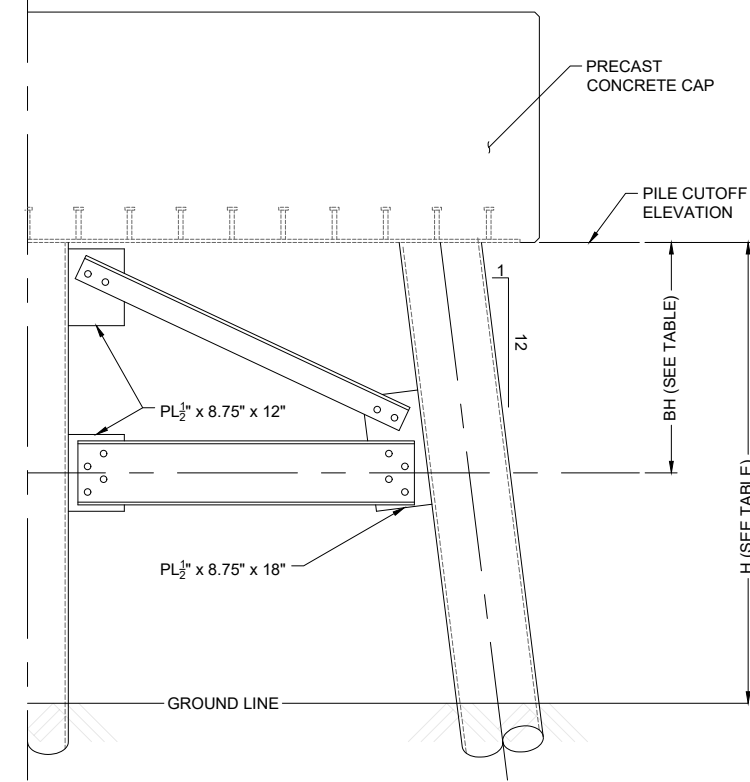
A PROPOSED PIPE PILE LAYOUT
11

NOTES

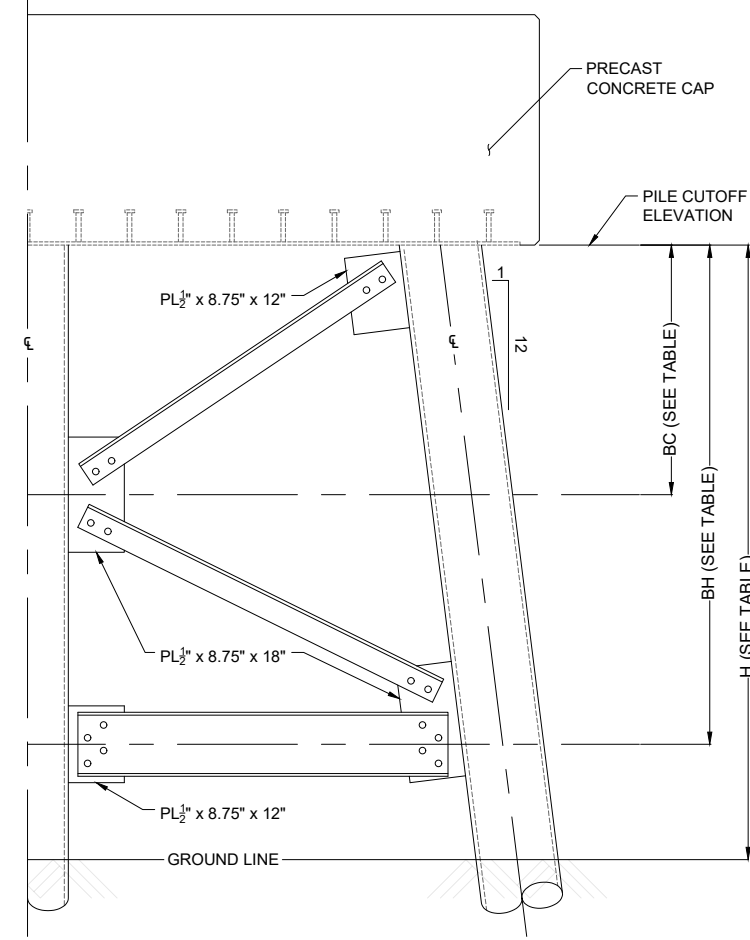
1. WHEN REQUIRED; FORWARD BATTER PILE AND 45° ANGLE BATTER PILES MAY BE INSTALLED AT ALTERNATE ANGLES WITH ENGINEERING APPROVAL.
2. INTERMEDIATE PIERS MAY USE A SINGLE ROW OF 16" DIA. PILES IN PLACE OF DOUBLE ROW 12" DIA. PILES. HOWEVER, PROVIDE ONE PIER WITH DOUBLE ROW 12" DIA. PILES FOR EVERY 140 FT OF SPAN.
3. SINGLE ROW 16" DIA PILES USING A DOUBLE ROW CAP AT ABUTMENTS WITH ENGINEER APPROVAL ONLY.

PRELIMINARY
 NOT FOR CONSTRUCTION

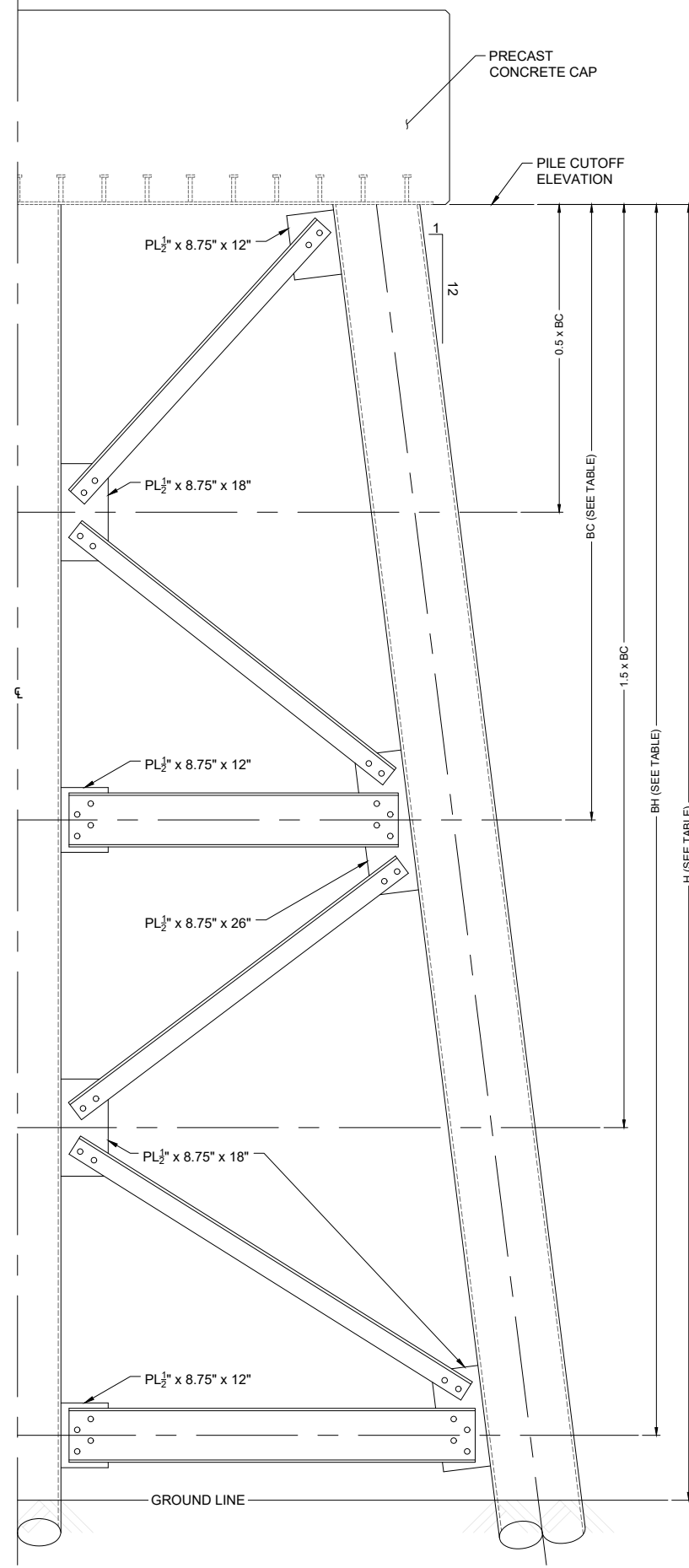
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 PUBLISHED CTB: ARRC_CTB_2023.CTB
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 TIME: 4:58 PM
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A HALF BRACING
12

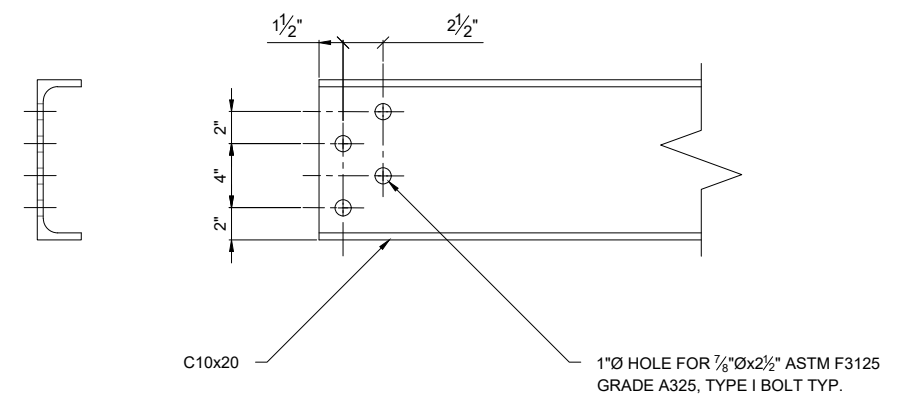


B SINGLE BRACING
12

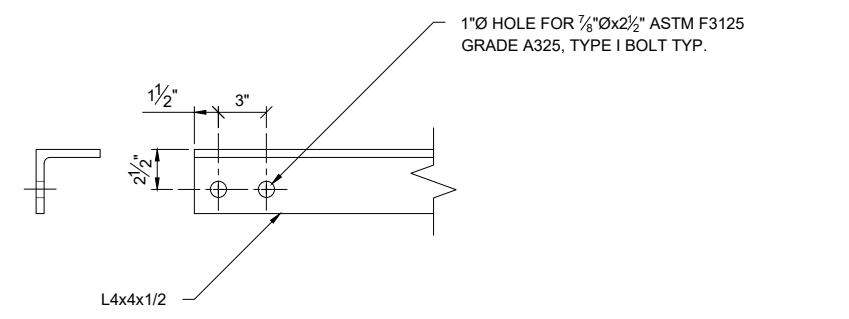


C DOUBLE BRACING
12

BENT DESIGN TABLE (BRACING REQUIREMENTS)								
PIPE PILE	H, MAX BENT HEIGHT	# ROWS	# PILES PER ROW	EQUILIBRIUM SUPERELEVATION	MAX PILE LOAD (TONS)	BRACING	BH, BRACE HEIGHT	BC, BRACE CENTER
12"Ø x 1/2"	6'-0"	2	3	<=6"	80	HALF	3'-0"	--
12"Ø x 5/8"	8'-0"	2	3	<=3"	75	SINGLE	6'-6"	3'-3"
12"Ø x 5/8"	11'-0"	2	3	0"	74	SINGLE	9'-6"	4'-0"
16"Ø x 1/2"	9'-0"	1	3	0"	87	SINGLE	7'-6"	3'-9"
16"Ø x 1/2"	20'-0"	2	3	0"	102	DOUBLE	=H-1'	=BH/2



D HORIZONTAL BRACING CHANNEL
12



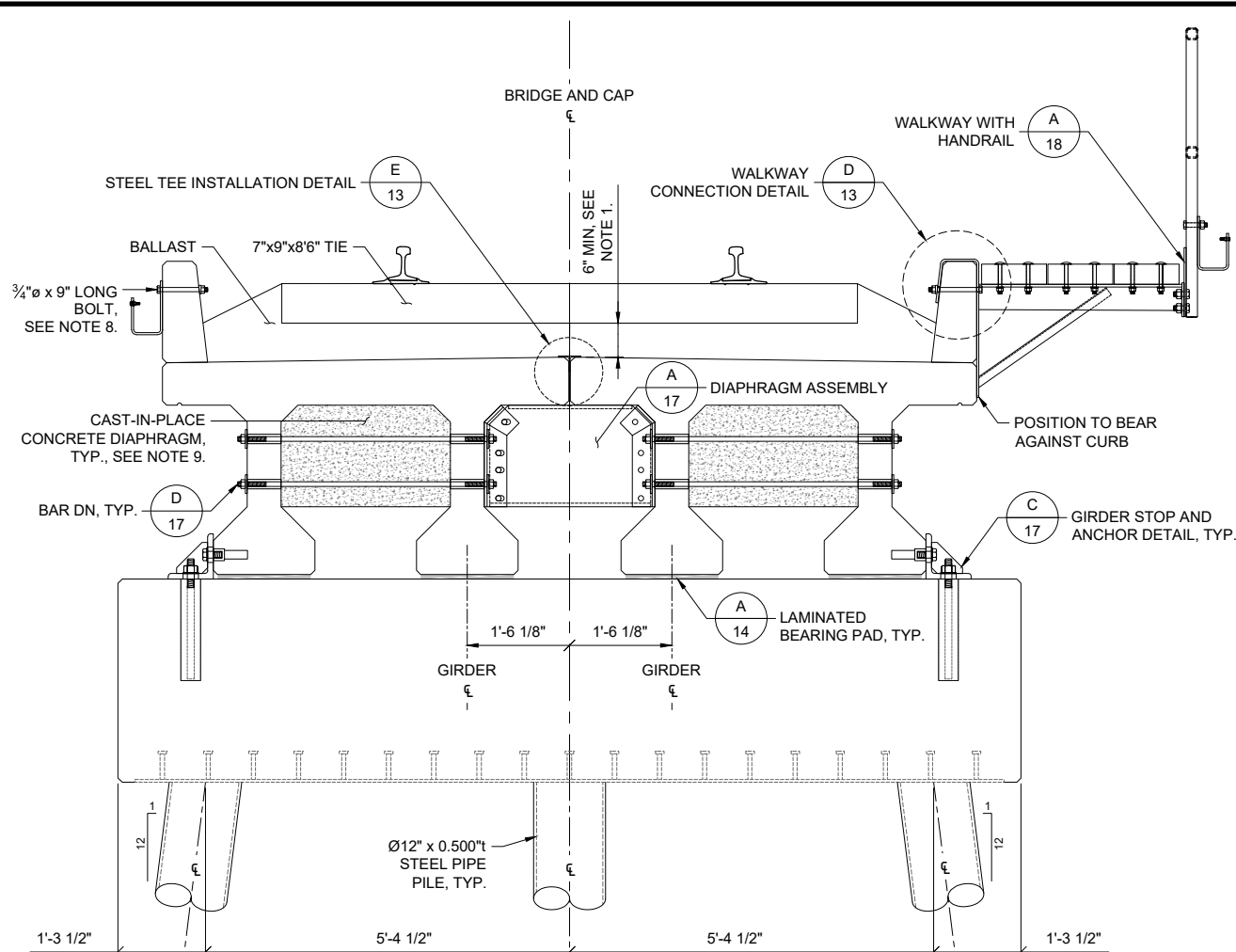
E BRACING ANGLE
12

- NOTES**
- ALL STRUCTURAL STEEL ANGLES AND PLATES SHALL CONFORM TO ASTM A36.
 - MATERIALS SCHEDULED TO BE COATED SHALL BE GALVANIZED IN ACCORDANCE WITH ARRC SSC SECTION 716-2.07.
 - C-CHANNELS ON FORWARD BATTER PILES SHALL BE INSTALLED WITH OPENINGS FACING THE LOWER SIDE TO ENSURE DRAINAGE AND PREVENT WATER POOLING.
 - NUT AND BOLT ENDS TO ORIENT TOWARD NEAREST ABUTMENT.
 - TIGHTEN BOLTS USING TURN-OF-NUT METHOD AND TACK WELD AFTER TENSIONING.
 - HARDENED STEEL WASHERS (2 PER BOLT): ASTM F436

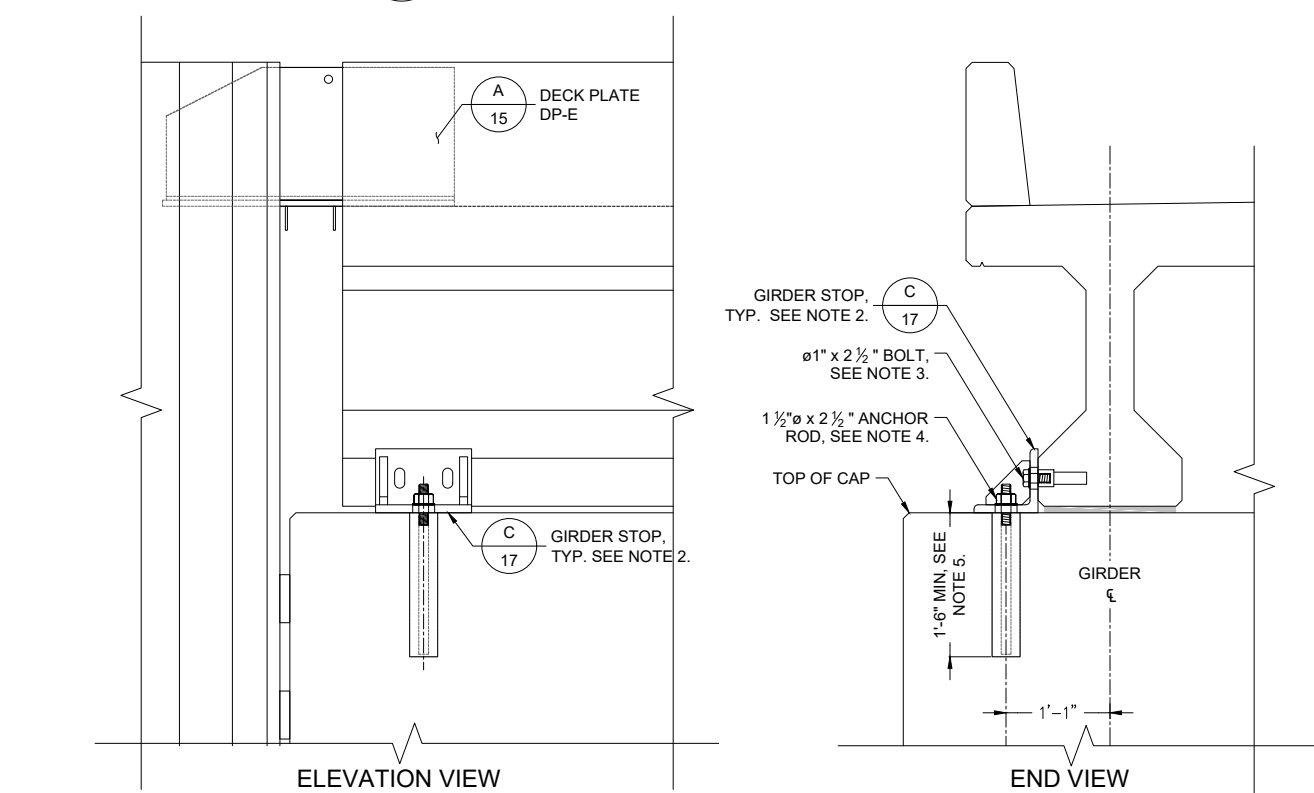
**PRELIMINARY
NOT FOR CONSTRUCTION**

DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP:	
ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD) SHEET TITLE: PIPE PILE BRACING
AFE NO.	TBD
YEAR	2025
SHEET	12 OF 19

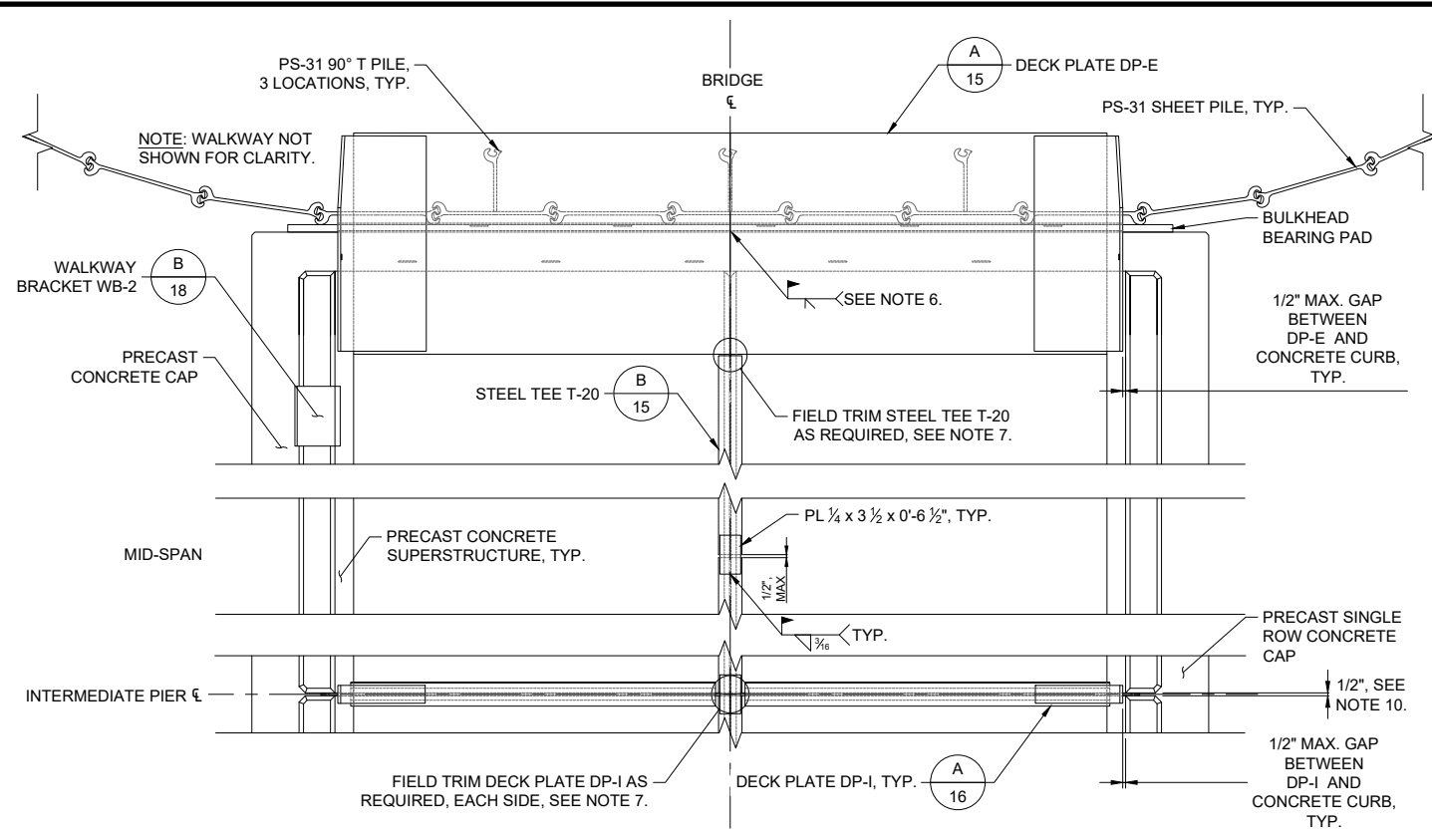
DRAWING LOCATION: P:\ENGINEERING\BRIDGES\00 - BRIDGE STANDARD PLANS\28' STANDARD CBD BRIDGE REPLACEMENT\CBD STANDARDS 2024.DWG
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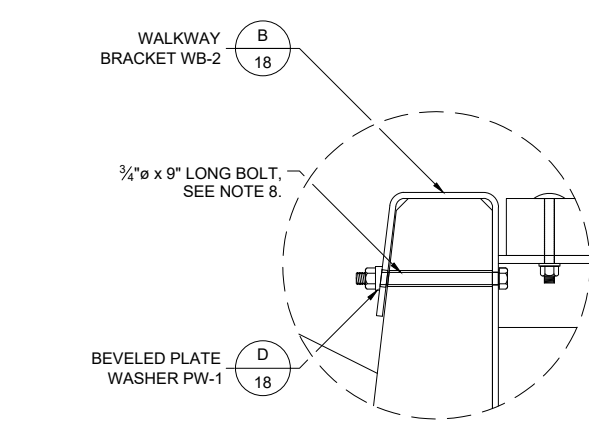
A CROSS SECTION AT ABUTMENT
13



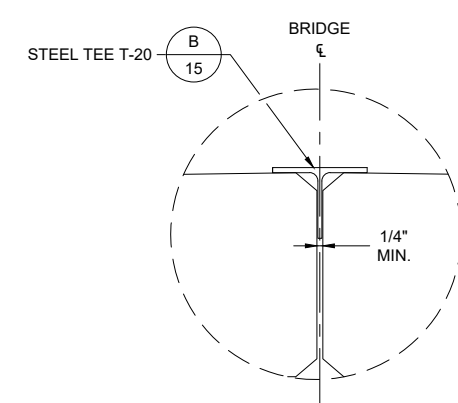
B GIRDER STOP CONNECTION ABUTMENT DETAIL
13



C DECK PLATE WELDING DETAILS
13



D WALKWAY CONNECTION DETAIL
13



E STEEL TEE INSTALLATION DETAIL
13

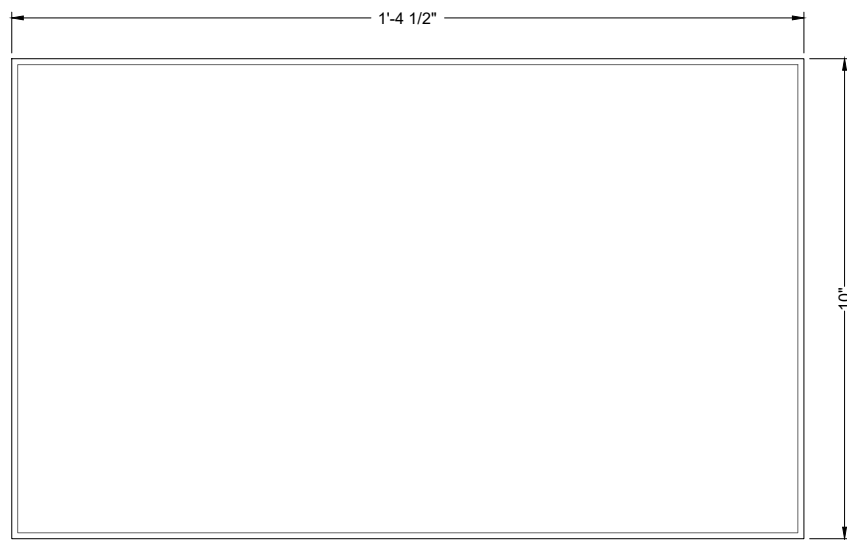
NOTES

1. MAXIMUM AMOUNT OF BALLAST IS 25".
2. GIRDER STOP IN ELEVATION SHOWN WITHOUT BOLTS FOR CLARITY. THE GS-1 CONFIGURATION WILL BE USED FOR THE EXPANSION END AND THE GS-2 FOR THE FIXED END.
3. ASTM F3125, GRADE A325, TYPE I, HOT DIP GALVANIZED BOLT TO BE COMPATIBLE WITH EXISTING ELECTRO GALVANIZED DAYTON SUPERIOR F64 FERRULE LOOP INSERT, CONTRACTOR TO VERIFY.
4. ASTM F1551, GRADE 36, HOT DIP GALVANIZED ANCHOR ROD SET WITH SIKA SIKADUR-32 HI-MOD GROUT, OR APPROVED EQUAL.
5. CORING DEPTH IS DEPENDENT UPON GROUT MANUFACTURERS RECOMMENDATIONS.
6. DECK PLATE DP-E MAY BE PROVIDED IN TWO PLATES TO ALLOW CREW TO INSTALL HALVES WITHOUT REQUIRING THE REMOVAL OF THE RAIL.
7. FIELD TRIM STEEL TEE T-20 AND DP-I SUCH THAT THE GAP BETWEEN THE DECK PLATES IS NOT MORE THAN 1/2".
8. ASTM A307, GRADE A, HOT DIP GALVANIZED BOLT WITH NYLOCK NUT. FOR WALKWAY BRACKET OR CONDUIT BRACKET.
9. EACH CBD HALF HAS THREE (6) CAST-IN-PLACE CONCRETE DIAPHRAGMS.
10. INSTALL CBD FORM SUCH THAT THE GAP ACROSS CENTER LINE IS NOT MORE THAN 1/4" AND THE GAP BETWEEN FORM ASSEMBLIES IS NOT MORE THAN 1/2".

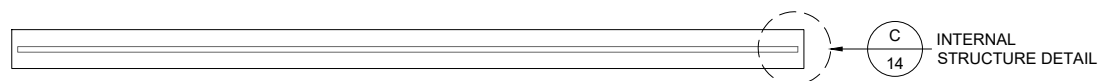
**PRELIMINARY
NOT FOR CONSTRUCTION**

DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP	FAIRBANKS ANCHORAGE SEWARD
ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD) SHEET TITLE: STRUCTURE SECTIONS
AFE NO.	TBD
YEAR	2025
SHEET	13 OF 19

DRAWING LOCATION: P:\ENGINEERING\BRIDGES\00 - BRIDGE STANDARD PLANS\28' STANDARD CBD BRIDGE REPLACEMENT\CBD STANDARDS 2024.DWG
 DATE: 11/7/2025 4:58 PM
 SCALE: AS NOTED
 PUBLISHED CTB: ARRC_CTB_2023.CTB

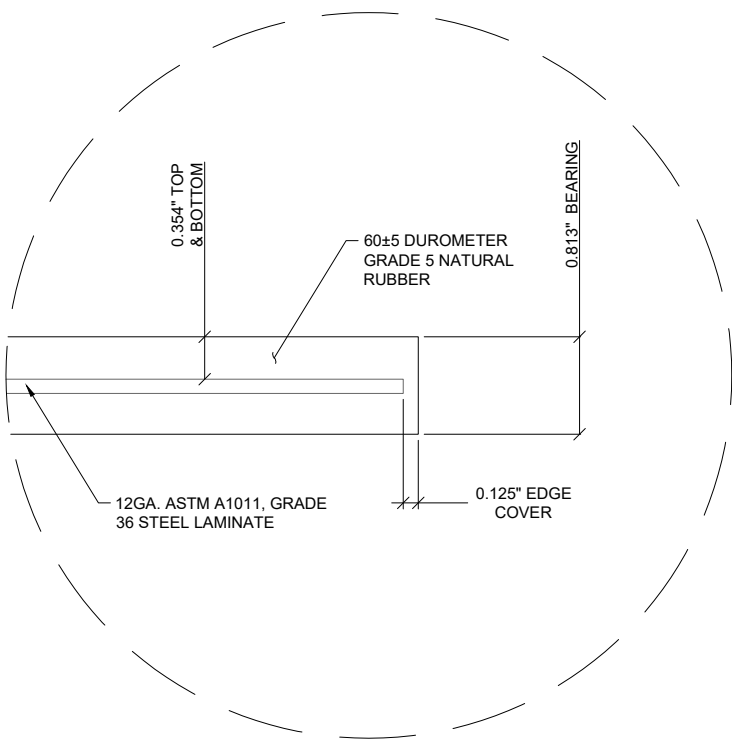


PLAN VIEW

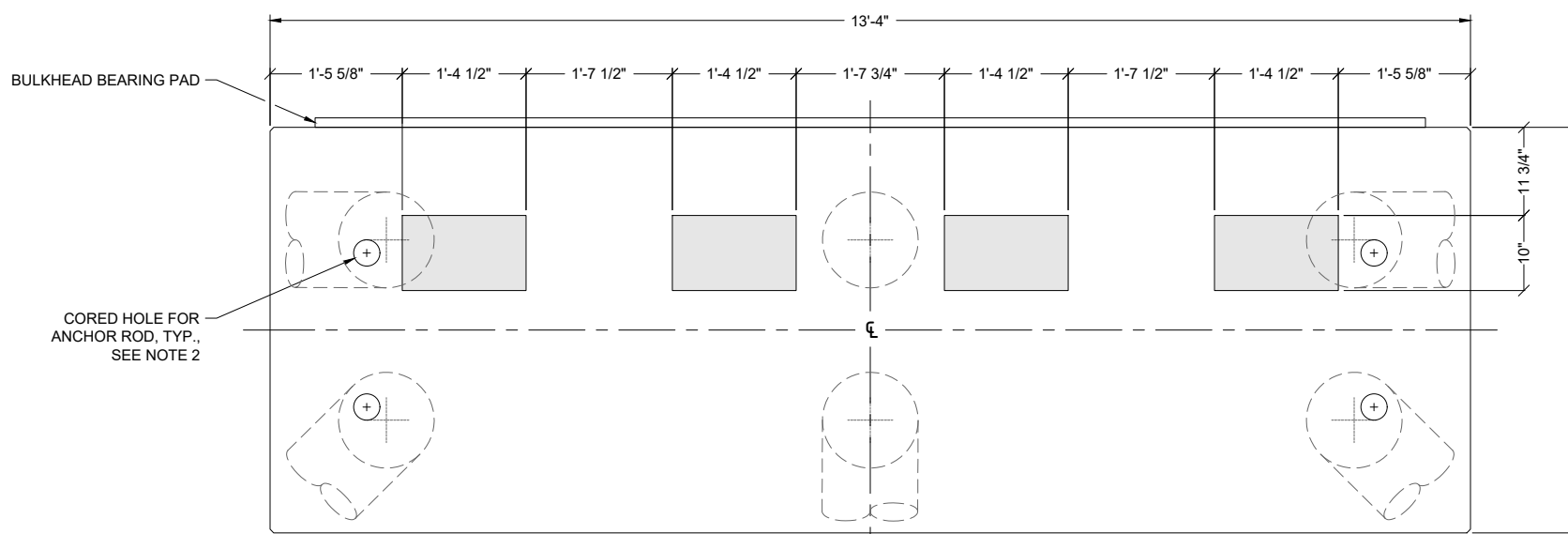


ELEVATION VIEW

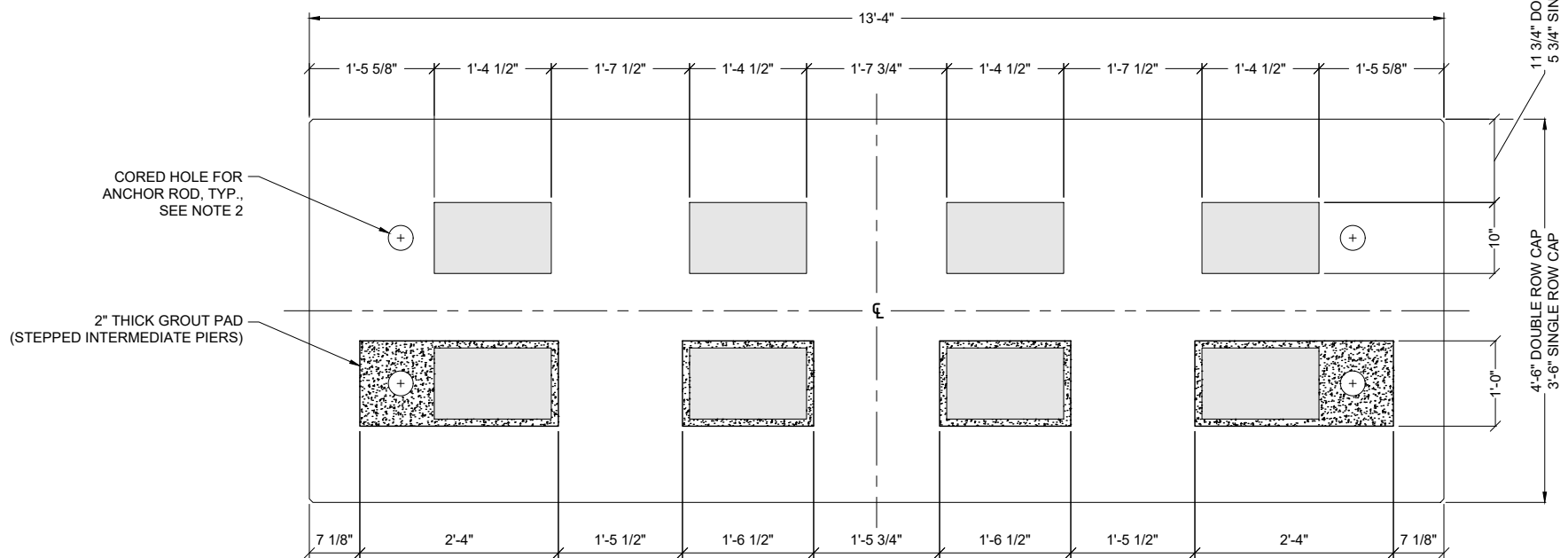
A LAMINATED ELASTOMERIC GIRDER BEARING PAD
14



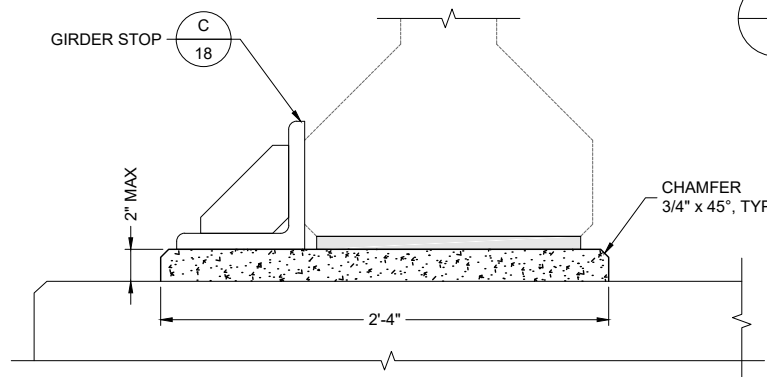
C INTERNAL STRUCTURE DETAIL
14



B BEARING PAD PLACEMENT AT ABUTMENTS
14



D BEARING PAD PLACEMENT AT PIERS
14



E BEARING PAD GROUT DETAIL
14

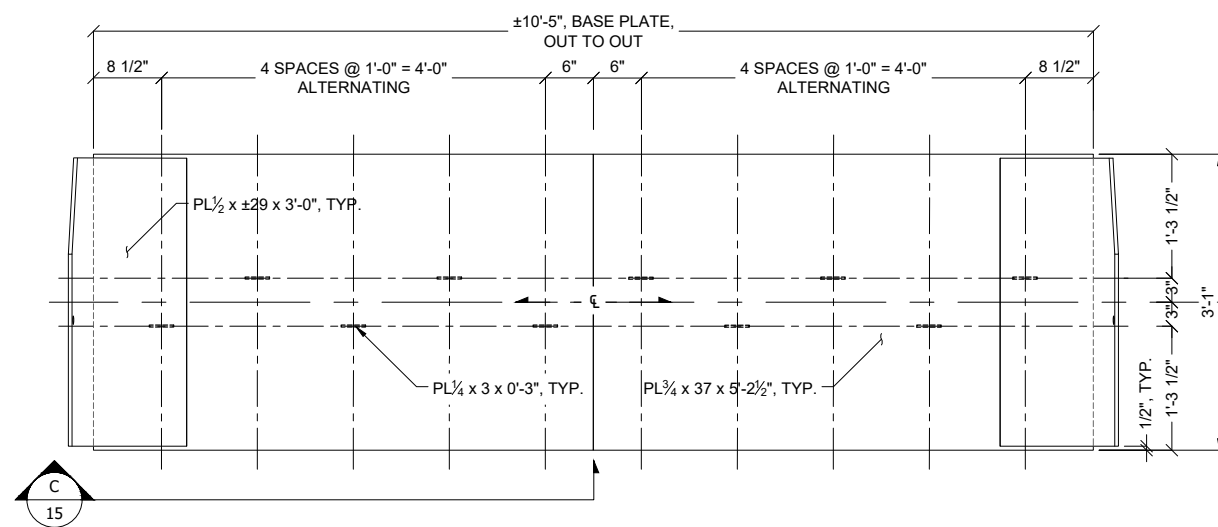
NOTES

1. MATERIALS AND MANUFACTURING TOLERANCES SHALL CONFORM TO THE LATEST REVISION OF SECTION 720 BEARINGS, OF THE ALASKA RAILROAD STANDARDS SPECIFICATIONS FOR CONSTRUCTION (SSC).
2. WHEN USING OWNER-PROVIDED PRE-CAST CONCRETE SUPERSTRUCTURES, HOLES FOR ANCHOR RODS MAY NEED TO BE CORED IN THE FIELD.
3. SINGLE ROW 16"Ø PILES USING A DOUBLE ROW CAP AT ABUTMENTS WITH ENGINEER APPROVAL ONLY.
4. WHEN STEPPED CAPS ARE USED, GROUT PADS TO BE BUILT UP BELOW BEARING PADS AND ANCHORS ON UPHILL SIDE OF INTERMEDIATE PILE CAP.

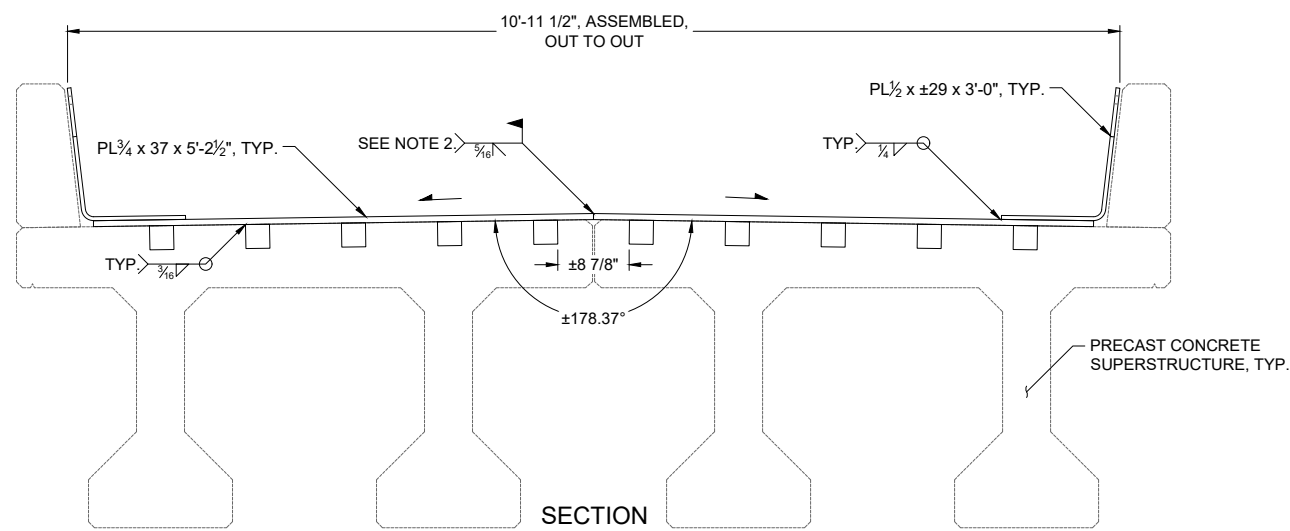
DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP:	
ENGINEERING DEPARTMENT	P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500
PROJECT:	STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)
SHEET TITLE:	BEARING PAD DETAILS AND PLACEMENT
AFE NO.	TBD
YEAR	2025
SHEET	14 OF 19

PRELIMINARY
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DRAWING LOCATION: P:\ENGINEERING\BRIDGES\00 - BRIDGE STANDARD PLANS\28' STANDARD CBD BRIDGE REPLACEMENT\CBD STANDARDS 2024.DWG
 DATE: 11/7/2025 4:58 PM
 TIME: AS NOTED
 SCALE: AS NOTED
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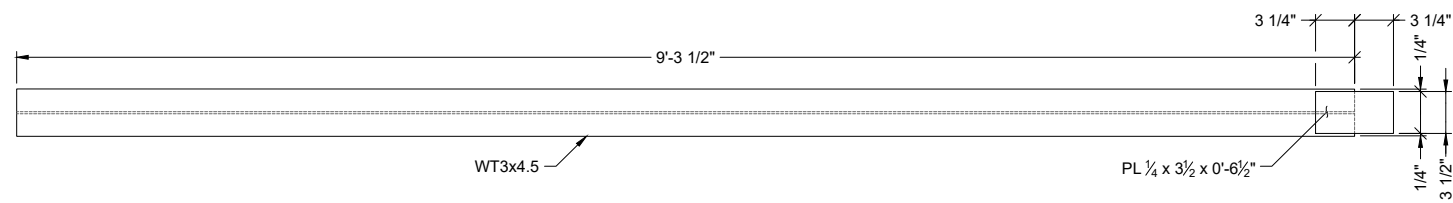


PLAN

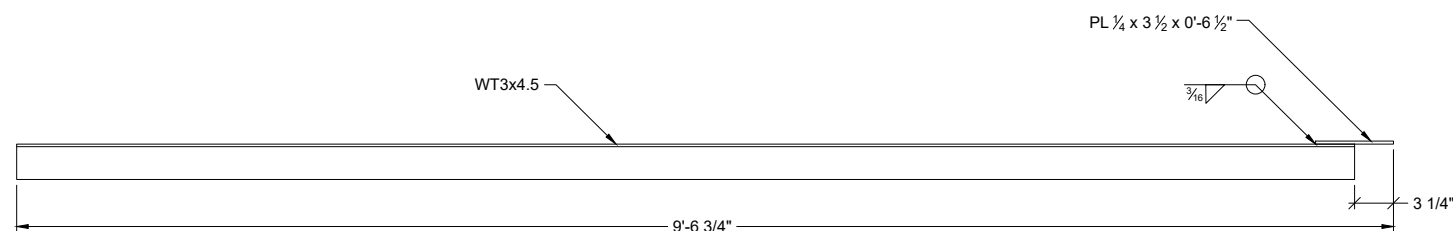


A DECK PLATE DP-E

EST. WT.: 1,150 LBS



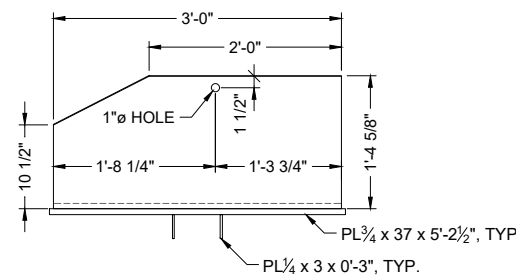
PLAN



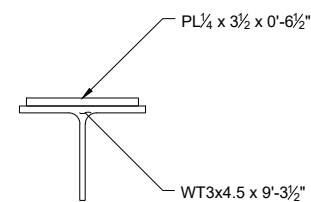
ELEVATION

B STEEL TEE T-20

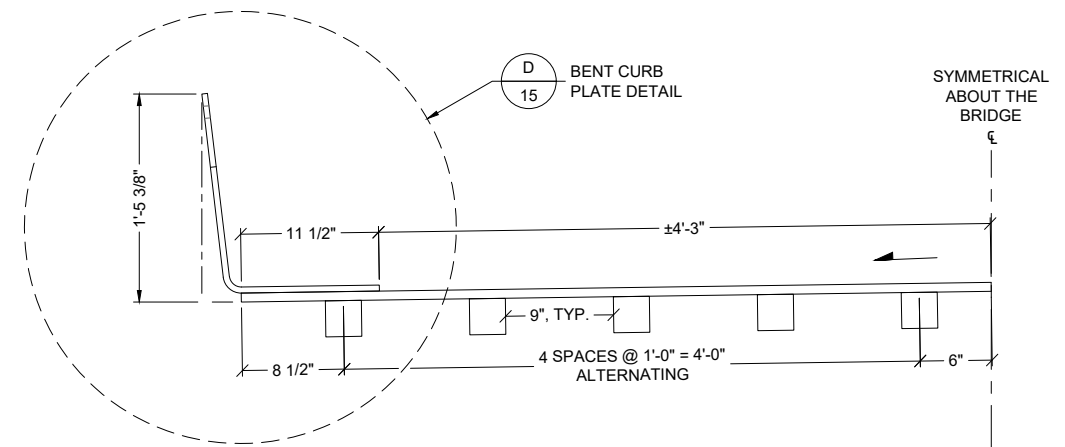
EST. WT.: 44 LBS



ELEVATION

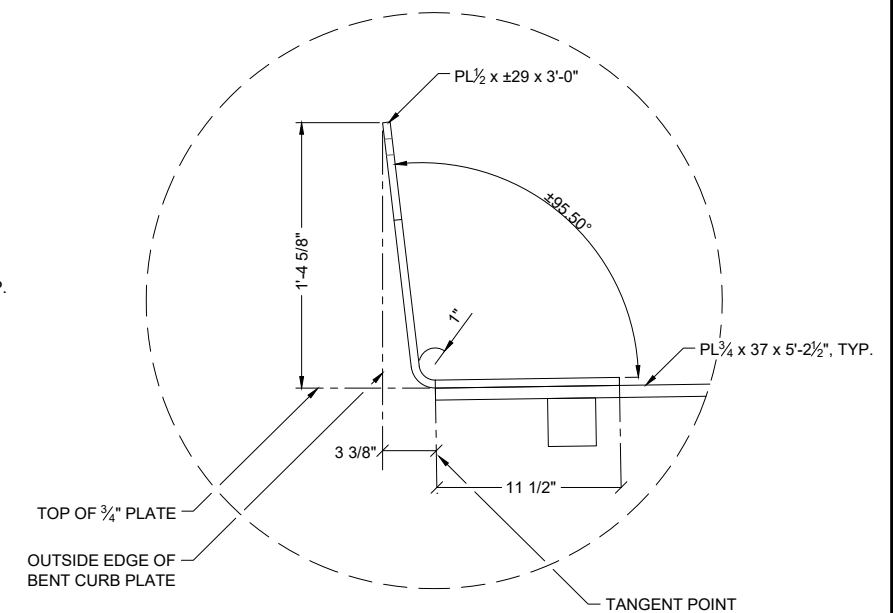


SECTION



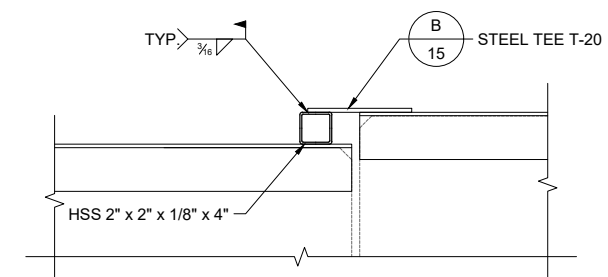
C SECTION DETAIL VIEW

15



D BENT CURB PLATE DETAIL

15



E STEPPED STEEL TEE DETAIL

15

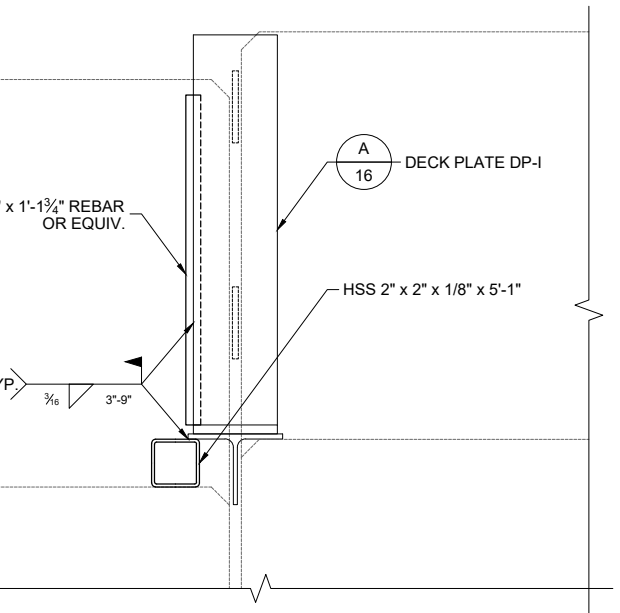
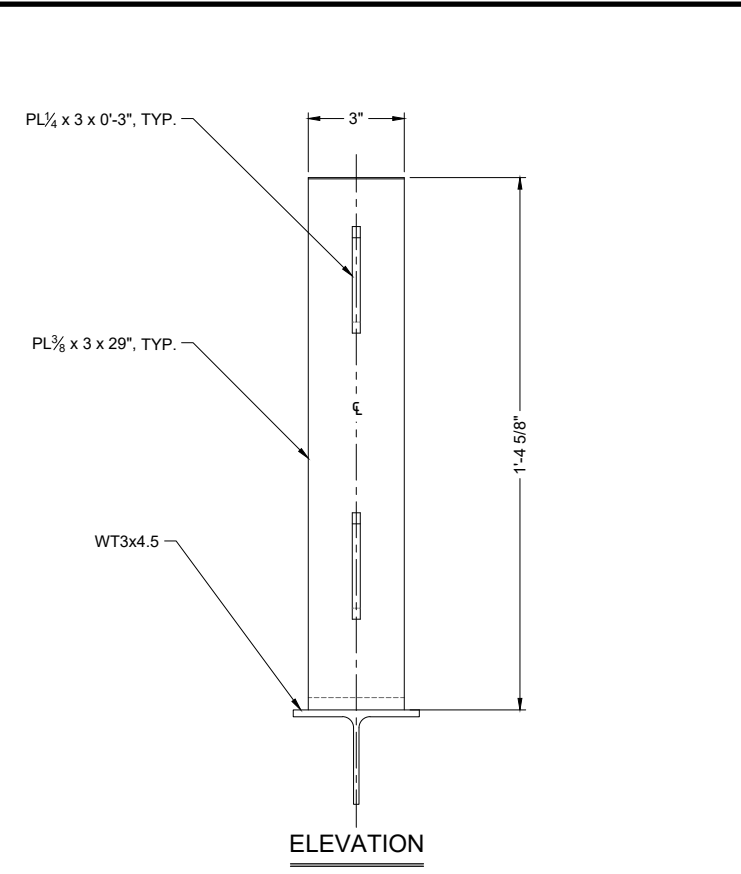
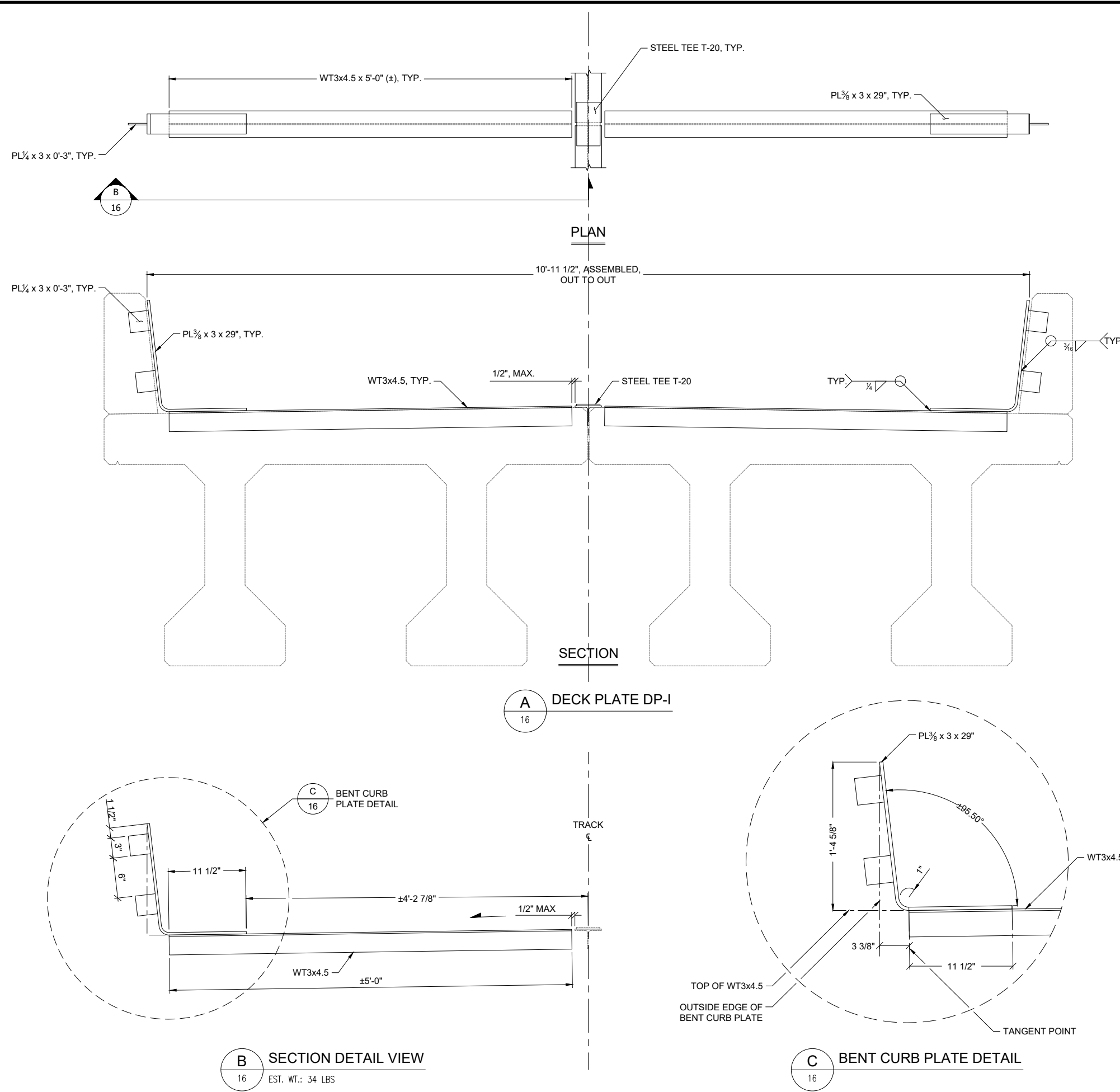
NOTES

- ALL STRUCTURAL STEEL ANGLES, PLATES, AND WT SHAPES SHALL CONFORM TO ASTM A36.
- DECK PLATE DP-E MAY BE PROVIDED IN TWO PLATES. IF ELECTED TO SUPPLY AS ONE PIECE, SHOP WELD THE CONNECTION.
- WHEN USING OWNER-PROVIDED PRE-CAST CONCRETE SUPERSTRUCTURES, FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING.
- STEPPED CAPS REQUIRING FILLER HSS SQUARE TUBING TO BE INSTALLED PLUM AND IN-LINE.

PRELIMINARY
NOT FOR CONSTRUCTION

DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP 	
ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD) SHEET TITLE: MISCELLANEOUS STEEL: DP-E AND T-20
AFE NO.	TBD
YEAR	2025
SHEET	15 OF 19

DRAWING LOCATION: P:\ENGINEERING\BRIDGES\00 - BRIDGE STANDARD PLANS\28' STANDARD CBD BRIDGE REPLACEMENT\CBD STANDARDS 2024.DWG
 DATE: 11/7/2025 4:58 PM
 TIME: 4:58 PM
 SCALE: AS NOTED
 PUBLISHED: CTB
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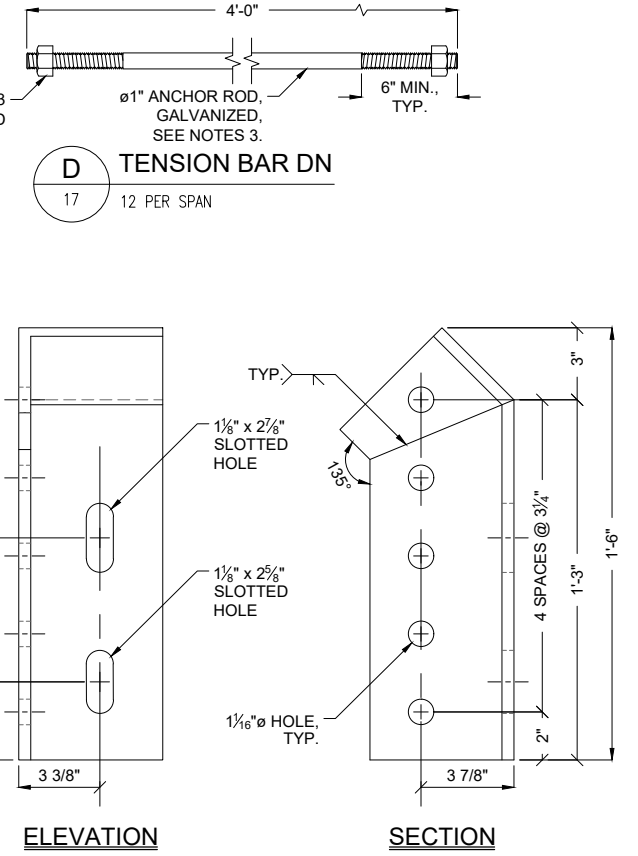
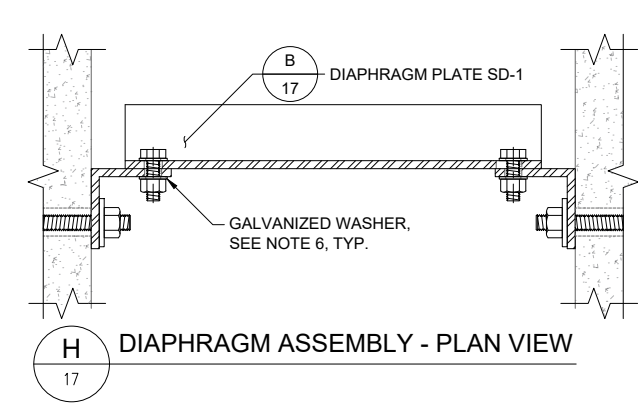
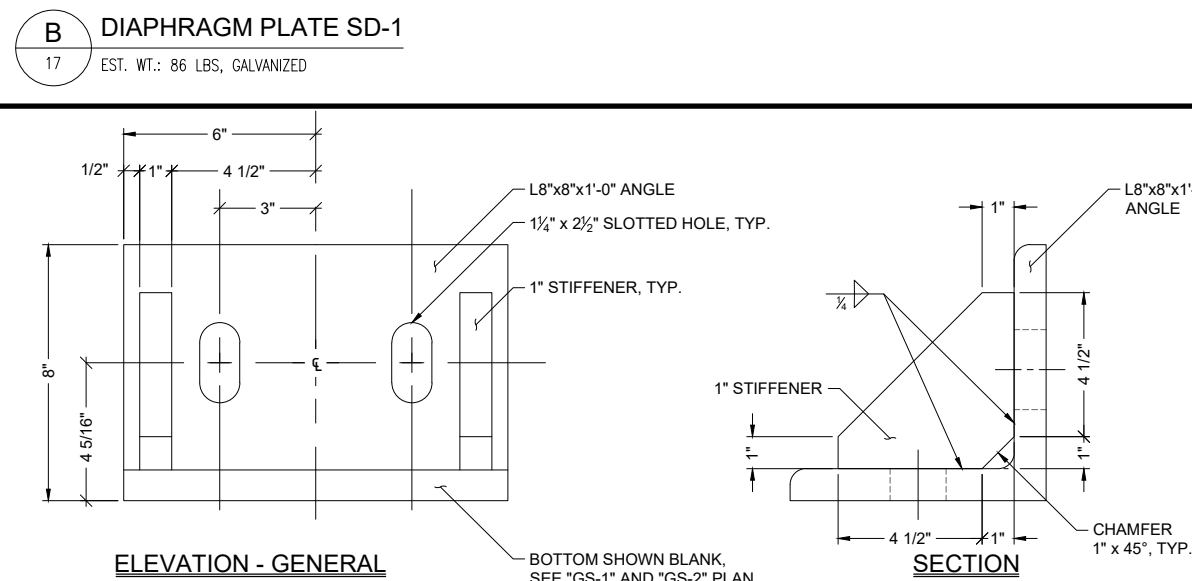
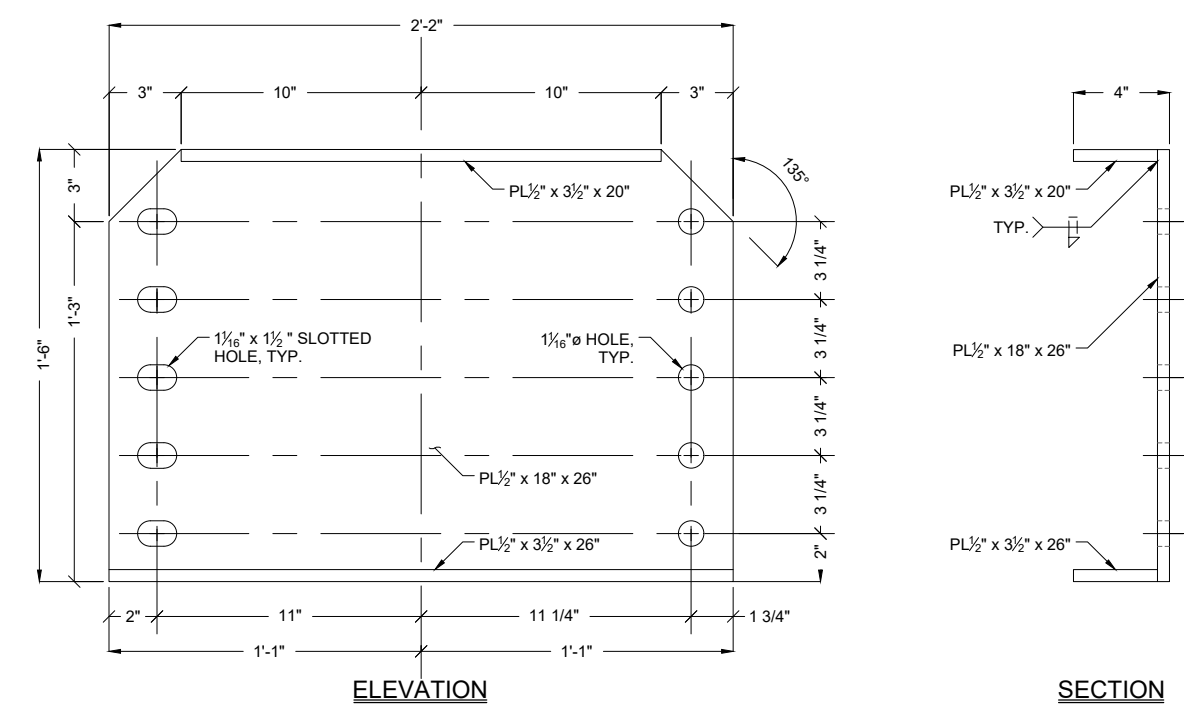
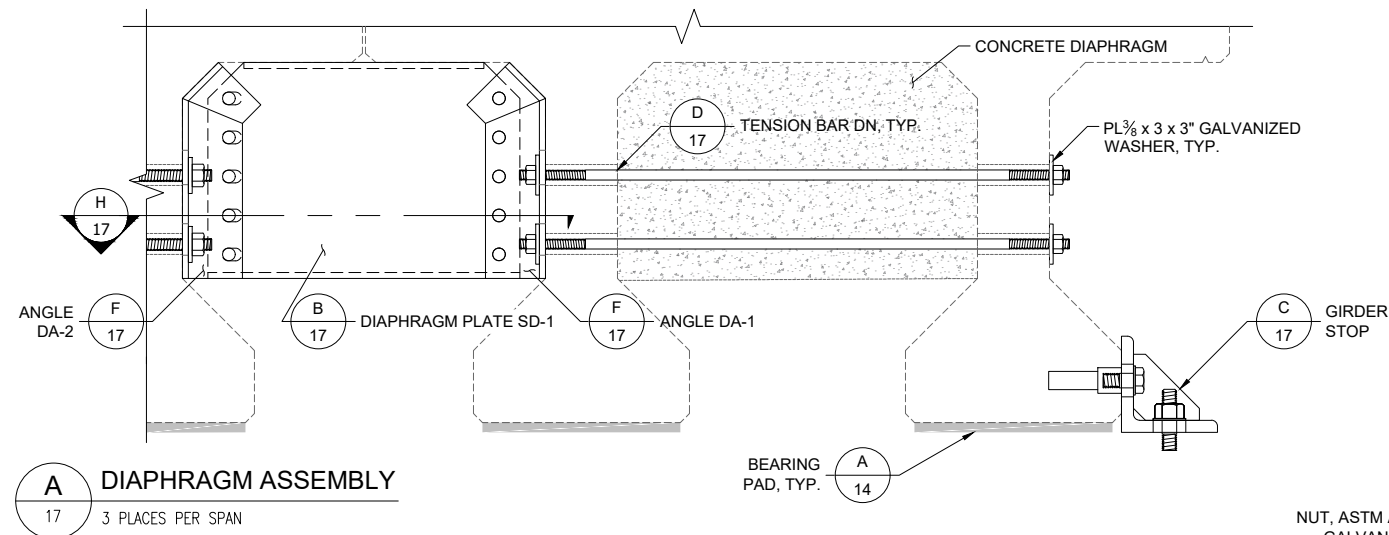


- NOTES**
1. ALL STRUCTURAL STEEL ANGLES, PLATES, AND WT SHAPES SHALL CONFORM TO ASTM A36.
 2. DECK PLATE DP-I IS TO BE PROVIDED IN TWO PIECES.
 3. WHEN USING OWNER-PROVIDED PRE-CAST CONCRETE SUPERSTRUCTURES, FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING.
 4. STEPPED CAPS REQUIRING FILLER HSS SQUARE TUBING TO BE INSTALLED PLUM AND IN-LINE.

**PRELIMINARY
NOT FOR CONSTRUCTION**

DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP 	
ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD) SHEET TITLE: MISCELLANEOUS STEEL: DP-I
AFE NO.	TBD
YEAR	2025
SHEET	16 OF 19

DRAWING LOCATION: P:\ENGINEERING\BRIDGES\00 - BRIDGE STANDARD PLANS\28' STANDARD CBD BRIDGE REPLACEMENT\CBD STANDARDS 2024.DWG
 DATE: 11/7/2025 4:58 PM
 SCALE: AS NOTED
 PUBLISHED: CTB
 ARRC_CTB_2023.CTB



- NOTES**
- ALL STRUCTURAL STEEL ANGLES AND PLATES SHALL CONFORM TO ASTM A36.
 - MATERIALS SCHEDULED TO BE COATED SHALL BE GALVANIZED IN ACCORDANCE WITH ARRC SSC 716-2.07.
 - TENSION BARS SHALL CONFORM TO ASTM F1554, GRADE 36.
 - WHEN USING OWNER-PROVIDED PRE-CAST CONCRETE SUPERSTRUCTURES, FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING.
 - TIGHTEN BOLTS USING TURN-OF-NUT METHOD AND APPLY HIGH STRENGTH (RED) THREADLOCK TO ALL THREADED CONNECTIONS.
 - HARDENED STEEL WASHERS (2 PER BOLT): ASTM F436
 - DIAPHRAGM ASSEMBLY, NUT END OF BOLTS ORIENTED TOWARD NEAREST ABUTMENT.

DESIGNED BY: _____
 CHECKED BY: _____
 DRAFTED BY: MCG

ALASKA RAILROAD CORPORATION
 PO BOX 107500, ANCHORAGE, AK 99510-7500
 327 W SHIP CREEK AVE
 ANCHORAGE, AK 99501
 (907) 265-2300

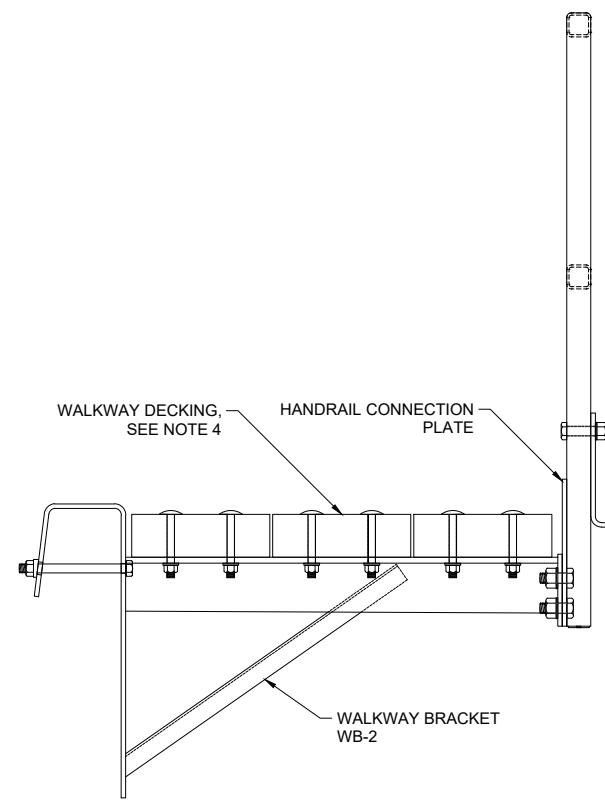
KEY MAP: FAIRBANKS, ANCHORAGE, SEWARD

ENGINEERING DEPARTMENT
 P.O. BOX 107500
 ANCHORAGE, ALASKA 99510-7500

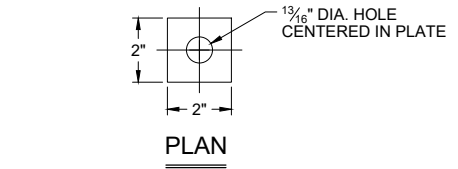
PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD)
 SHEET TITLE: MISCELLANEOUS STEEL: DIAPHRAGM AND GIRDER STOPS

AFE NO. TBD
 YEAR 2025
 SHEET 17 OF 19

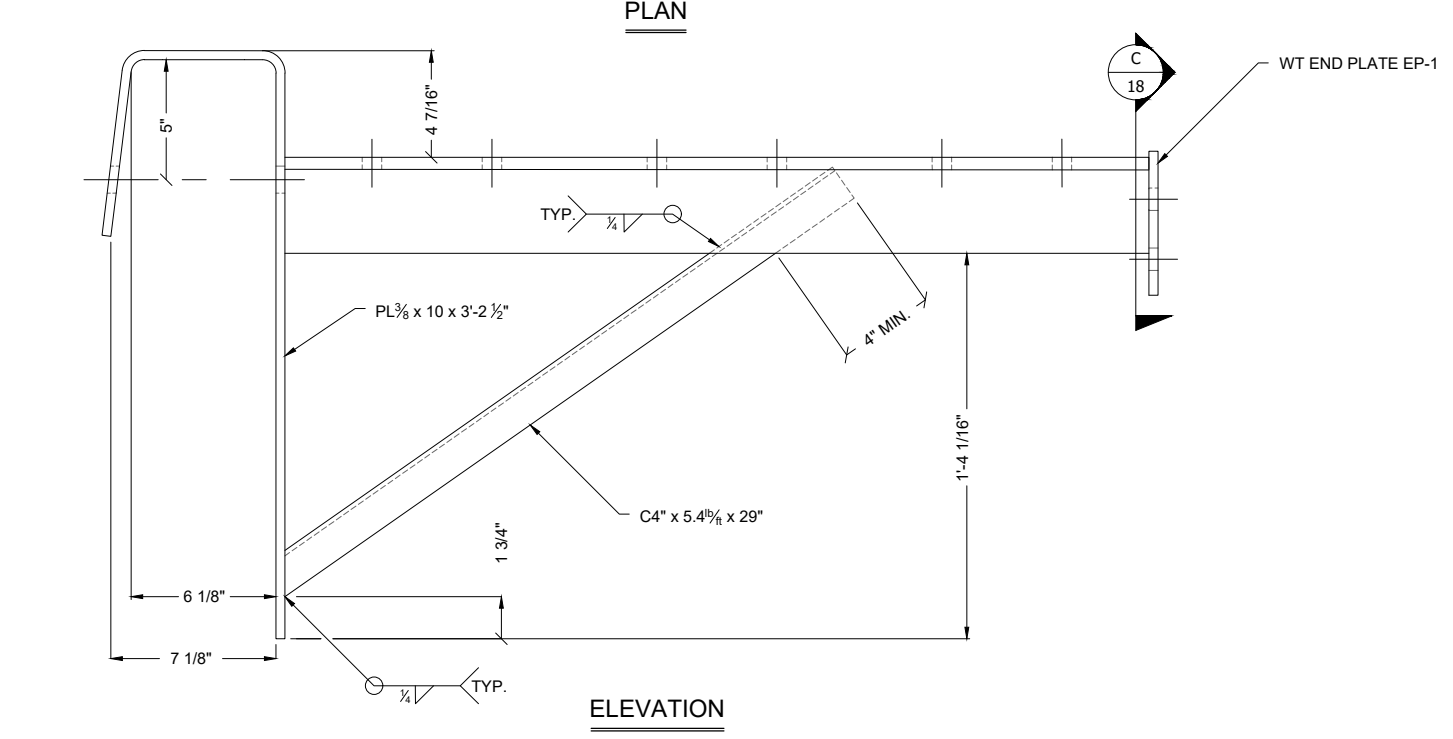
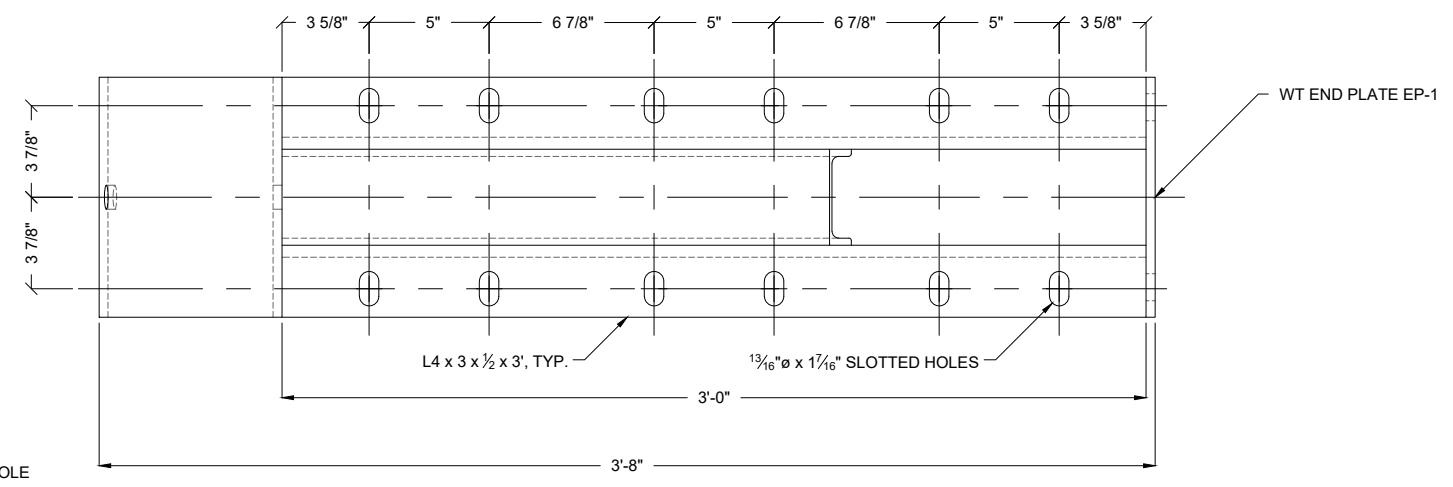
**PRELIMINARY
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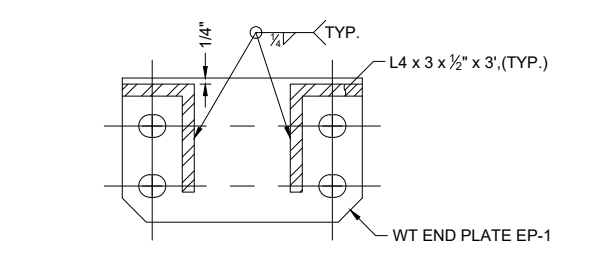
A WALKWAY WITH HANDRAIL ASSEMBLY
18



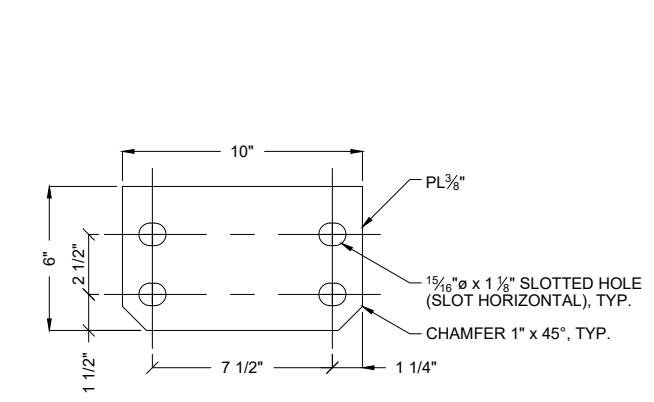
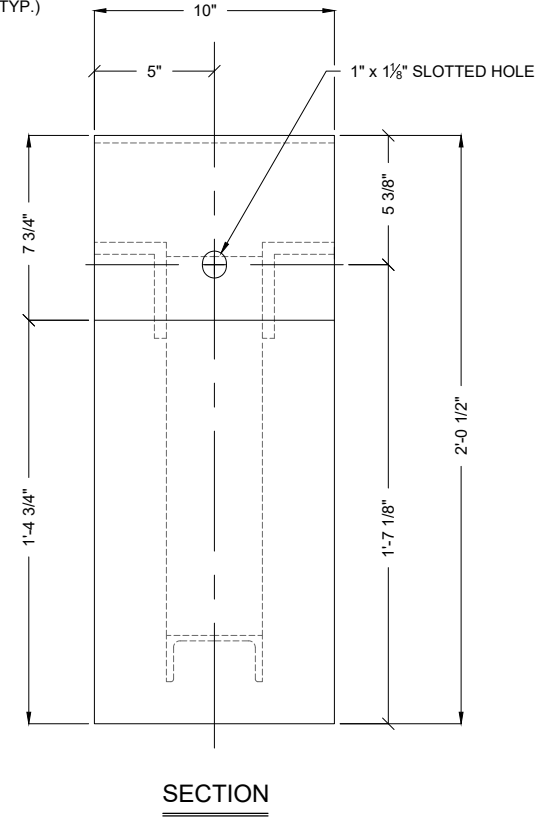
D PLATE WASHER PW-1
18 EST. WT.: 1 LBS, GALVANIZED



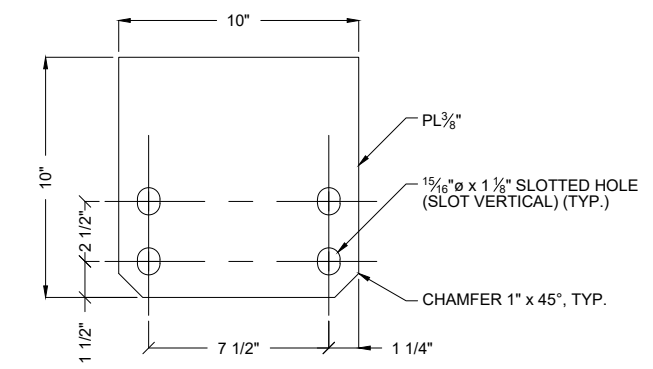
B WALKWAY BRACKET WB-2
18 EST. WT.: 124 LBS, GALVANIZED



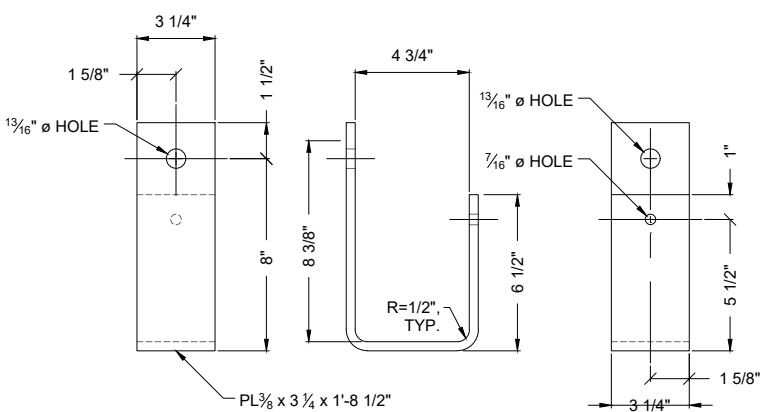
C END PLATE SECTION
18



E WT END PLATE EP-1
18



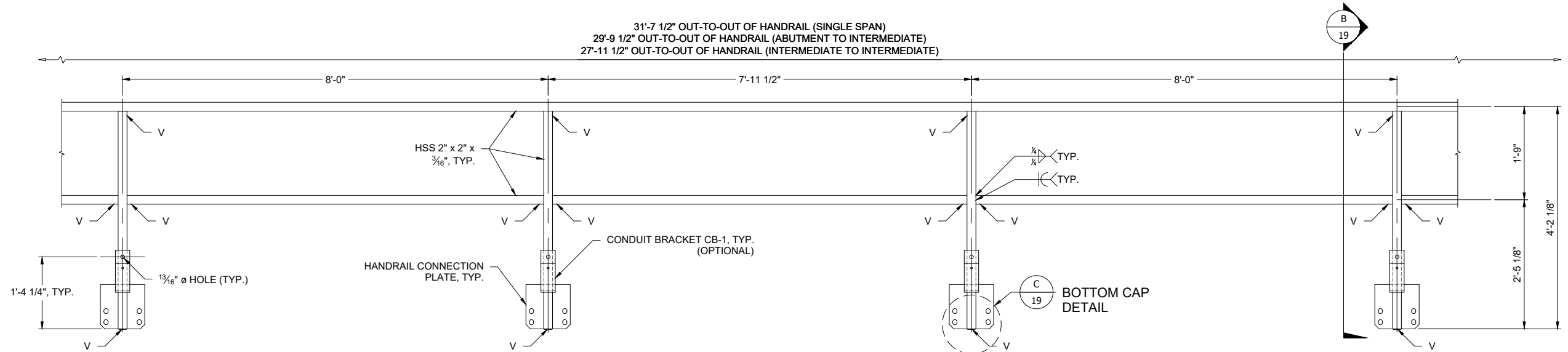
F HANDRAIL CONNECTION PLATE
18



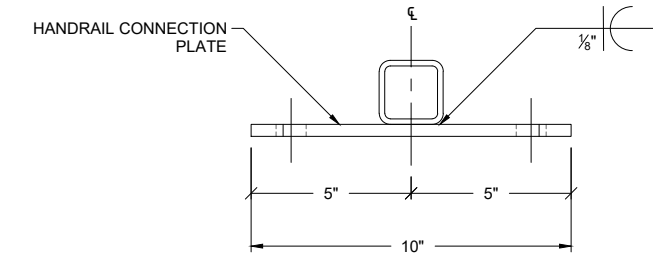
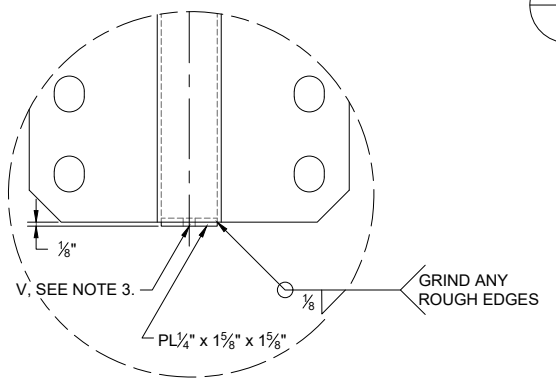
G CONDUIT BRACKET CB-1
18 EST. WT.: 7 LBS, GALVANIZED

- NOTES**
- ALL STRUCTURAL STEEL ANGLES AND PLATES SHALL CONFORM TO ASTM A36.
 - MATERIALS SCHEDULED TO BE COATED SHALL BE GALVANIZED IN ACCORDANCE WITH ARRC SSC 716-2.07.
 - WHEN USING OWNER-PROVIDED PRE-CAST CONCRETE SUPERSTRUCTURES, FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING.
 - WALKWAY DECKING SHALL BE THREE 4"x12" HARDWOOD BEAMS FIELD CUT AND DRILLED OR STEEL 3" WIDE 38W2 DECKING RATED FOR MINIMUM 10' SPAN.
 - CONDUIT BRACKET CB-1 MAY BE INSTALLED WITHOUT THE WALKWAY USING ASTM A307, GRADE A, HOT DIP GALVANIZED 3/4"Ø x 9" BOLT WITH NYLOCK NUT AND PLATE WASHER PW-1.
 - ALL BOLTS TACK WELDED AFTER TENSIONING.

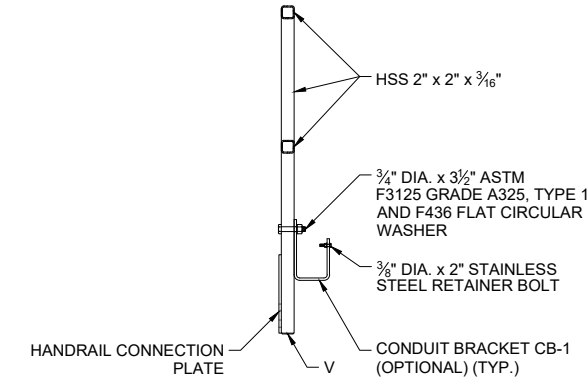
PRELIMINARY
 NOT FOR CONSTRUCTION



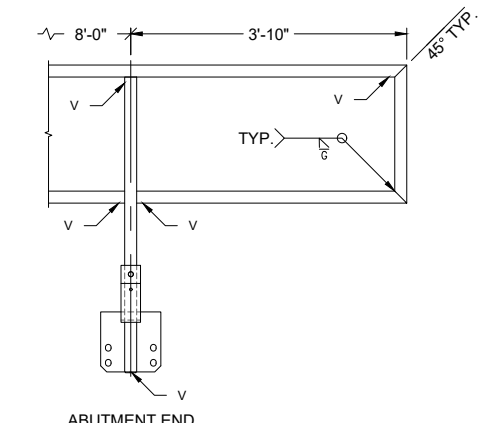
A HANDRAIL PANEL HP-00
 19 EST. WT.: 370 LBS., GALVANIZED



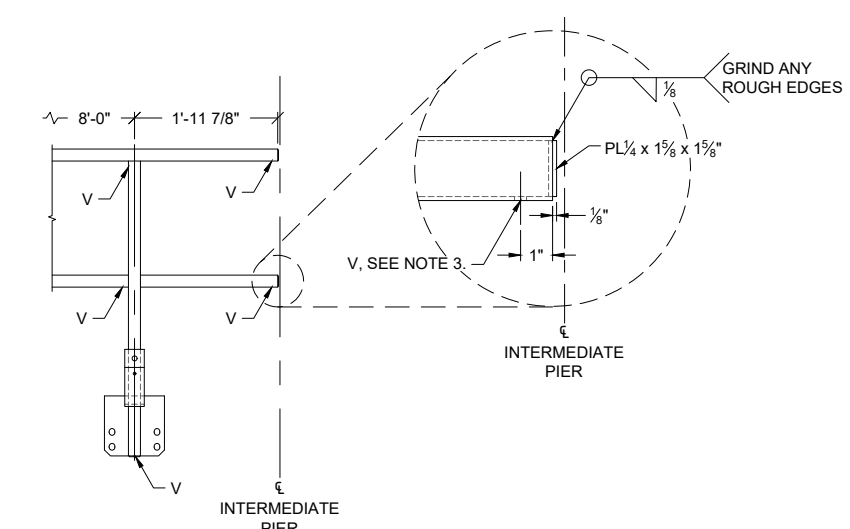
D HANDRAIL CONNECTION DETAIL
 19 TYPICAL



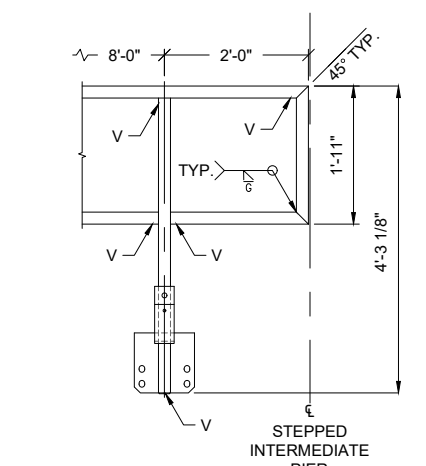
B HANDRAIL SECTION
 19 TYPICAL



E ABUTMENT END
 19 APPLIES TO ALL ABUTMENT ENDS IN RESPECTIVE ORIENTATION (MIRRORED WHERE APPLICABLE).



F INTERMEDIATE END
 19 APPLIES TO ALL INTERMEDIATE PIER ENDS IN RESPECTIVE ORIENTATION (MIRRORED WHERE APPLICABLE).



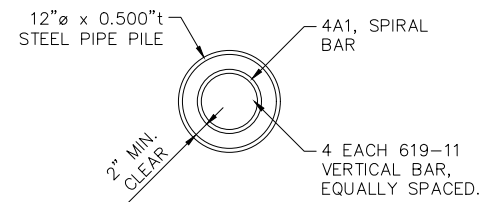
G STEPPED INTERMEDIATE END
 19 APPLIES TO ALL STEPPED INTERMEDIATE PIER ENDS IN RESPECTIVE ORIENTATION (MIRRORED WHERE APPLICABLE).

NOTES

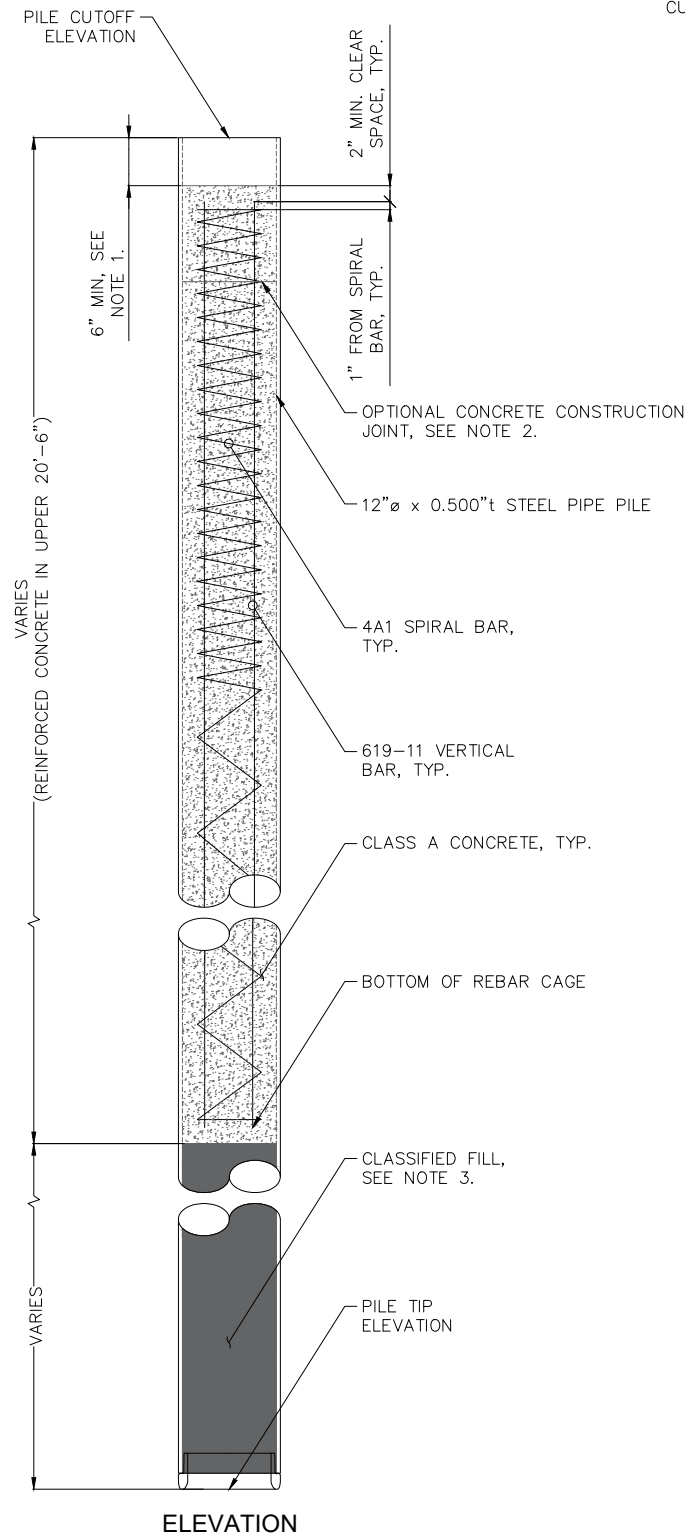
- ALL STRUCTURAL STEEL ANGLES AND PLATES SHALL CONFORM TO ASTM A36.
- MATERIALS SCHEDULED TO BE COATED SHALL BE GALVANIZED IN ACCORDANCE WITH ARRC SSC 716-2.07.
- V = 3/8\"/>
- HANDRAIL PANEL ON WALKWAY SHALL BE ERECTED PLUM AND IN-LINE.
- WHEN USING OWNER-PROVIDED PRE-CAST CONCRETE SUPERSTRUCTURES, FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING.

**PRELIMINARY
 NOT FOR CONSTRUCTION**

DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP: FAIRBANKS, ANCHORAGE, SEWARD	
ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: STANDARD 28 FOOT SPAN CONCRETE BALLAST DECK (CBD) SHEET TITLE: MISCELLANEOUS STEEL: HANDRAIL PANEL
AFE NO.	TBD
YEAR	2025
SHEET	19 OF 19

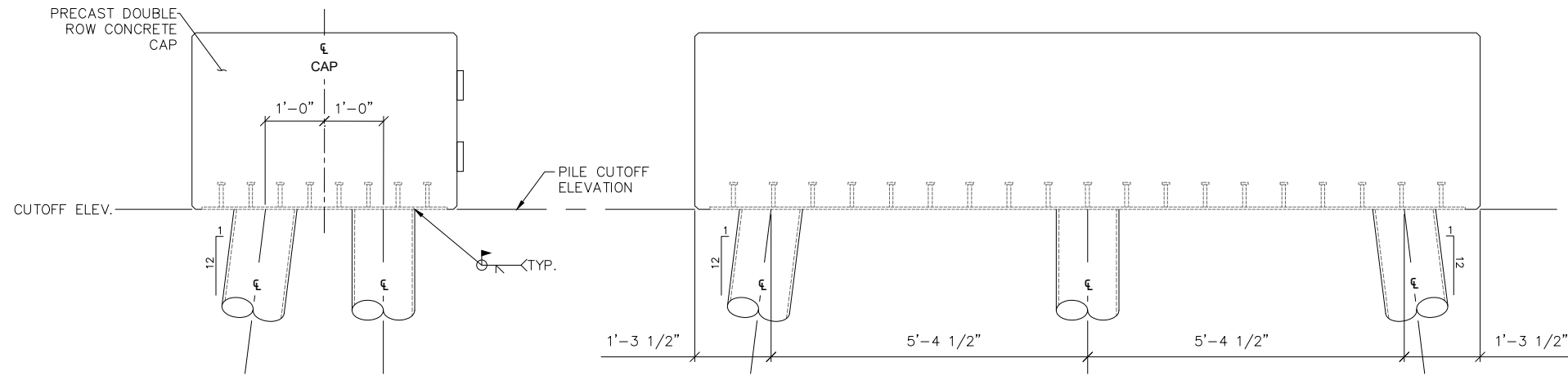


SECTION



ELEVATION

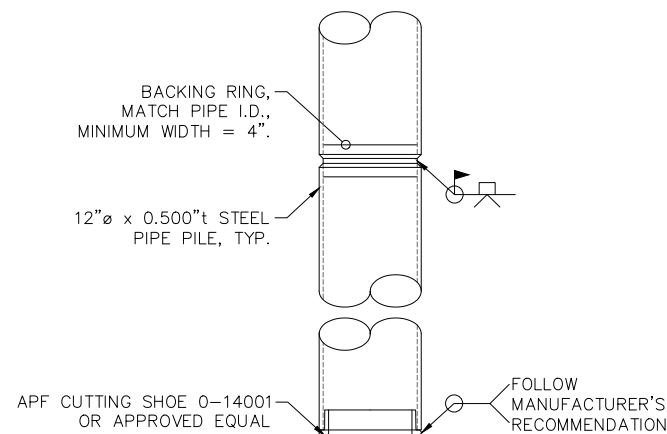
A **Ø12" X 0.500"t PILE REINFORCEMENT DETAIL**
 09A SCALE: 1" = 1'-0"



ELEVATION - SIDE

ELEVATION - FRONT

B **PILE TO CAP CONNECTION DETAILS**
 09A SCALE: 9" = 1'-0"

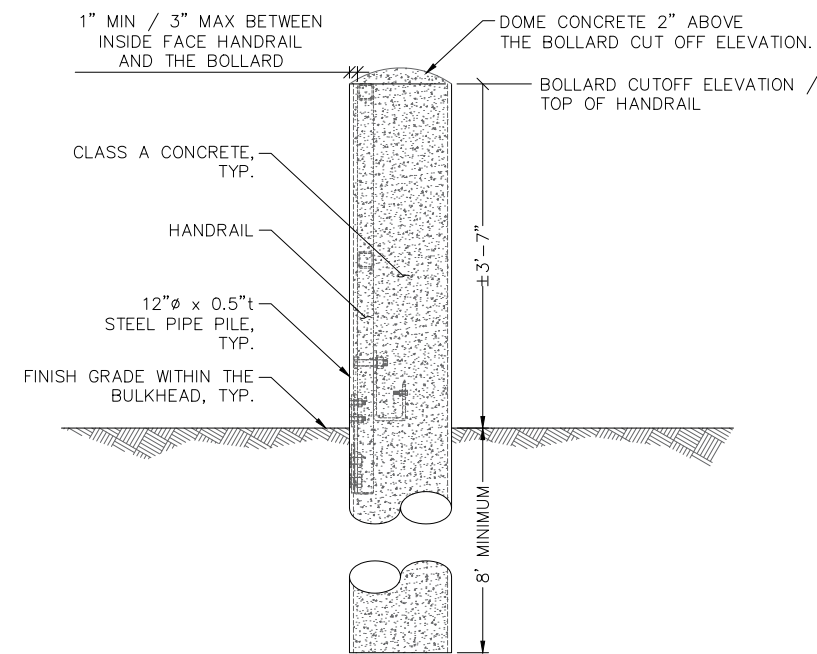


ELEVATION

C **PIPE PILE WELD DETAILS**
 09A SCALE: 1" = 1'-0"

REINFORCING SCHEDULE						
NAME	SIZE	TYPE	A	B	LENGTH	PER PILE
619-11	#6	STR.	-	-	19'-11"	4
4A1	#4	A	6.75"	19'-9"	73'-8"	1

BENDING DIAGRAM	
* PITCH NOTE:	
PITCH = 3" FOR TOP 5'-0" THEN 12" PITCH FOR REMAINING 14'-9"	
DIMENSIONS ARE OUT TO OUT OF BARS ESTIMATED WEIGHT OF REINFORCING STEEL PER PIPE PILE = 170 LB.	



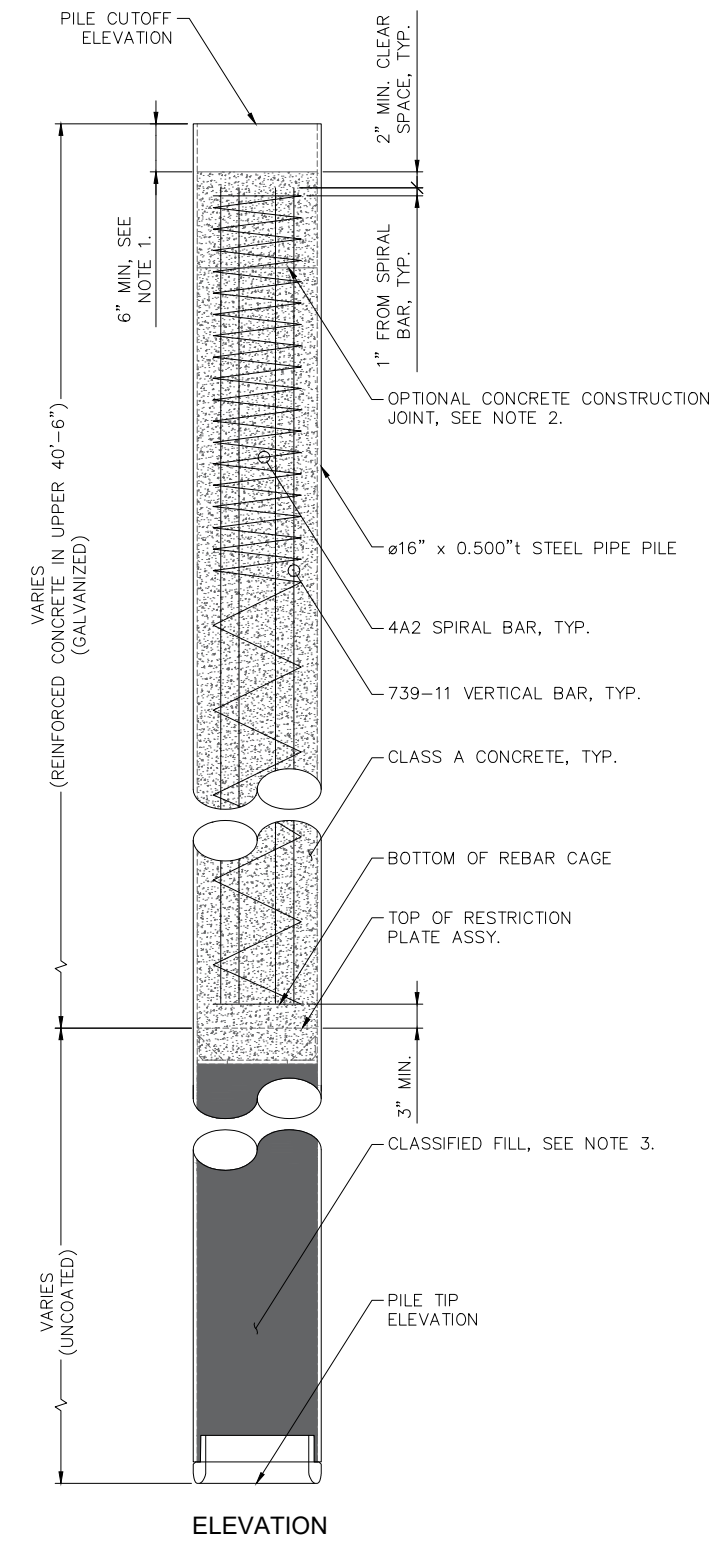
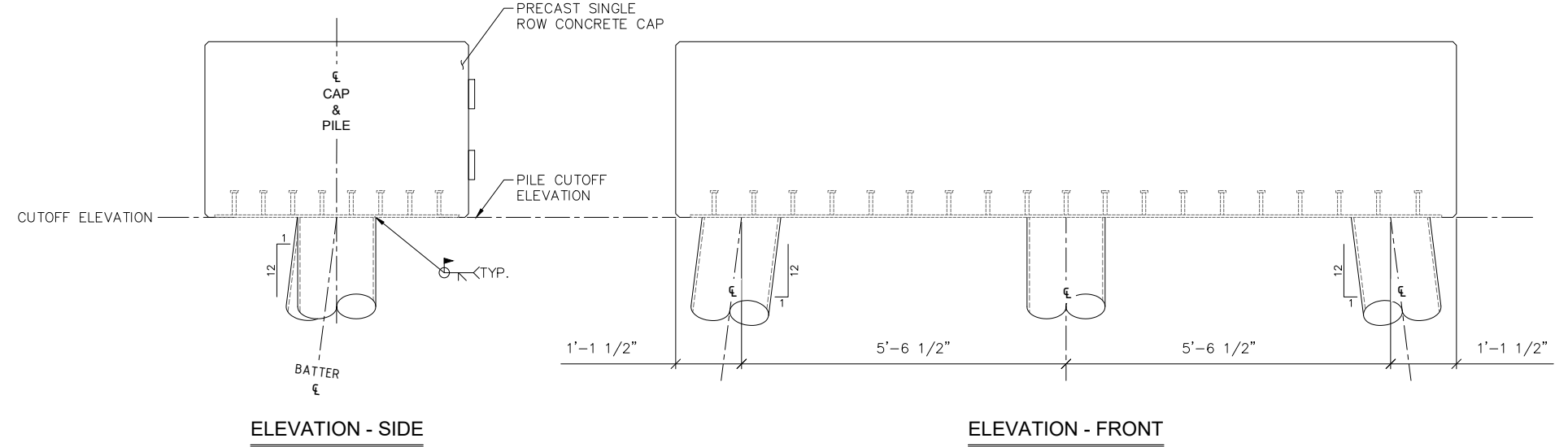
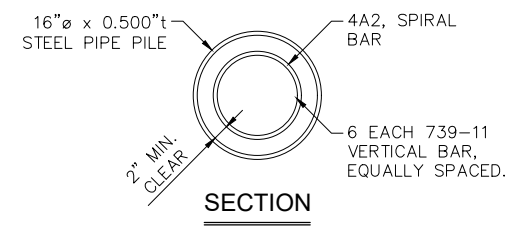
D **Ø12" BOLLARD DETAILS**
 09A SCALE: 1" = 1'-0"

NOTES

- MEASUREMENTS TAKEN ABOUT THE LOW END OF THE BATTERED PILES.
- A SINGLE CONSTRUCTION JOINT IN THE CONCRETE IS ALLOWED A MINIMUM OF 1.5' BELOW THE CUTOFF ELEVATION OF THE PILE.
- WHEN REQUIRED; CLASSIFIED FILL MAY CONSIST OF CONCRETE, CONTROLLED LOW-STRENGTH MATERIAL (CLSM), OR PROCESSED AGGREGATES. THE USE OF IN-SITU MATERIAL IS NOT ALLOWED WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE OWNER.
- IF A PLUG IS REQUIRED, IT SHALL BE INSTALLED NO LESS THAN 40' 9" FROM THE DESIGNED PILE CUTOFF ELEVATION.
- 100 TON MINIMUM DRIVING RESISTANCE PER PILE AT 60'-0" MINIMUM PENETRATION.

THIS SHEET REPLACES EQUIVALENT IN CBD STANDARD SET

DESIGNED BY:	ARRK
CHECKED BY:	ARRK
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP: FAIRBANKS, ANCHORAGE MP102.5, SEWARD	
ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: MP 102.5 CULVERT REPLACEMENT SHEET TITLE: Ø12" PIPE PILE DETAILS
AFE NO.	TBD
YEAR	2025
SHEET	09A OF 19

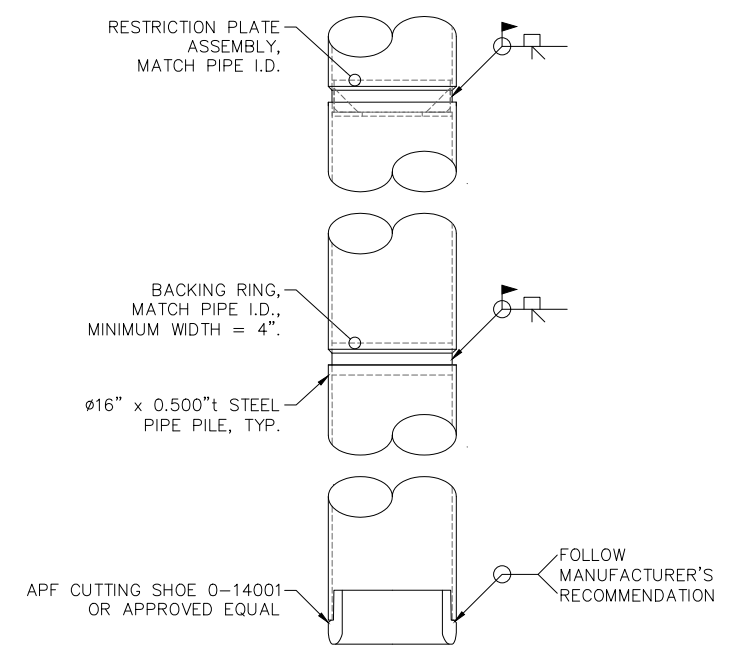


A 16" X 0.500" t PILE REINFORCEMENT DETAIL

10A SCALE: 1" = 1'-0"

B PILE TO CAP CONNECTION DETAILS

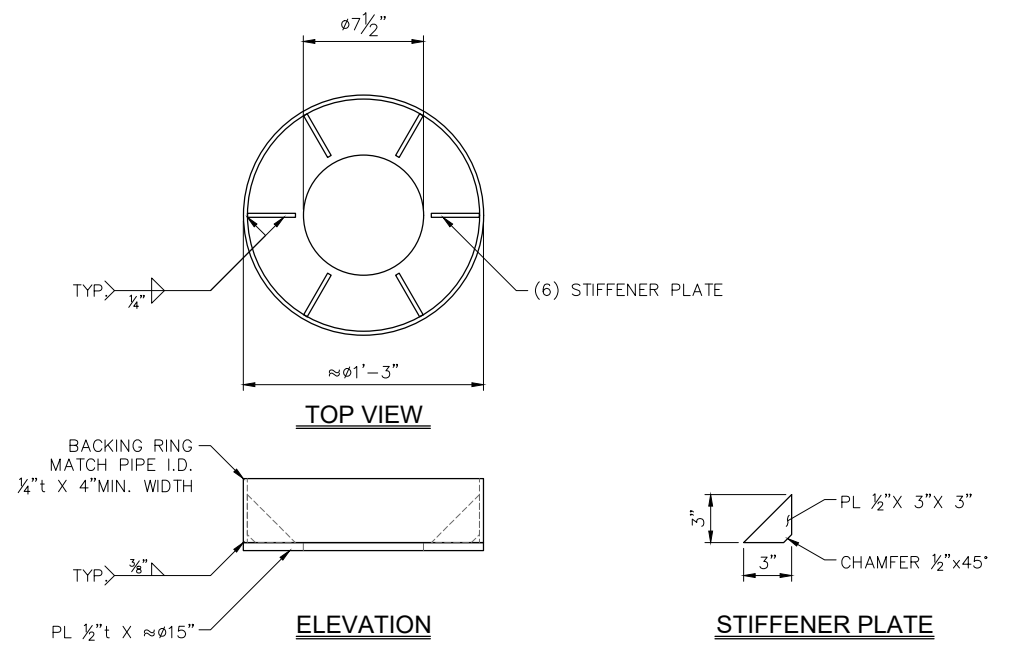
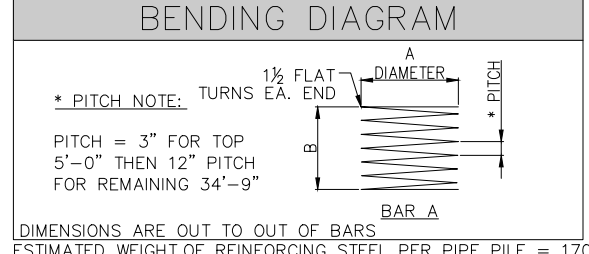
10A SCALE: 9" = 1'-0"



C PIPE PILE WELD DETAILS

10A SCALE: 1" = 1'-0"

REINFORCING SCHEDULE						
NAME	SIZE	TYPE	A	B	LENGTH H	PER PILE
739-11	#7	STR.	-	-	39'-11"	6
4A2	#4	A	10.75"	39'-9"	172'-8"	1



D RESTRICTION PLATE ASSEMBLY DETAILS (PLUG)

10A SCALE: 1" = 1'-0"

NOTES

- MEASUREMENTS TAKEN ABOUT THE LOW END OF THE BATTERED PILES.
- A SINGLE CONSTRUCTION JOINT IN THE CONCRETE IS ALLOWED A MINIMUM OF 1.5' BELOW THE CUTOFF ELEVATION OF THE PILE.
- WHEN REQUIRED; CLASSIFIED FILL MAY CONSIST OF CONCRETE, CONTROLLED LOW-STRENGTH MATERIAL (CLSM), OR PROCESSED AGGREGATES. THE USE OF IN-SITU MATERIAL IS NOT ALLOWED WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE OWNER.
- IF A PLUG IS REQUIRED, IT SHALL BE INSTALLED NO LESS THAN 40' 9" FROM THE DESIGNED PILE CUTOFF ELEVATION.
- 200 TON MINIMUM DRIVING RESISTANCE PER PILE AT 60'-0" MINIMUM PENETRATION.

THIS SHEET REPLACES EQUIVALENT IN CBD STANDARD SET



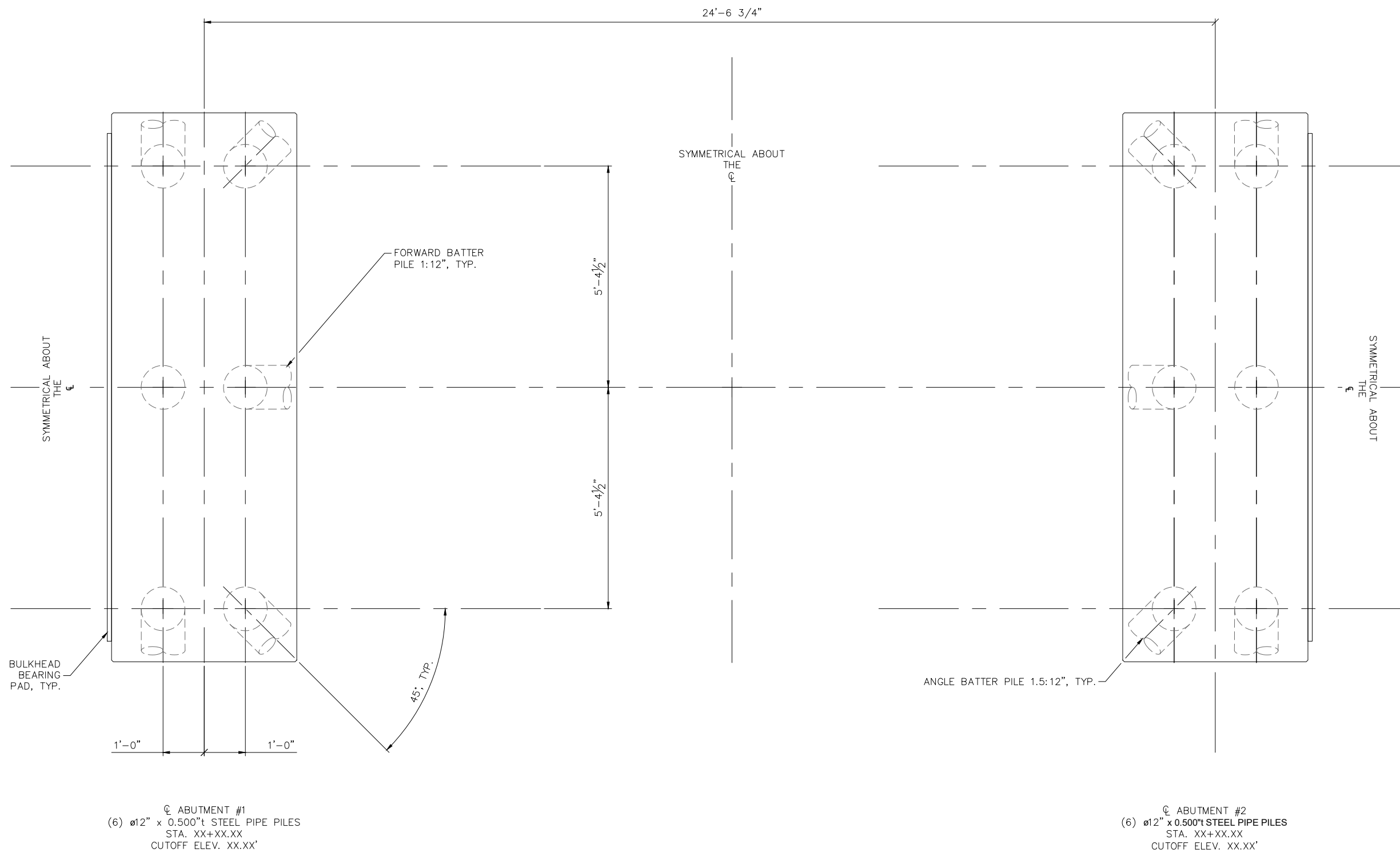
A **PROPOSED PIPE PILE LAYOUT**
 11A SCALE: 9" = 1'-0"

NOTES

1. WHEN REQUIRED; FORWARD BATTER PILE AND 45° ANGLE BATTER PILES MAY BE INSTALLED AT ALTERNATE ANGLES WITH ENGINEERING APPROVAL.

THIS SHEET REPLACES EQUIVALENT
 IN CBD STANDARD SET

DRAWING LOCATION: P:\ENGINEERING\CULVERTS\CU 102.5\EMERGENCY REPLACEMENT 2025\CU 102.5 PILE AND CAPS.DWG
 DATE: 11/7/2025 5:03 PM
 SCALE: AS NOTED
 PUBLISHED CTB: -----



CL ABUTMENT #1
 (6) $\phi 12$ " x 0.500"t STEEL PIPE PILES
 STA. XX+XX.XX
 CUTOFF ELEV. XX.XX'

CL ABUTMENT #2
 (6) $\phi 12$ " x 0.500"t STEEL PIPE PILES
 STA. XX+XX.XX
 CUTOFF ELEV. XX.XX'

A
 12A PROPOSED PIPE PILE LAYOUT
 SCALE: 9" = 1'-0"

NOTES

- WHEN REQUIRED; FORWARD BATTER PILE AND 45° ANGLE BATTER PILES MAY BE INSTALLED AT ALTERNATE ANGLES WITH ENGINEERING APPROVAL.

THIS SHEET REPLACES EQUIVALENT IN CBD STANDARD SET

DESIGNED BY:	
CHECKED BY:	
DRAFTED BY:	MCG
ALASKA RAILROAD CORPORATION PO BOX 107500, ANCHORAGE, AK 99510-7500 327 W SHIP CREEK AVE ANCHORAGE, AK 99501 (907) 265-2300	
KEY MAP 	
ALASKA RAILROAD ENGINEERING DEPARTMENT P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500	PROJECT: MP 102.5 CULVERT REPLACEMENT SHEET TITLE: PROPOSED PIPE PILE LAYOUT
AFE NO.	TBD
YEAR	2025
SHEET	11B OF 19