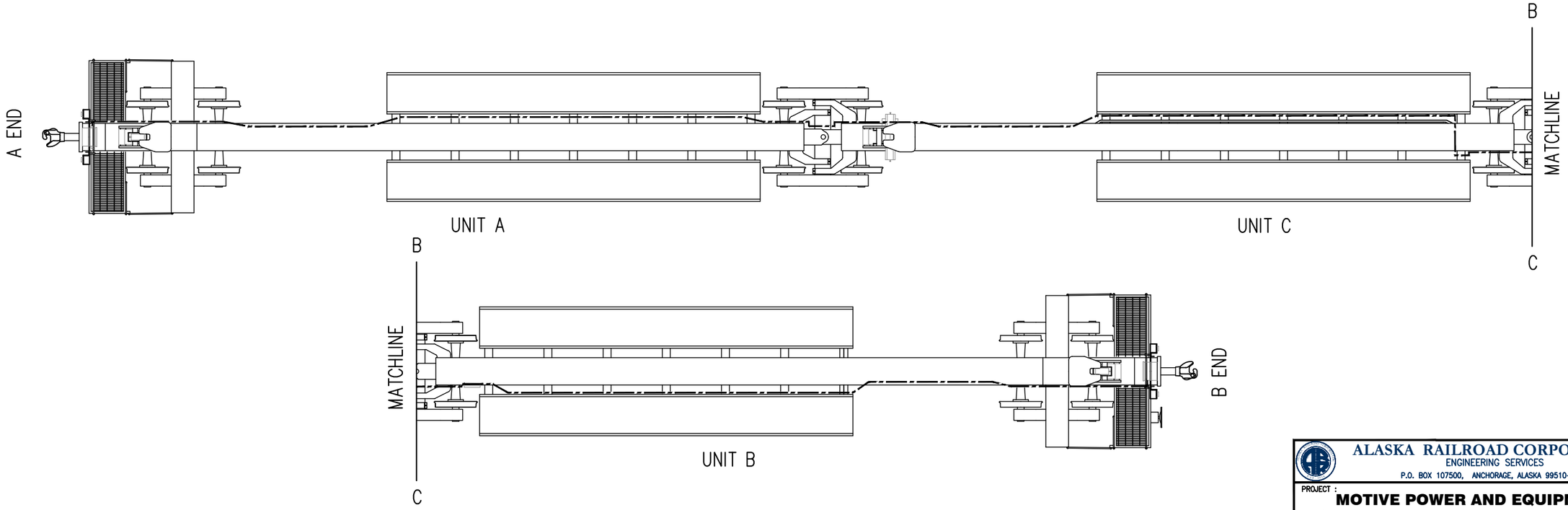
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

MOTIVE POWER AND EQUIPMENT
ARR 19116-19129 & ARR 19130-19144
480v ELECTRIFICATION

MAY 2020



CAR POWER 2" CONDUIT ROUTING OVERVIEW

REV.	DATE	BY	REVISION

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

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

TITLE:
TITLE SHEET & CONDUIT ROUTING OVERVIEW

DESIGNED BY: ARRC	SCALE : NO SCALE	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 1 OF 13	
APPROVED BY:			

Car Number	Power	Conduit Type
ARR 19116	Dry	N/A
ARR 19117	Dry	N/A
ARR 19118	Dry	N/A
ARR 19119	Dry	N/A
ARR 19120	Dry	N/A
ARR 19121	Dry	N/A
ARR 19122	Dry	N/A
ARR 19123	Dry	N/A
ARR 19124	Dry	N/A
ARR 19125	Dry	N/A
ARR 19126	Dry	N/A
ARR 19127	Dry	N/A
ARR 19128	Dry	N/A
ARR 19129	Dry	N/A
ARR 19130	220V	Standard
ARR 19131	220V	Rec Tubing Tray
ARR 19132	220V	Standard
ARR 19133	220V	Standard
ARR 19134	220V	Rec Tubing Tray
ARR 19135	220V	Standard
ARR 19136	220V	Rec Tubing Tray
ARR 19137	220V	Standard
ARR 19138	220V	Standard
ARR 19139	220V	Standard
ARR 19140	220V	Standard
ARR 19141	220V	Rec Tubing Tray
ARR 19143	220V	Standard
ARR 19144	220V	Standard

NOTES:

1) "DRY" UNITS DO NOT HAVE ELECTRICAL EQUIPMENT INSTALLED ON THE RAIL CARS CURRENTLY.
2) "220V" UNITS HAVE A FUNCTIONING 220V ELECTRICAL SYSTEM THAT MUST BE REMOVED PRIOR TO INSTALLATION OF THE 480VAC SYSTEM, IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
3) THE CONDUIT ON THE "220" CARS, CAN BE EITHER REUSED OR REPLACED AT THE DISCRETION OF THE CONTRACTOR. ADDITIONALLY, THE "220V" CARS WHICH ARE DESIGNATED AS "REC TUBING TRAY" HAVE THE CABLING ROUTED THROUGH THE TRAILER TRAY TUBING, THUS ARE LACKING THE 2" CONDUIT IN THESE LOCATIONS.
4) WHEN REUSING EXISTING CONDUIT, ADDITIONAL SUPPORTS MAYBE NECESSARY TO MEET SPECIFICATIONS AND DRAWING STANDARDS.

REV.	DATE	BY	REVISION

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

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

TITLE:
CONFIGURATION LIST

DESIGNED BY: ARRC	SCALE : NO SCALE	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 2 OF 13	
APPROVED BY:			

Description	Manufactures Part #	Warehouse Part #	Quantity/Car	Cars	Full Quantity	Provider
ESL 15KVA Step-Down Transformer Portable Unit, 480V-220V	XK-50-240-32-480-220866A	317632	3	28	84	ARRC
ESL, 1-Gang Reefer Assembly, 440/480 VAC, 30A, 50/60 Hz (Plunger Box)	E1-R32-480-30-22SSNDP-SP-220322RN	316945	4	28	112	ARRC
ESL, Pigtail Assembly Convertor, 3Phase, 240V, 50A	0914-XX	317633	3	28	84	ARRC
ESL, 96" 480V Jumpers, Rail Car To Semi Trailer	0905-41	316994	3	28	84	ARRC
Side Hinged Junction Box 20x16x6.75 (NEMA 3R)	A20R166HCR (Hoffman (nVent))		2	28	56	ARRC
Enclosure, Steel, Continuous Hinge with Clamps, 12 x 10 x 8 (NEMA 4)	A12108CHNF (Hoffman (nVent))		2	28	56	ARRC
Top Hinged Junction Box 20x16x6.75			3	28	84	ARRC
Side Hinged Junction Box 6x6x4 (NEMA 3R)	A6R64HCR (Hoffman (nVent))		3	28	84	ARRC
Conduit 3/4" (IMC Galvanized Steel)			45	28	1,260	Contractor
Conduit 3/4" (Flexible Liquid Tight Metal Core)			10	28	280	Contractor
Conduit 2" (IMC Galvanized Steel)			170	14	2,380	Contractor
Wire - Train line 2/0			510	28	14,280	Contractor
Wire - Branch #10/4			215	28	6,020	Contractor
Steel Bracket - 480v Train Complete			2	28	56	Contractor
480v Outlet Housing	MRA-H Rev. H (Cadillac Trainline "480 Series")	054503	4	28	112	ARRC
480v Receptacle Assembly, 48” Length	MRA-1-0048 (Cadillac Trainline "480 Series")	054453	4	28	112	ARRC
Jumper Cable, 72" Head End Power	MPA-2-0072 (Cadillac Trainline "480 Series")	058405	2	28	56	ARRC
Fasteners, Brackets & Miscellaneous Parts			1	28	28	Contractor

NOTES:

1) CONDUIT AND WIRE QUANTITIES ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR THEIR OWN QUANTITY TAKE-OFFS USING THE INFORMATION WITHIN THE CONTRACT DOCUMENT TO VERIFY THE QUANTITIES FOR THEIR BID.

REV.	DATE	BY	REVISION

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

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

TITLE:
PROJECT PARTS LIST

DESIGNED BY: ARRC
DRAWN BY: CDL
CHECKED BY: JAK
APPROVED BY:

SCALE : NO SCALE
DATE : 05/01/2020

AFE NO.:
ACAD FILE:
DWG NO. 3 OF 13

DIVISION 16 - ELECTRICAL

PART 1 - GENERAL

1.1 SCOPE

A. PROVIDE COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON DRAWINGS AND SPECIFIED. FURNISH ALL LABOR, EQUIPMENT, APPLIANCES, MATERIALS, AND PERFORM OPERATIONS REQUIRED FOR COMPLETE INSTALLATION IN ACCORDANCE WITH ALL SECTIONS OF SPECIFICATIONS, DRAWINGS, CODES, AND CONDITIONS OF CONTRACT.

1.2 CODES, STANDARDS, FEES, PERMITS

A. COMPLY WITH LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND NATIONAL ELECTRICAL SAFETY CODE. COMPLY WITH NEMA, UL, ANSI, ICEA AND OTHER INDUSTRY STANDARDS.

B. COMPLY WITH THE LATEST EDITION OF THE APTA PR-E-RP-002-98 "RECOMMENDED PRACTICE FOR WIRING OF PASSENGER EQUIPMENT", AND AAR RP-585 WIRING AND CABLE SPECIFICATION".

1.3 DRAWINGS

A. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL FEATURES OF WORK. DO NOT SCALE DRAWINGS. REVIEW OTHER DRAWINGS AND ADJUST WORK TO CONFORM TO CONDITIONS SHOWN. VERIFY FIELD CONDITIONS. IMMEDIATELY CONTACT THE OWNER'S REPRESENTATIVE FOR CLARIFICATION OF QUESTIONABLE, OBSCURE ITEMS, OR APPARENT CONFLICTS. THE OWNER'S REPRESENTATIVE'S DECISION IS FINAL FOR ALL CLARIFICATIONS REQUESTED. EXTRA COST RESULTING FROM A CONDITION WHERE CLARIFICATION WAS NOT REQUESTED: MADE AT NO INCREASE IN CONTRACT AMOUNT UNLESS EXTRA COST IS APPROVED IN WRITING.

1.4 WORKMANSHIP

A. WORKMANSHIP IS CONSIDERED AS IMPORTANT AS ELECTRICAL AND MECHANICAL EFFICIENCY AND SUBJECT TO APPROVAL. EMPLOY WORKMEN SKILLED IN TRADE AND FAMILIAR WITH PARTICULAR TECHNIQUES APPLICABLE TO VARIOUS SECTIONS OF WORK. INSTALL IN ACCORDANCE WITH NECA “STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING.”

1.5 COORDINATION

A. COORDINATE WITH OTHER TRADES FOR PROPER INSTALLATION AND TIMELY EXECUTION. ANY CHANGES NECESSITATED BY FAILURE TO PROPERLY COORDINATE WORK: MADE AT NO INCREASE IN CONTRACT AMOUNT.

B. VERIFY INFORMATION SHOWN ON PLANS WITH EQUIPMENT ITEMS ACTUALLY FURNISHED WHERE EQUIPMENT IS FURNISHED OR INSTALLED BY OTHERS. NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICTS.

1.6 REMODEL WORK

A. EXISTING CONDITIONS NOTED ON THE DRAWINGS WERE PREPARED FROM PREVIOUS CONSTRUCTION DRAWINGS. VISIT SITE, VERIFY EXISTING CONDITIONS AND ALLOW ADEQUATE MONIES TO COVER ADDITIONAL WORK REQUIRED AS A RESULT OF AS-BUILT CONDITIONS. ASSUME THAT THE AS-BUILT INFORMATION DOES NOT INDICATE EXACT CONDUIT ROUTING OR CIRCUITING. INCLUDE NECESSARY WORK TO PROVIDE CIRCUIT CONTINUITY TO EXISTING CIRCUITS THAT MAY BE AFFECTED BY NEW WORK. CUT BACK EXISTING WORK BEING REMOVED OR ABANDONED BEYOND FINISHED SURFACES TO ALLOW REPAIR AND REFINISHING. ASSUME CONDITION OF WIRING IS NOT SUITABLE FOR RECONNECTING, UNLESS OTHERWISE NOTED.

B. NOTIFY OWNER'S REPRESENTATIVE OF ANY FIELD CONDITIONS WHERE CONTRACTOR CANNOT REUSE EXISTING MATERIAL OR EQUIPMENT BECAUSE OF DETERIORATED CONDITIONS. ALSO NOTIFY OWNER'S REPRESENTATIVE OF ANY EXISTING CONDITIONS WHICH MAY BE CONSIDERED UNSAFE OR IN NEED OF REPAIR.

1.7 SUBMITTALS

A. SUBMITTAL REVIEW IS FOR GENERAL DESIGN AND ARRANGEMENT ONLY AND DOES NOT RELIEVE THE CONTRACTOR FROM ANY REQUIREMENTS OF CONTRACT DOCUMENTS. PROVISION OF A COMPLETE AND SATISFACTORY WORKING INSTALLATION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

B. UNLESS NOTED, SUBMIT ELECTRONIC COPIES OF ALL MATERIALS, EQUIPMENT, AND WIRING DEVICES.

1.8 SUBSTITUTIONS

A. MAKE NO SUBSTITUTIONS OR REVISIONS WITHOUT WRITTEN APPROVAL. FOR EQUIPMENT SCHEDULED BY MANUFACTURER'S NAME AND CATALOG DESIGNATIONS: MANUFACTURER'S PUBLISHED DATA AND/OR SPECIFICATION FOR THAT ITEM ARE CONSIDERED PART OF SPECIFICATION. ALL SIMILAR EQUIPMENT SAME MANUFACTURER THROUGHOUT.

1.9 PROJECT COMPLETION

A. NOTIFY OWNER'S REPRESENTATIVE OF THE COMPLETION OF 480V ELECTRICAL SYSTEM INSTALL. OWNER'S REPRESENTATIVE WILL COORDINATE WITH ARRC JOURNEYMAN MECHANIC TO PERFORM THE INSPECTION WITHIN 24 HOURS, AND WILL HAVE TO BE DONE PRIOR TO SWITCHING.

B. THOROUGHLY CLEAN INSIDE AND OUT ALL FIXTURES AND EQUIPMENT. CLEAN PREMISES OF CONSTRUCTION DEBRIS.

DEMONSTRATE INSTALLATION TO OPERATE SATISFACTORILY IN ACCORDANCE WITH REQUIREMENTS OF CONTRACT DOCUMENTS. PROVIDE PERSONNEL TO ASSIST OWNER'S REPRESENTATIVE IN REMOVAL AND REPLACEMENT OF EQUIPMENT FOR OBSERVATION PURPOSES.

C. SHOULD ANY PORTION OF INSTALLATION FAIL, REPAIR OR REPLACE ITEMS UNTIL ITEMS CAN BE DEMONSTRATED TO COMPLY.

D. TURN OVER AS-BUILT DRAWINGS TO OWNER.

1.10 GUARANTEE

A. GUARANTEE ALL CONTRACTOR PROVIDED MATERIAL TO BE NEW, ALL WORK TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE. REPAIR OR REPLACE ANY WORK OR MATERIAL DEEMED DEFECTIVE DURING THE GUARANTEE PERIOD AT NO COST TO THE OWNER.

PART 2 - PRODUCTS

2.1 RACEWAYS

A. GALVANIZED RIGID STEEL CONDUIT OR INTERMEDIATE METAL CONDUIT ALONG THE BODY OF THE CAR AS SHOWN IN THE DRAWINGS.

B. ELECTRICAL METALLIC TUBING: USE IN A&B END TRAILER HITCH AREAS AS INDICATED. PROVIDE RAINTIGHT/CONCRETE-TIGHT COMPRESSION FITTINGS.

C. FLEXIBLE METALLIC CONDUIT: USAGE IN A&B END TRAILER HITCH AREAS AS INDICATED. PROVIDE RAINTIGHT/CONCRETE-TIGHT COMPRESSION FITTINGS. WHERE USED OUTDOORS, USE LIQUIDTIGHT FLEXIBLE CONDUIT RATED FOR -60 DEGREES FAHRENHEIT AND LISTED FOR DIRECT BURY.

D. UNLESS NOTED, INSTALL CONDUIT AS SHOWN ON THE ATTACHED PLAN. LOCATE CONDUIT TO NOT ENDANGER STRENGTH OF STRUCTURAL MEMBERS. DO NOT INSTALL CONDUIT IN OR THROUGH STRUCTURAL MEMBERS, UNLESS APPROVED IN WRITING FROM OWNER'S REPRESENTATIVE. DO NOT CUT, DRILL, OR PIERCE ANY STRUCTURAL MEMBERS, UNLESS APPROVED IN WRITING BY OWNER'S REPRESENTATIVE.

E. WHEN REUSING EXISTING CONDUIT, ADDITIONAL SUPPORTS MAYBE NECESSARY TO MEET SPECIFICATION AND DRAWING STANDARDS.

2.2 WIRE AND CABLE

A. INSTALL ALL CONDUCTORS IN APPROVED CONDUIT SYSTEMS. ALL CONDUCTOR SIZES BASED ON COPPER. ALUMINUM MAY NOT BE SUBSTITUTED.

B. PROVIDE STRANDED TRANSIT WIRE PER AAR RP-585.

C. MINIMUM INSULATION RATING: MINUS 50 TO PLUS 105 DEGREES CELSIUS, 600 VOLT

D. INSTALL NO THERMOPLASTIC INSULATED CONDUCTORS WHEN TEMPERATURE IS BELOW 30 DEGREES CELSIUS.

E. FLAME RETARDANT, AND OIL RESISTANT JACKET AND CONDUCTORS

F. WATER RESISTANT AND SUBMERSIBLE

G. ACCEPTABLE MANUFACURES - ARCTIC ULTRAFLEX BLUE, POLYRAD XT (RAIL & TRANSIT GRADE WIRE AND CABLING), OR EQUIVALENTS SUBJECT TO APPROVAL BY ALASKA RAILROAD.

PART 3 - EXECUTION

3.1 GENERAL

A. INSTALL ALL WIRE IN RACEWAY TO PROTECT THE CONDUCTORS AND INSULATION.

B. ALL WIRING SHALL TERMINATE AT TERMINAL BLOCKS. ALL TERMINATIONS SHALL BE OF VIBRATION RESISTANT, COMPRESSION (CRIMP) TYPE. TO BE COMPLIANT WITH APTA PR-E-RP-002-98.

C. INSTALL ALL MATERIAL AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, INSTRUCTIONS AND INSTALLATION DRAWINGS, UNLESS OTHERWISE INDICATED AND IN ACCORDANCE WITH NECA'S "STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING".

D. SEAL PENETRATIONS WITH UL-LISTED FIREPROOFING MATERIALS TO MAINTAIN FIREPROOFING INTEGRITY AND WATERTIGHTNESS.

E. SEAL AIRTIGHT ALL PENETRATIONS THROUGH SMOKE PARTITIONING, FAN PLENUMS, DUCTWORK, AND VAPOR BARRIERS.

F. PROVIDE PROPER IDENTIFICATION FOR PANELS, SWITCHES, TERMINAL STRIPS, OR ANY ITEM OF ELECTRICAL EQUIPMENT USED AS A CONTROL DEVICE OR DISCONNECTING MEANS FOR ANY EQUIPMENT. IDENTIFY BOXES CONTAINING EMERGENCY CIRCUITS PER N.E.C. ARTICLE 700-9.

3.2 CONDUIT & JUNCTION BOX SUPPORTS

A. SUPPORT CONDUIT ON APPROVED TYPES OF WALL BRACKETS, MALLEABLE IRON STRAPS.

B. INDEPENDENTLY SUPPORT CONDUIT OR EQUIPMENT FROM CARBODY SIDESILL/ CENTERSILL UNLESS OTHERWISE SPECIFIED.

3.3 AS-BUILT DRAWINGS

A. KEEP CLEAN SET OF PRINTS AT JOB SITE AND RECORD ALL ELECTRICAL CHANGES THAT OCCURRED DURING CONSTRUCTION. FAILURE TO DO SO MAY DELAY PAYMENT.

B. AT END OF CONSTRUCTION, PROVIDE ONE COMPLETE SET OF DRAWINGS INDICATING ALL FIELD CHANGES FOR RECORD PURPOSES TO THE OWNER'S REPRESENTATIVE.

REV.	DATE	BY	REVISION

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

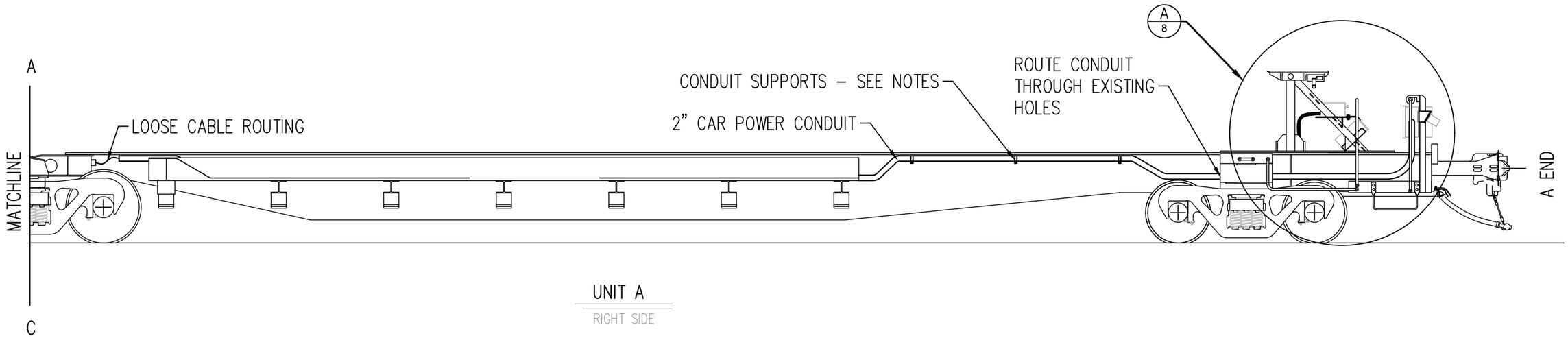
PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

TITLE:
ELECTRICAL SPECIFICATIONS

DESIGNED BY: ARRC
DRAWN BY: CDL
CHECKED BY: JAK
APPROVED BY:

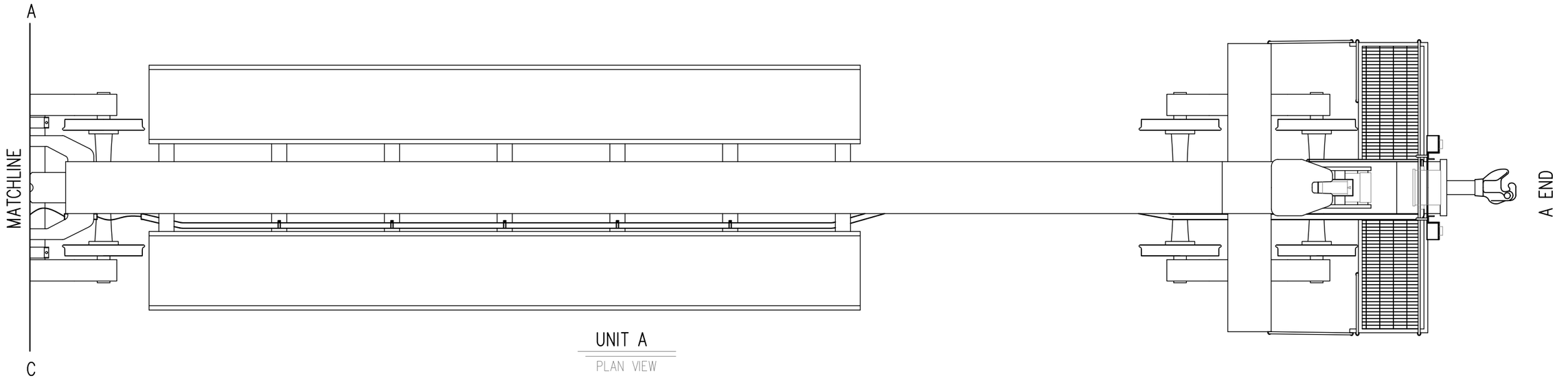
SCALE : NO SCALE
DATE : 05/01/2020

AFE NO.:
ACAD FILE:
DWG NO. 4 OF 13



UNIT A

RIGHT SIDE



UNIT A

PLAN VIEW

NOTES:

1) VERTICALLY MOUNTED CONDUIT SUPPORTS MUST NOT EXCEED 48" SPACING.
2) CONDUIT MUST BE SUPPORTED WITHIN 6" OF TERMINATIONS OR BENDS.

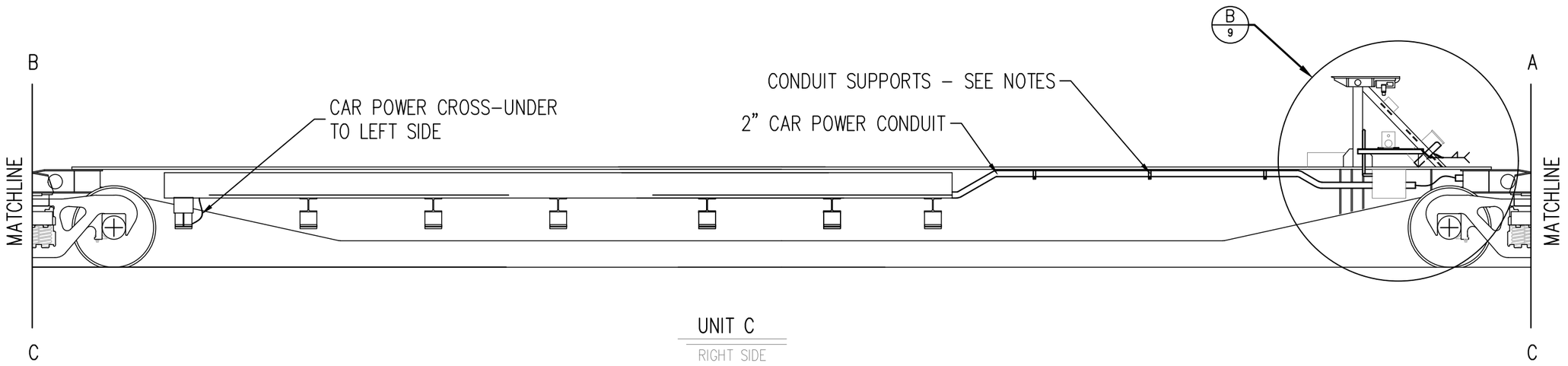
REV.	DATE	BY	REVISION

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

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

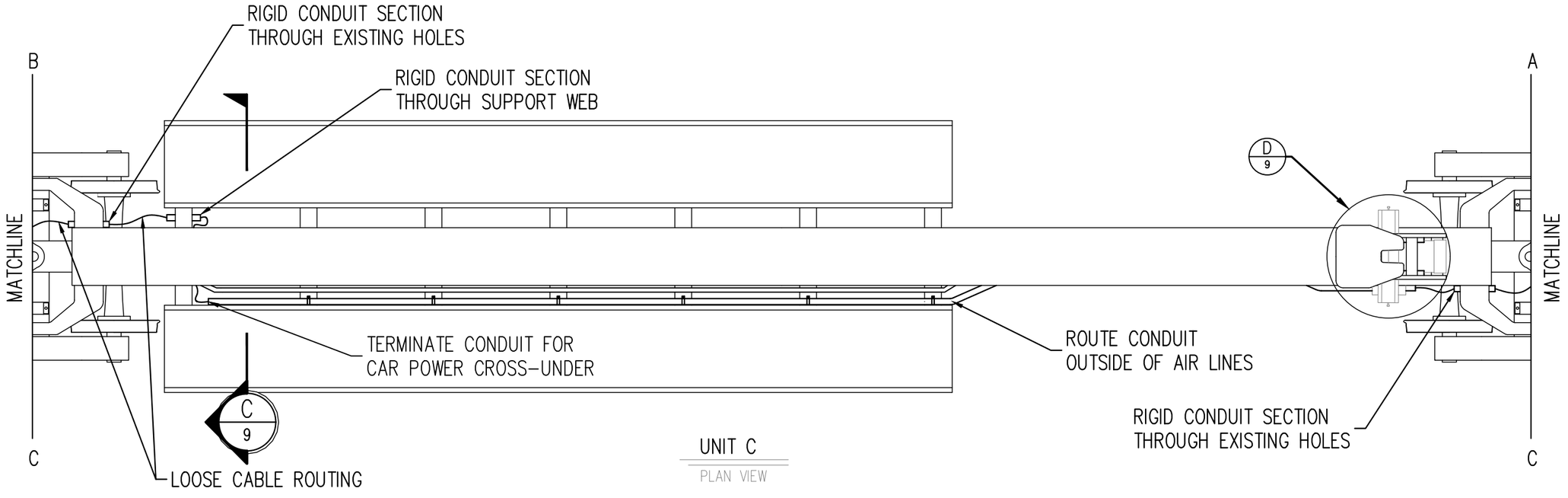
TITLE:
CAR UNIT A
PROFILE AND PLAN VIEW

DESIGNED BY: ARRC	SCALE : NO SCALE	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 5 OF 13	
APPROVED BY:			



UNIT C

RIGHT SIDE



UNIT C

PLAN VIEW

NOTES:

1) VERTICALLY MOUNTED CONDUIT SUPPORTS MUST NOT EXCEED 48" SPACING.
2) CONDUIT MUST BE SUPPORTED WITHIN 6" OF TERMINATIONS OR BENDS.

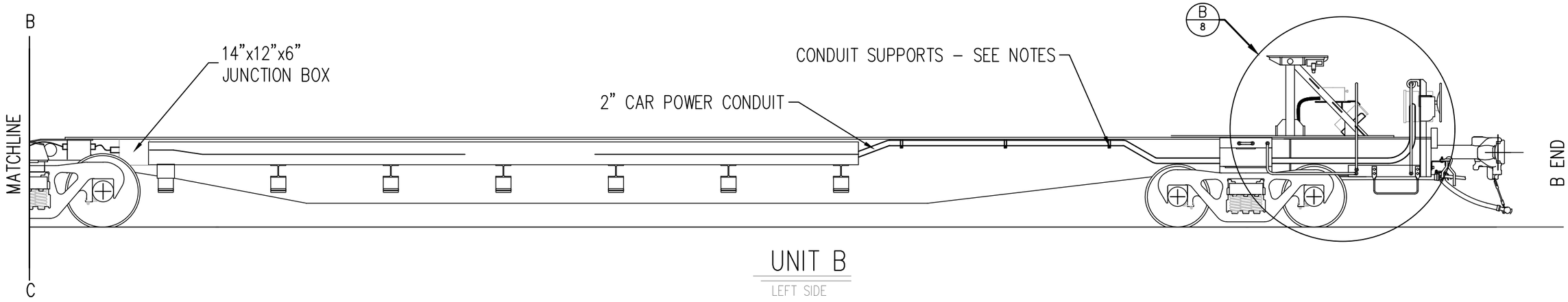
REV.	DATE	BY	REVISION

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

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

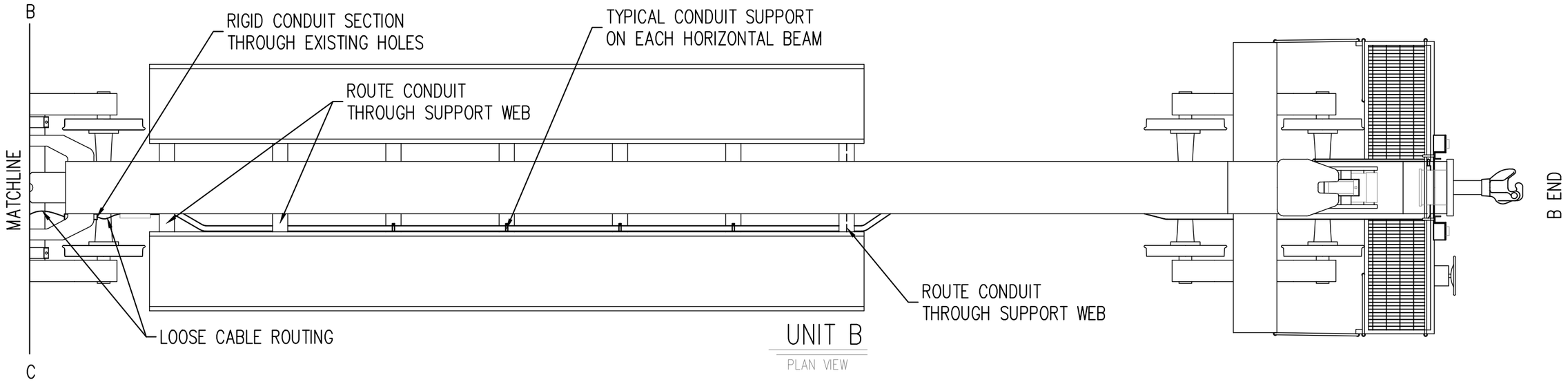
TITLE:
CAR UNIT C
PROFILE AND PLAN VIEW

DESIGNED BY: ARRC	SCALE : NO SCALE	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 6 OF 13	
APPROVED BY:			



UNIT B

LEFT SIDE



UNIT B

PLAN VIEW

NOTES:

1) VERTICALLY MOUNTED CONDUIT SUPPORTS MUST NOT EXCEED 48" SPACING.
2) CONDUIT MUST BE SUPPORTED WITHIN 6" OF TERMINATIONS OR BENDS.

REV.	DATE	BY	REVISION

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

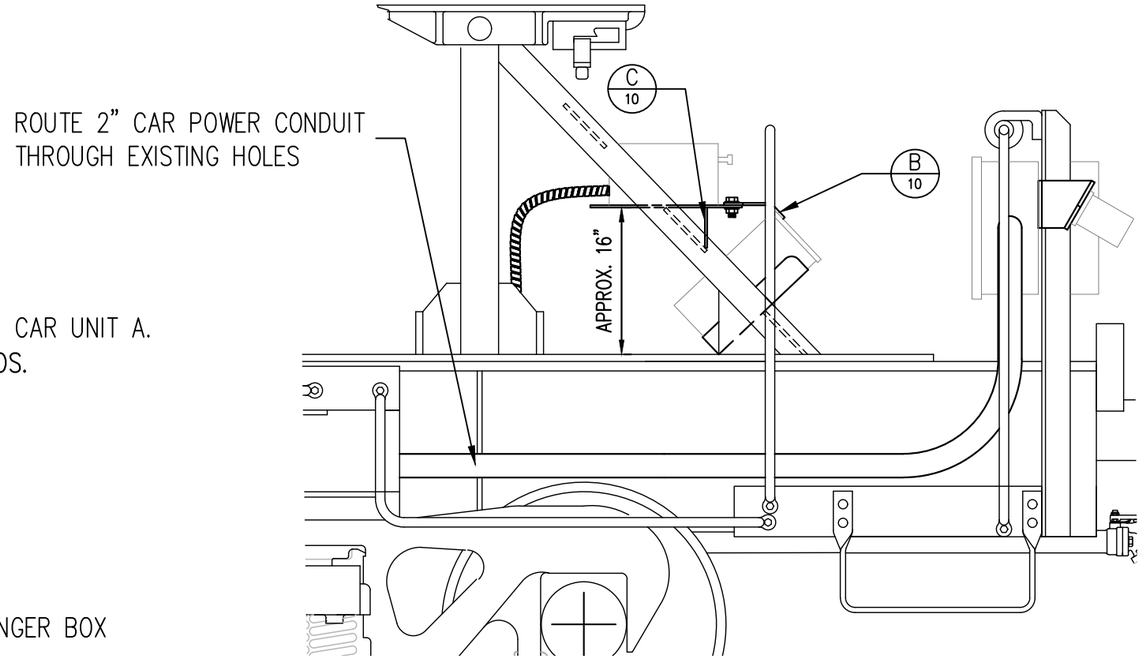
PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

TITLE:
CAR UNIT B
PROFILE AND PLAN VIEW

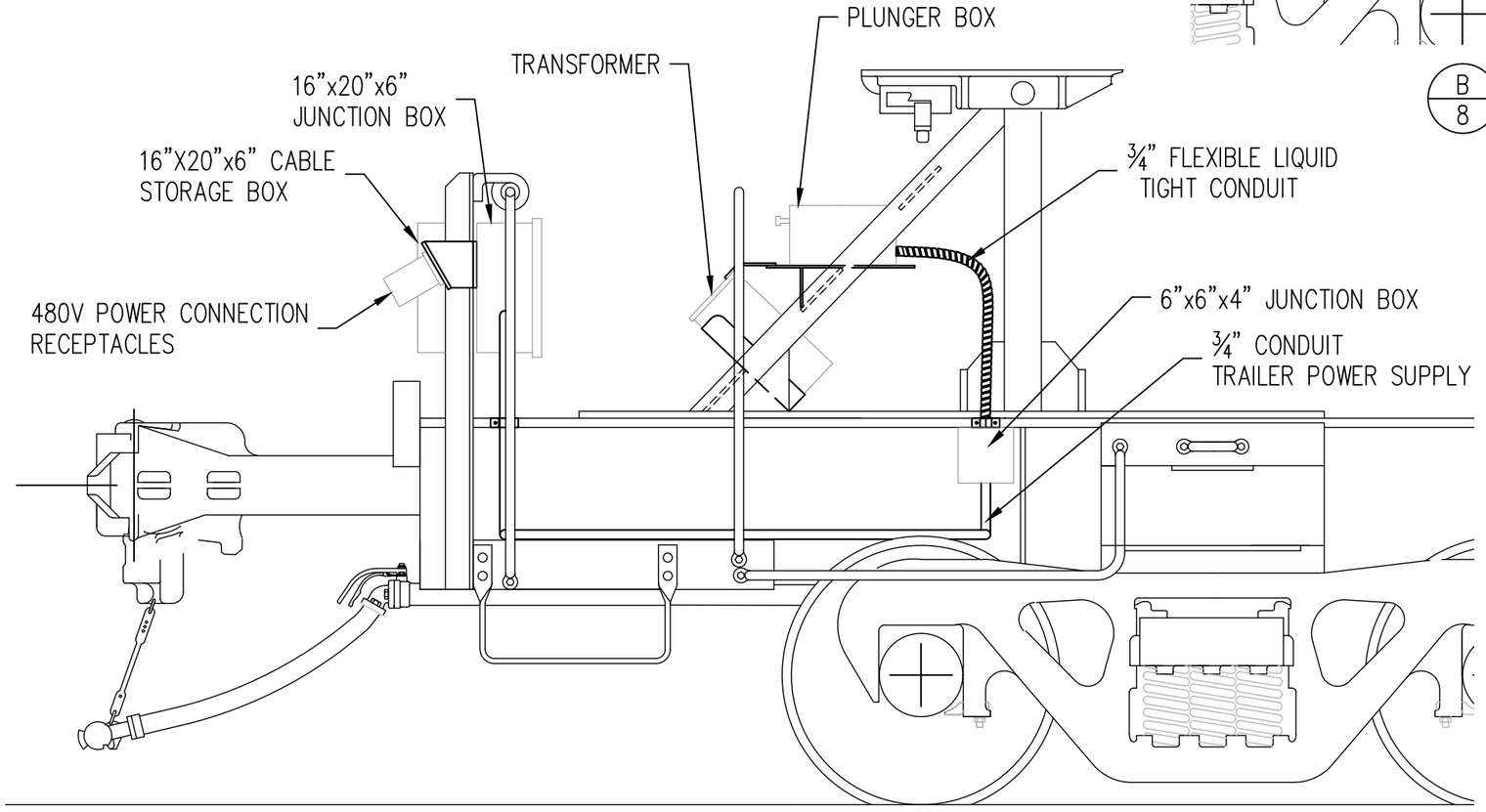
DESIGNED BY: ARRC	SCALE : NO SCALE	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 7 OF 13	
APPROVED BY:			

NOTES:

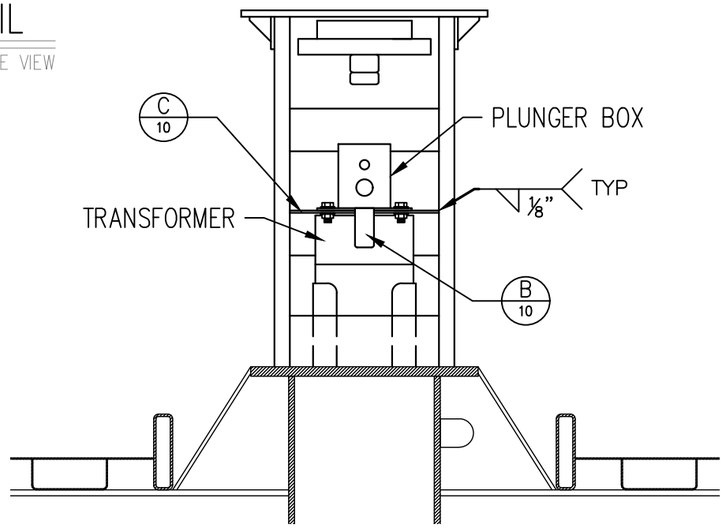
1) CAR UNIT B TRAILER STAND EQUIPMENT DETAILS ARE MIRRORED FROM CAR UNIT A.
2) TYPICAL WELDING OF BRACKETS TO TRAILER HITCHES ARE FILLET WELDS.



B/8 DETAIL
RIGHT SIDE VIEW



A/8 DETAIL
LEFT SIDE VIEW



C/8 CROSS-SECTION
TRAILER STAND EQUIPMENT

REV.	DATE	BY	REVISION

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

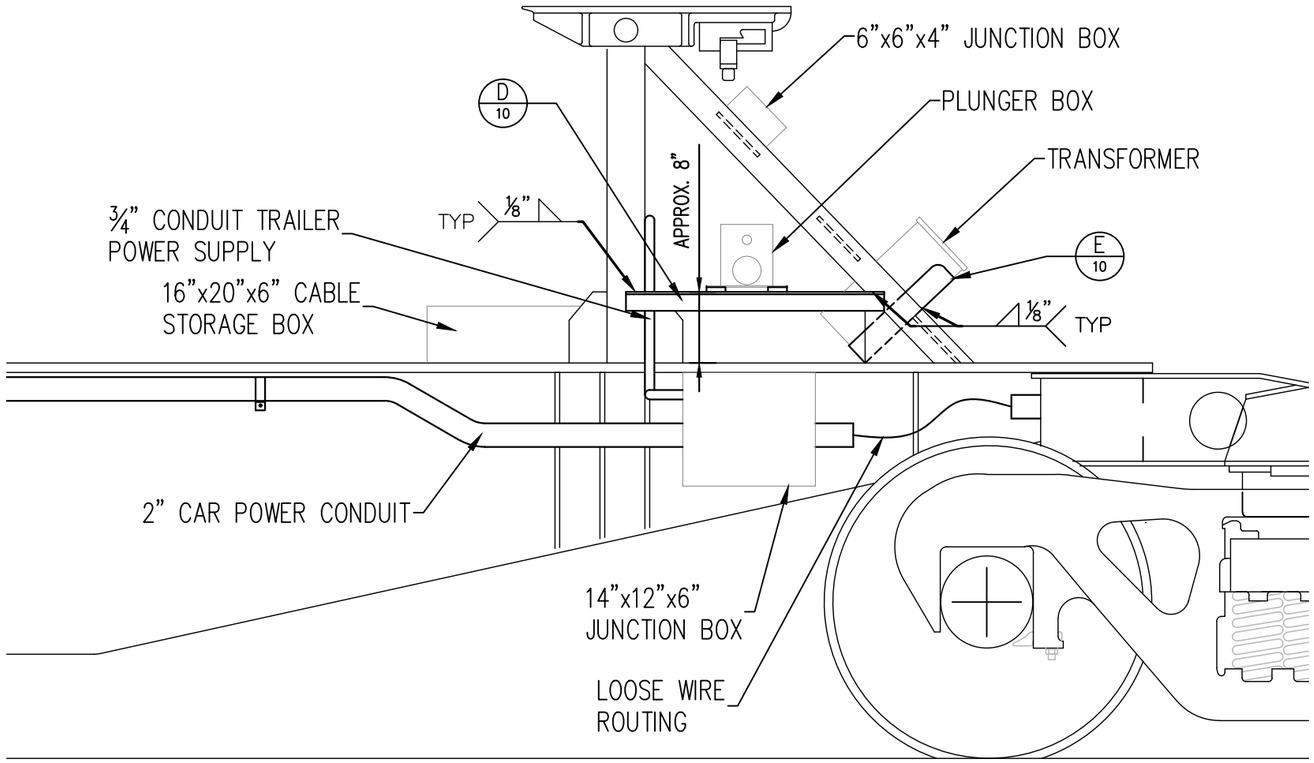
PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

TITLE:
CAR UNIT A
STAND DETAILS

DESIGNED BY: ARRC
DRAWN BY: CDL
CHECKED BY: JAK
APPROVED BY:

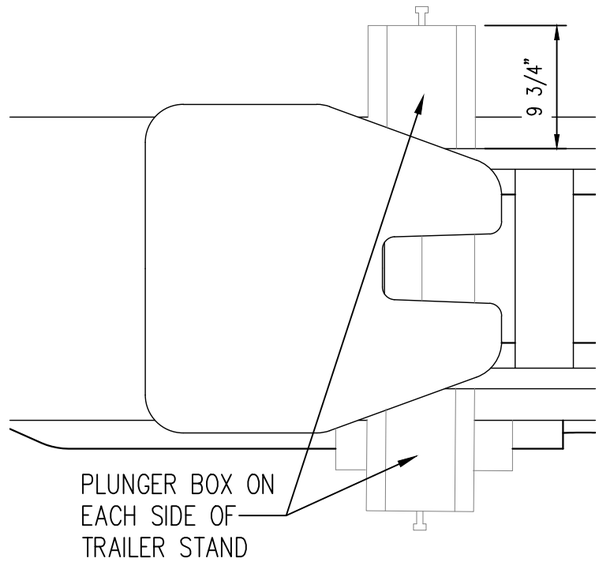
SCALE : NO SCALE
DATE : 05/01/2020

AFE NO.:
ACAD FILE:
DWG NO. 8 OF 13



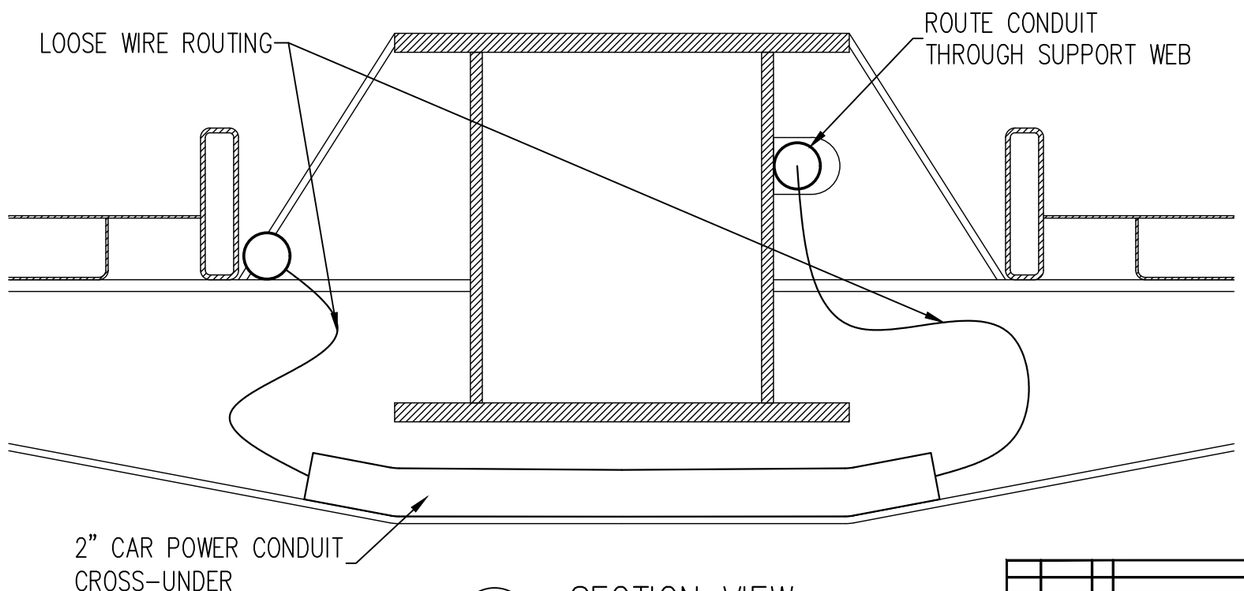
B/9 UNIT C TRAILER STAND – RIGHT SIDE VIEW

NO SCALE



D/9 UNIT C TRAILER STAND – PLAN VIEW

NO SCALE



C/9 SECTION VIEW

NO SCALE

REV.	DATE	BY	REVISION

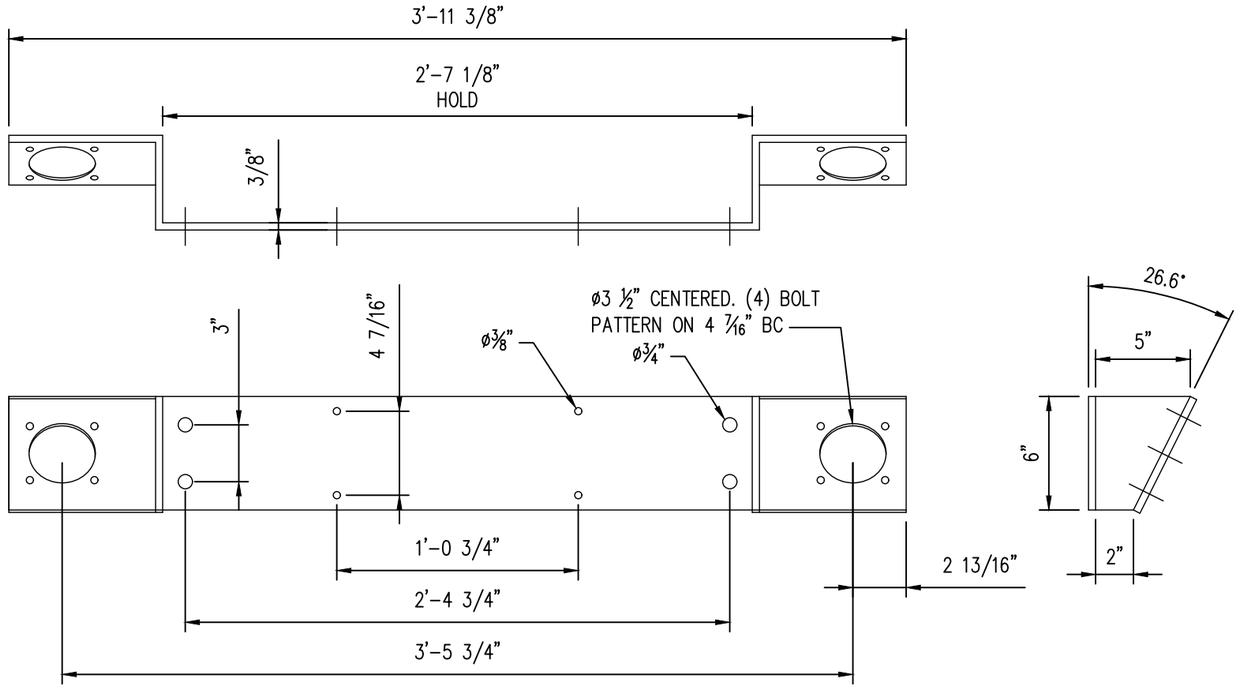
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

TITLE:
CAR UNIT C
DETAILS

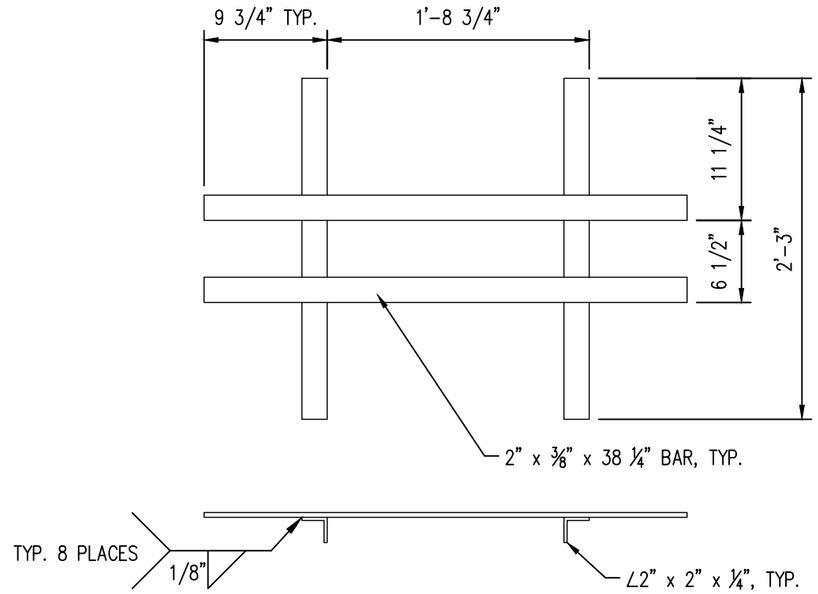
DESIGNED BY: ARRC	SCALE : NO SCALE	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 9 OF 13	
APPROVED BY:			

P:\Engineering\ACAD\eng-projects\Flatcars\ARR 19100's\2019 480v Electrification\DRAWINGS\ARR 19100 Electrification.dwg, VPort: SHT 9, Plot Style: 750C-Half.ctb



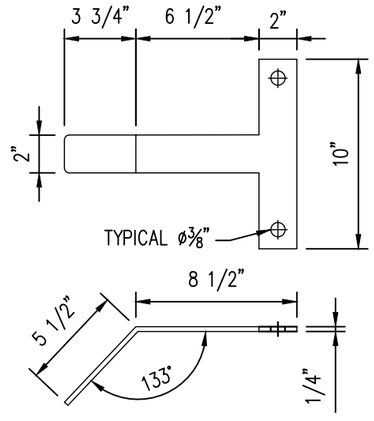
A / 10 — A & B END COUPLER BRACKET

1 1/2" = 1'



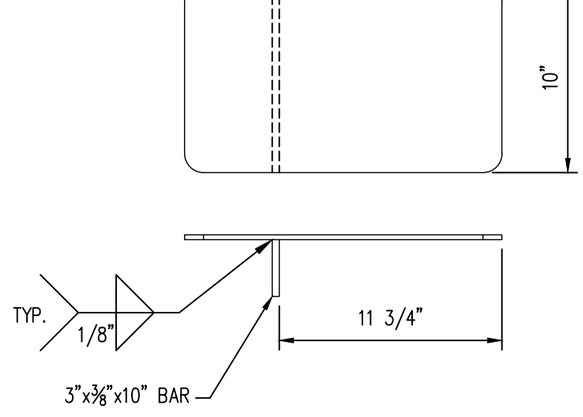
D / 10 — UNIT C PLUNGER BOX SUPPORT

1" = 1'



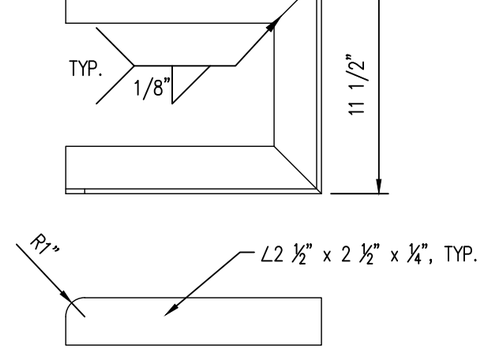
B / 10 — TRANSFORMER STRAP DETAIL

1 1/2" = 1'



C / 10 — UNIT A & B PLUNGER BOX SUPPORT

1 1/2" = 1'



E / 10 — TRANSFORMER BRACKET DETAIL

1 1/2" = 1'

NOTES:

1) ALL BRACKETS ARE TYPICALS AND MUST BE FABRICATED TO MATCH FIELD CONDITIONS.
2) BOLT HOLES IN A & B END COUPLER BRACKET TO BE FIT TO ATTACHED 480V HOUSING UNITS AND 20"X16"X8" JUNCTION BOXES.
3) BOLT SHALL BE GRADE 5 WITH NYLON LOCKING NUTS.
4) CONTRACTOR TO CONFIRM LOCATION, DIAMETER, AND SPACING OF BOLT HOLES WITH OWNER'S PROVIDED EQUIPMENT.

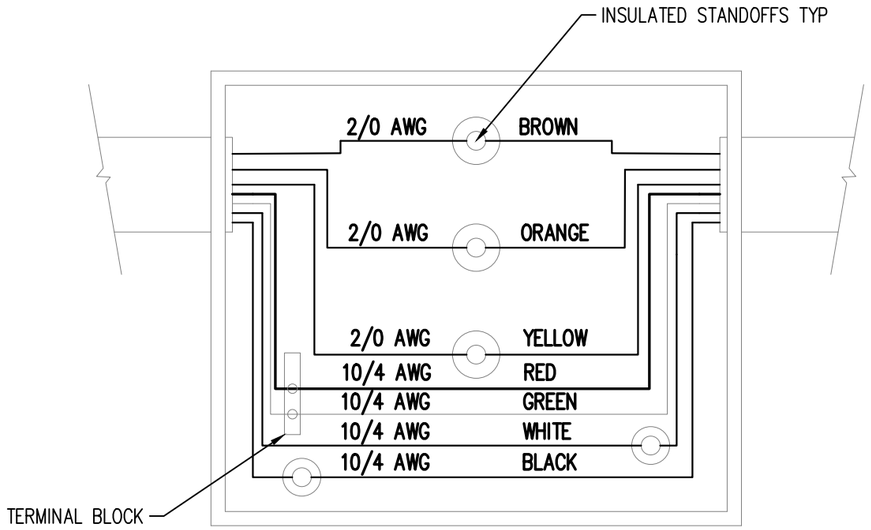
REV.	DATE	BY	REVISION

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

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

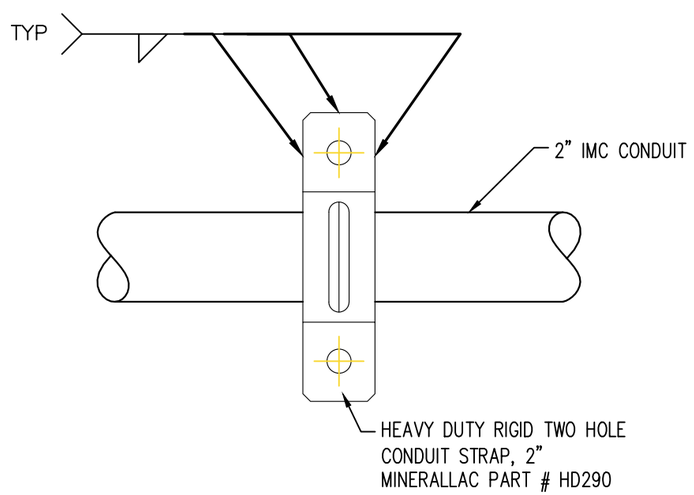
TITLE:
DETAILS

DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 10 OF 13	
APPROVED BY:			



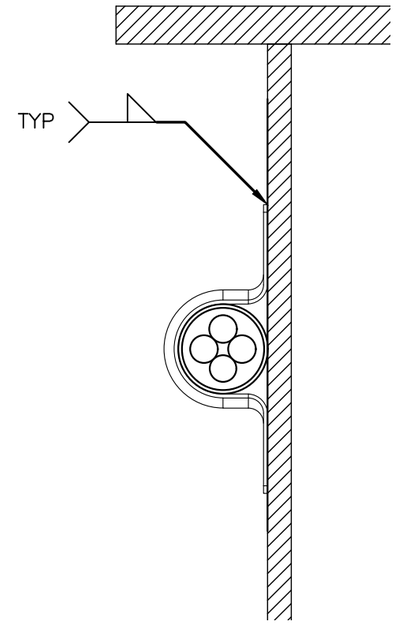
JUNCTION BOX WIRE ROUTING

3" = 1'



TYPICAL 2" CONDUIT MOUNTING – ELEVATION

3" = 1'



TYPICAL 2" CONDUIT MOUNTING – SECTION

3" = 1'

NOTES:

1) VERTICALLY MOUNTED CONDUIT SUPPORTS MUST NOT EXCEED 48" SPACING.
2) CONDUIT MUST BE SUPPORTED WITHIN 6" OF TERMINATIONS OR BENDS.

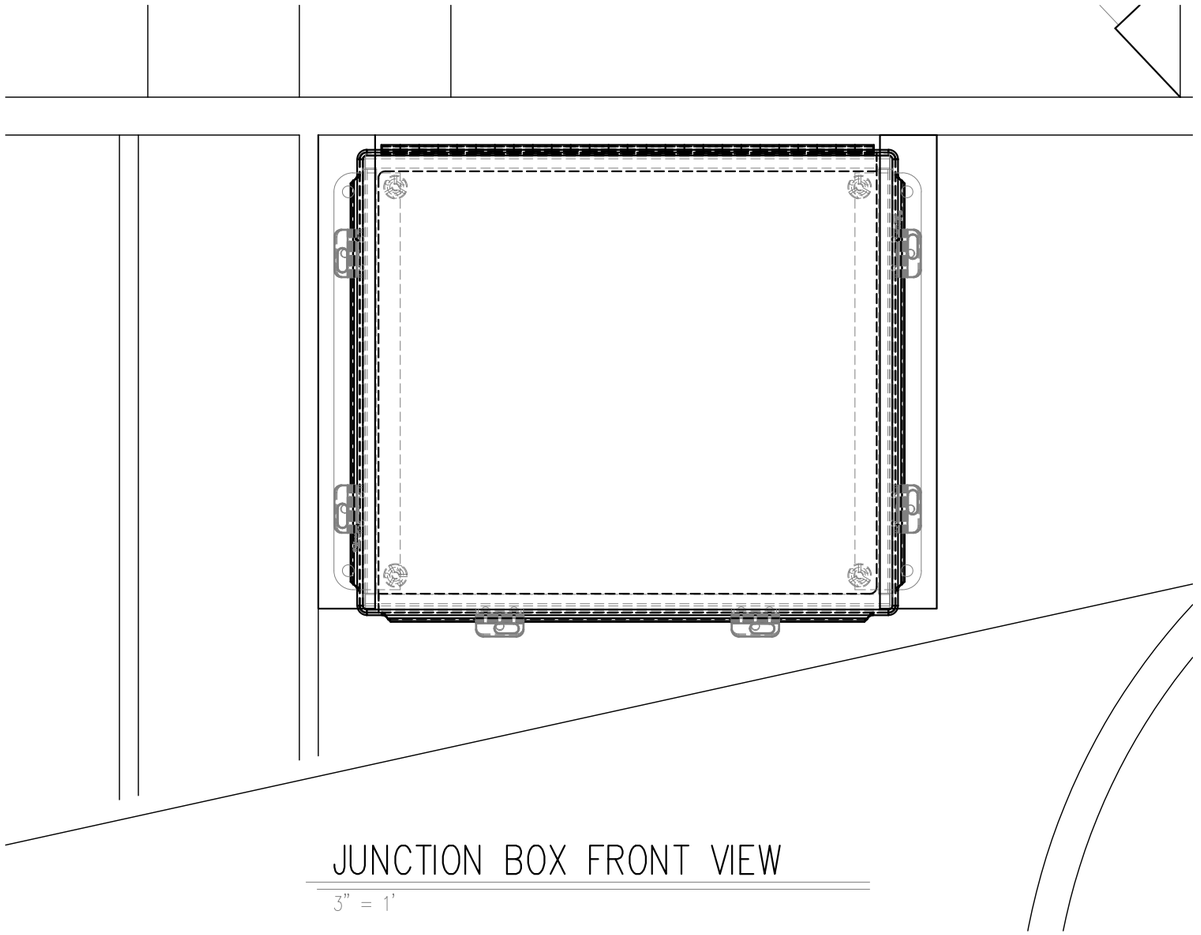
REV.	DATE	BY	REVISION

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

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

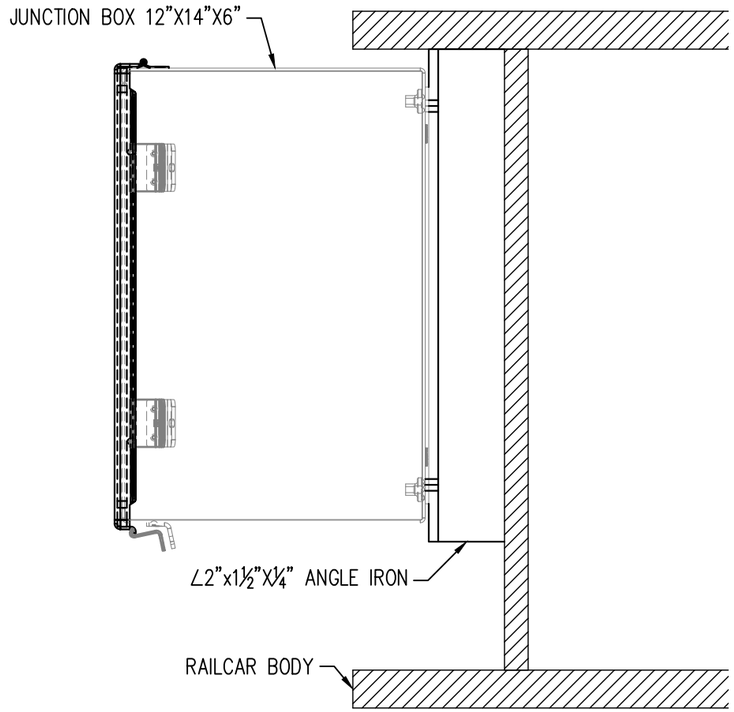
TITLE:
JUNCTION BOX WIRING ROUTING

DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 11 OF 13	
APPROVED BY:			



JUNCTION BOX FRONT VIEW

3" = 1'

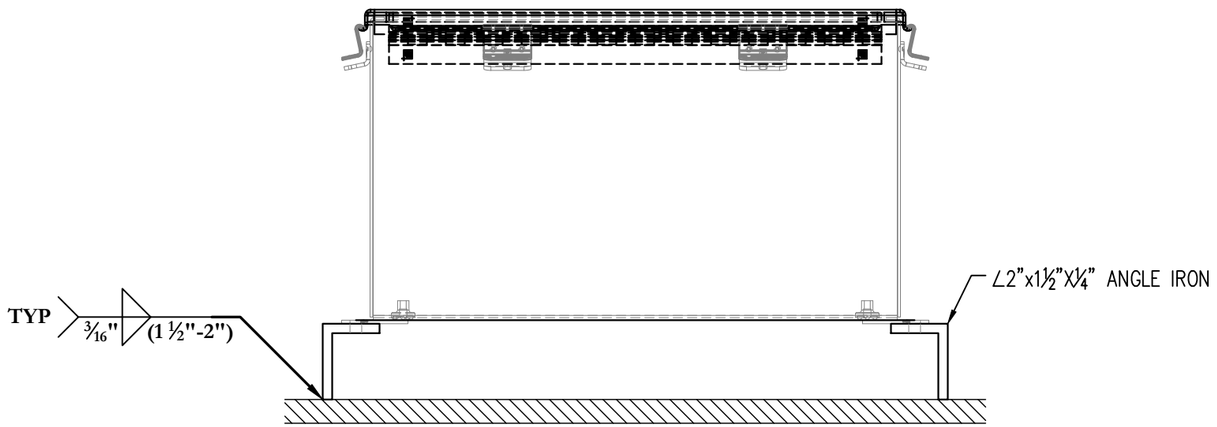


JUNCTION BOX SIDE VIEW

3" = 1'

NOTES:

1) BOLTED CONNECTIONS MUST HAVE MINIMUM OF THREE (3) THREADS EXPOSED BEYOND NUT.



JUNCTION BOX TOP VIEW

3" = 1'

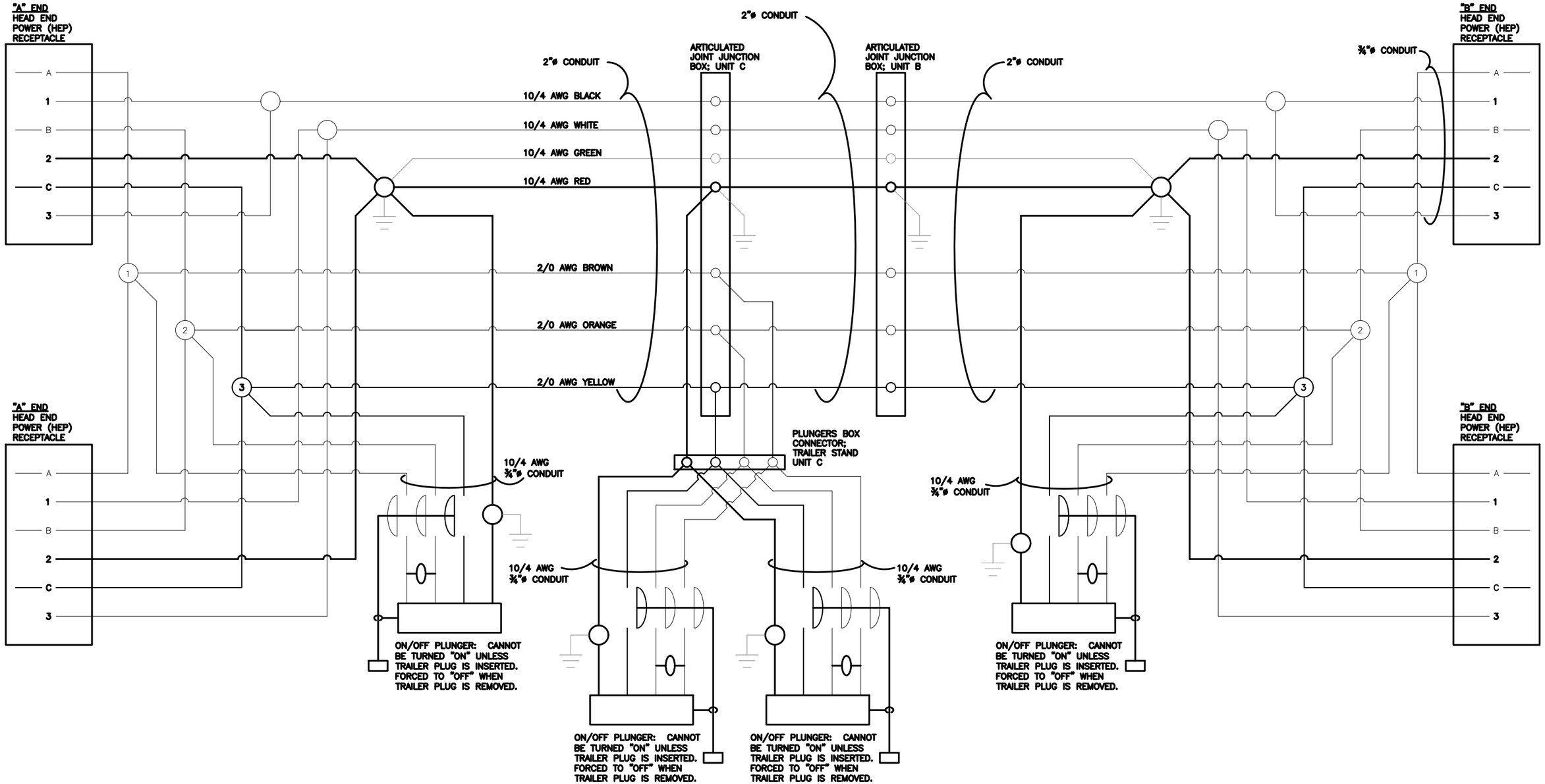
REV.	DATE	BY	REVISION

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

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

TITLE:
JUNCTION BOX
TYP SIDE MOUNTING

DESIGNED BY: ARRC	SCALE : AS NOTED	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 12 OF 13	
APPROVED BY:			



ELECTRICAL ONE LINE DIAGRAM

NO SCALE

NOTES:

1) ALL WIRING SHALL BE LABELED FOR IDENTIFICATION WITHIN JUNCTION BOXES.

REV.	DATE	BY	REVISION

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

PROJECT :
MOTIVE POWER AND EQUIPMENT
ARR 19116-19144 480v ELECTRIFICATION

TITLE:
ELECTRICAL ONE LINE DIAGRAM

DESIGNED BY: ARRC	SCALE : NO SCALE	AFE NO.:	
DRAWN BY: CDL		ACAD FILE:	
CHECKED BY: JAK	DATE : 05/01/2020	DWG NO. 13 OF 13	
APPROVED BY:			